W.S. Darley & Co.

FIRE APPARATUS SPECIFICATIONS

Darley Super Single Ford F550 4x4

Max-Tactical Pumper™
For
A very well prepared Fire Department

Date: Aug 11, 2025
Sales Rep:

W.S. Darley & Co.

GENERAL INFORMATION

These specifications are a detailed description of the apparatus and equipment to be furnished by W.S. Darley & Co. and is intended to outline the quality and design of the apparatus desired.

The apparatus covered by this specification shall be new, unused, and the latest production design and which is furnished to US based Fire Departments in general.

This apparatus shall be constructed in its entirety within the continental United States.

THANK YOU

Thank you for the opportunity to present these specifications. Our company looks forward to working with you, to provide the best service possible, and the best product possible, as detailed within these specifications.

FIRE APPARATUS SPECIFICATIONS

ADMINISTRATION

PRODUCT QUALITY AND WORKMANSHIP

The components provided and workmanship performed shall be of the highest quality available for this application. Special consideration shall be given to the following areas:

A). Accessibility to various components that require periodic maintenance or lubrication checks.
B). Ease of vehicle and pump operation (as applicable).
C). Features beneficial to the intended operation of the apparatus.

Construction of the complete apparatus shall be designed to carry the loads intended to meet the road and terrain conditions and speed requirements desired when specified by the purchaser.

Welding shall not be employed in the assembly of the apparatus in a manner that will prevent the removal of any major component part for service and/or repair.

SAFETY GUIDE

One (1) copy of the FAMA Fire Apparatus Safety Guide shall be provided. This guide provides safety instructions for operators of fire apparatus.

DOT/NFPA COMPLIANCE

The proposal for fire apparatus conforms with all Federal Department of Transportation (DOT) rules and regulations in effect at the time of bid, and with all National Fire Protection Association (NFPA) guidelines for automotive fire apparatus as published at the time of bid, except as modified by customer specifications. Any increased costs incurred by Seller because of future changes in, or additions to said DOT or NFPA standards will be passed along to the Buyer as an addition to the price set forth above in the contract. The apparatus is designed to meet the applicable and available recommendations of NFPA 1900 which went into effect Jan 1, 2024. This was previously known as NFPA 1901 (Fire Pump/Tank) and NFPA 1906 (Storage, equipment and equipment allowance).

PAYMENT REQUIREMENTS

Payment for the value of the chassis shall be made to Darley upon chassis completion and invoicing by Darley.

The balance of the contract shall be paid in full upon completion of the apparatus at the Darley facilities and invoicing by Darley.

A down payment of $95,000 for the chassis is expected within 30 days of Darley invoicing the Fire Department once the chassis is received at the Darley factory. Payment to be made within 30 days of contract signing if chassis is in stock.

DELIVERY REQUIREMENTS

DELIVERY AFTER CONTRACT

F.O.B. DARLEY

The completed apparatus shall be picked up by the customer, at the Darley manufacturing facility in Chippewa Falls, Wisconsin. Custom apparatus completion is estimated at between 12 and 18 months upon signing contract. Stock truck purchases may offer expedited delivery. If stock is selected, delivery will be confirmed when contract is signed by Buyer and counter-signed by Darley.

PROGRESS PHOTOS

Progress photos are to be uploaded to a customer accessible SharePoint folder once the project is in production.

INSPECTION TRIP(S)

One inspection trip to Darley is recommended prior to delivery. There are no inspection trips included. No funds are set aside to cover inspection trip costs and are therefore expected to be the responsibility of the buyer.

DRAWING REQUIREMENTS

APPARATUS DRAWINGS

Darley has submitted, with the specification, a minimum of one (1) set of drawings of the apparatus as proposed. The drawings shall include left side, right side, top, front and rear views of the apparatus.

Critical dimensions such as overall height, overall length, body width, cab dimensions, pump module dimensions (when applicable), compartment dimensions, and overall body dimensions are on the drawings.

Water tank size and pump gpm are also to be stated on the drawings.

WARRANTY REQUIREMENTS

WARRANTY

The following warranties shall be provided:

ONE YEAR DARLEY APPARATUS WARRANTY

The Darley apparatus herein shall include a warranty against defects in materials and workmanship for a period of twelve (12) months, effective upon pick up or delivery of the apparatus to the destination, as found in the available warranty document.

DARLEY FIRE PUMP WARRANTY

Upon pick up or delivery, for a period of ten (10) years, the Darley Company guarantees to replace any defective part or parts in the Champion pump. This Champion pump is guaranteed to deliver the performance as specified on the certification label.

This warranty does not obligate the Darley Company to bear costs of labor or transportation of repairs or alterations not previously authorized by same.

The Darley Company shall not be responsible, under the terms of this warranty, for the cost of repairs or alterations of any Champion pump.

The Darley Company makes no warranty of trade accessories incorporated in the assembly or employed in conjunction with any Champion pump. Improper use of the pump or excessive overloading of the pump beyond recommended limits of capacity and pressure shall void this warranty.

LIFETIME TANK WARRANTY

The water and foam tanks herein are warrantied, to the original owner of the apparatus, to be free from defects in material and workmanship for the normal service life of the apparatus in which the tanks are installed, per the available warranty document.

COPOLYMER BODY WARRANTY

The Darley Company provides a limited lifetime warranty on its copolymer PolyBilt bodies, to the original owner of the apparatus, the body to be free from defects in material and workmanship, per the available warranty document.

FIVE YEAR DARLEY COPOLYMER BODY PAINT WARRANTY

Subject to the provisions, limitations, and conditions set forth, Darley hereby warrants to the original Purchaser, the finish paint on the copolymer body is free of defects and blisters and further warrants that it will maintain such integrity and shall not result in unreasonable gloss or color loss, for a period of five (5) years following the date the apparatus leaves the Seller facility. Per the available warranty document.

OPERATIONAL - DEMONSTRATION

Darley is pleased to provide full demonstration and familiarization of this product for the customer at the Darley factory. The demonstration shall include all aspects of apparatus operation. The demonstration is anticipated to take place at final inspection, however training can also be arranged at the customer location at the expense of the customer.

MANUAL AND DATA REQUIREMENTS - FIRE APPARATUS DOCUMENTATION

At the time of delivery, Darley shall supply the following information:

---The manufacturer's record of construction details (MRCD).
---The operations and service documentation/manuals for the pump and body including electrical.

The above will be provided electronically and a SharePoint link will be given for the customer to access their vehicle manuals from anywhere they have internet access.

---Any printed vendor component part's manuals, such as chassis paperwork, will be shipped in the truck

CHASSIS PROVIDER

The chassis, as detailed in these specifications, shall be ordered, and supplied by Darley. The chassis portion of the contract shall be paid for as detailed in the Darley proposal and contract verbiage.

MANUFACTURER RIGHTS

The Darley Company reserves the right to incorporate the latest technology or standards, including changes to apparatus features and brand names, or model or equipment being supplied with the vehicle.

CHASSIS SPECIFICATIONS

MODEL
Current model year (2026) Ford F550 Super Crew (4-door) 4x4

DIMENSIONS
Wheelbase: 203"
C/A: 84"
GAWR front: 7,500 lbs.
GAWR rear: 14,706 lbs.
GVW total: 19,500 lbs.

ENGINE
6.7L 4V OHV Power Stroke Diesel V8
Stainless steel exhaust

TRANSMISSION
Torqshift 10 speed automatic W/3OD

AXLES
7500 lb. rated front
Disc brakes
Power steering
7,500 lb. front suspension
2-speed transfer case

14,706 lb. rated rear
Disc brakes
14,706 lb. rear suspension

BRAKE SYSTEM
ABS Power Disc Brake package

W.S. Darley & Co.

CHASSIS AND FUEL TANK
Chassis
-Fire/Rescue prep package
-Front tow hooks
-Fuel tank - 40 gallon tank rear axle

TIRES AND WHEELS
19.5" Wheels
225/70RX19.5G BSW Max-Traction tires (four rear - two front)

CAB
AM/FM stereo w/CD/MP3 player with Sync 3, 8” video screen
Chrome steel front bumper with Chrome grille surround (bumper to be replaced)
Power door locks with Remote keyless entry
Power windows
Rear camera kit
4X4 Electronic shift on the fly and auto rotary control on instrument panel
Cloth seats - Earth Gray
Driver side manual lumbar support
40/20/40 Front bench seat
4-way adjustable driver and passenger headrests.
Crew bench seat
HVAC with Air conditioning and Heater/defroster
Air bags
Tinted glass
Powerscope trailer tow mirrors (includes power heated glass, power telescoping, power fold-away, heated spotter mirror and integrated clearance lights and turn signals)

GAUGES AND CONTROLS
Gauge package (volt meter/tachometer/trans temp)
Self-canceling turn signals

ELECTRICAL AND LIGHTING
Front Fog Lights
Dual heavy duty alternators
Dual 78 AH 750 CCA batteries
Dual electric horns
Halogen headlights and Front turn signals
Windshield wipers
Clearance lights
12 volt power outlets

PAINT
One color finish paint (Ford Red) with clear coat

DARLEY MAX-SS EDITION - SUPER SINGLE PACKAGE

This Ford F550 chassis shall undergo a "Super Single" tire and wheel modification, applying larger super single tires and wheels to be used. The scope of work shall be as follows:

This package shall utilize a highly engineered set of components, intended to increase ground clearance and improve off-road capability of the Ford F550 4x4 chassis. Larger wheels and tires shall replace the factory wheels and tires. The factory front fenders shall be modified to allow space for the larger front tires. A suspension lift shall be installed, as well as longer shocks front and rear. Speedometer correction shall be included and confirmed to be accurate upon completion of the installation.

FENDERS
The front fenders shall be altered with a larger flare radius design that bolt on. These wider and larger radius fenders shall allow proper fit for the 40” tires. A 3/16" sun fade-resistant, plastic rock guard liner shall also be installed. The fenders shall be coated with a black textured finish similar to the front bumper.

WHEELS and TIRES
The wheels shall be precision machined, forged aluminum, measuring 20" high x 11" wide drilled with the F550 bolt pattern. This bolt pattern and dished wheel rim design shall allow the wheel to flip from front to rear to provide the same overall outside track width of approximately 92 inches wide. They shall be powder-coated black with polished aluminum accents, stamped DOT approved, and rated to 7,390lb weight capacity per wheel. The tires shall be 335/80 R20 Continental MPT81, black side wall tires measuring approx. 40” tall. They are to be mounted and balanced. There shall be a total of four (4) mounted tires and wheels. A spare tire/wheel is optional.

LIFT KIT WITH SHOCKS
There shall be a suspension lift kit installed, with longer shocks installed to replace the factory Ford gas shocks. A longer, heavier-duty radius arm kit shall be installed to correct caster and reposition the front axle back into the correct operating angle.

If and when the midship Darley pump is to be utilized, the rear axle housing shall be shimmed to provide the proper operating angle, necessary for correcting the driveline angles with the addition of the Darley PSMC pump transmission, into the middle of the three piece factory Ford driveline. If no midship pump is used, this shim or spacer will not be required.

All parts shall be installed and fully tested. A 4-wheel computer steering alignment shall be performed to ensure all tires are tracking correctly. The speedometer shall be computer corrected before delivery.

All OE chassis take off parts become Darley property and are figured into the package price.

CHASSIS MODIFICATIONS

The following modifications and installations shall be performed on the chassis upon delivery to the apparatus manufacturer:

TIRE PRESSURE INDICATORS

There shall be LED air pressure sensor caps shipped loose for the customer to install on each tire's valve stem. Each shall be self-calibrating, memorizing pressure when initially installed. Each shall be easily recalibrated by simply removing and reinstalling. The bright LED allows for visual checks in daylight. This active tire pressure monitoring system shall start flashing RED if the tire pressure drops 5 to 10 psi.

CONTROL CONSOLE BETWEEN SEATS

A center control console shall be installed, on the cab floor, between the driver and the officer seat. The top shall be removable to allow access to the components and wiring inside the console. The top of the console shall

contain items such as the rocker switch panel for all warning lights and the door ajar warning light. It shall also contain the electronic siren head, and other controls (as applicable).

CREW SECTION SCBA SEATS

The rear seating provided with the chassis shall be replaced with two (2) individual Bostrom 400 CT seats with SCBA seat backs and Secure-All brackets. A seat mounting bracket, specific to this application, shall be installed. Note that each SCBA seat shall have a headrest. NOTE: Each headrest shall have the Darley logo.

MAX-BUMPER WITH BRUSH GUARD

An aluminum "Extra Wide" front bumper assembly with brush guard, tray, and mounting kit shall be provided and installed as a replacement for the factory Ford front bumper. This heavy duty replacement bumper features a 2" receiver built in under the winch tray and can be used with a portable style winch or as a secure attachment point. This bumper shall be black in color and includes a pair of round cutouts for 6" recessed driving lights.

LED DRIVING LIGHTS IN BUMPER

Two (2) 6" round 7200 lumen LED lights shall be mounted, one each side in the custom front bumper. Each shall be wired to the factory Fog Light switch in the dash or shall be controlled by a toggle switch in the event the chassis did not come equipped with the factory fog light option.

12V ELECTRIC RECEIVER WINCH

A Warn M10S, 12 volt portable electric winch, with a rated line pull of 10,000 lbs. shall be provided. It shall have a 12V reversible electric motor. It shall be mounted on a portable cradle for a 2" receiver.

Features:
---100 ft. of synthetic rope with a clevis hook and safety latch
---12 volt remote control with a 12 ft. cable
---Automatic load-holding brake
---Clutch for free spooling

NOTE: If a winch receiver is required (if detailed elsewhere in these specifications), the receiver shall not be recessed more than 1.25” from a bumper face.

FRONT WINCH POWER

A 12 volt circuit with appropriate high amperage wiring shall be provided, with a push in style receptacle near the receiver. A high amp slow blow fuse shall be provided near the batteries for circuit protection.

REAR HITCH-WINCH RECEIVER ASSEMBLY

A 2" square hitch receiver assembly shall be provided at the rear of the chassis, to allow attachment of a trailer or portable winch. A 12 volt, high amperage circuit with appropriate protected wiring shall be provided, with a receptacle near the receiver. A round 7-wire covered trailer connector, in a bracket, shall be installed near the rear hitch receiver and wired into the vehicle.

RECEIVER STEP

A removable, folding step shall be provided and installed with the rear 2" receiver; for use as an access step up to the tailboard; to meet NFPA 24" max step height. The step can also be able to be used in the front bumper receiver to provide easy access to the under hood area of the chassis.

FUEL FILL - AT LEFT REAR WHEELWELL

The chassis fuel fill inlet and vent shall be routed from the fuel tank to a recessed area at the side of the body, near the rear wheel well on the left side of the vehicle. A fuel cap shall be provided. A label designating the type of fuel to be used shall be installed near the fuel fill. No hinged door or cover for this fuel fill is to be provided.

AIR HORNS

Two (2) air horns shall be installed under the chassis. The air horns shall be connected to the onboard air system and be equipped with a pressure protection valve at the air tank.

AIR HORN CONTROL

A momentary rocker switch, with a red switch cover, shall be provided in both the center console control within easy reach of the driver or the officer and the pump panel to activate the air horns.

NFPA COMPLIANT TREADPLATE RUNNING BOARDS

A set of NFPA compliant running boards, that meet the appropriate stepping depth and abrasiveness, shall be provided. The running boards shall be fabricated from bright, embossed aluminum treadplate and shall be supplied and installed below the chassis cab doors.

The running board height, from the ground to the top of the first step shall be approximately 23" from the ground, but not to exceed 24". A bright aluminum diamond plate vertical back splash, from the top of the running board to below the cab shall be provided and installed. The back splash shall be mounted to allow for independent movement of the cab.

MASTER SWITCH - CHASSIS ON/OFF

A master battery cut-off switch shall be provided. This switch shall cut/supply all 12 volt power to the fire and emergency related body and pumping accessories. This master switch shall include a green colored, LED, master switch "ON" pilot light.

BATTERY CHARGER

An automatic battery charger shall be installed in the cab and connected to the chassis batteries. The maximum output shall be 15 amps. The system automatically becomes inactive when the batteries are fully charged. A built in battery saver feature shall be included for auxiliary electrical loads such as hand lights and portable radios. A weatherproof bar graph display shall be included and mounted in the driver’s side running board next to the 120 volt Auto Eject.

This onboard battery charger shall be located in the back of the 4-door cab on the floor and shall have a protective cover built around it. It shall be plugged into or powered by a household style outlet/junction box powered by the Auto-Eject mentioned elsewhere in these specifications. This leaves an open 120V port on the outlet for FD to use for in-station charging of equipment.

120V SUPER AUTO-EJECT

A 20 amp, 120 volt Super Auto Eject receptacle with weatherproof cover shall be provided and connected to the on board combination charger/compressor, specified elsewhere. The receptacle shall be wired so when the vehicle ignition is energized, the receptacle automatically ejects the external plug from the receptacle. The Super Auto Eject shall be a completely sealed assembly to prevent internal contamination. The internal switch arrangement shall eliminate the possibility of arching at the contacts.

The receptacle shall be located below the driver's door area.
A mating plug shall be furnished and shipped loose.

REAR MUD FLAPS

Two (2) black hard rubber mud flaps shall be installed behind the rear wheels, one each side.

CHASSIS EXHAUST

The chassis exhaust pipe shall discharge at the rear wheels and extend out to the side of the body.

BACK-UP ALARM (Chassis Provided)

One (1) electronic back up alarm shall be provided with the chassis. See the chassis specifications.

IDENTIFICATION DATA PLATE

An identification plate shall be installed in the driver's area of the cab specifying the quantity and types of fluids used in the vehicle.

--- Engine oil
--- Engine coolant
--- Chassis transmission fluid
--- Pump transmission lubrication fluid
--- Pump primer fluid
--- Drive axle lubrication fluid
--- Air conditioning refrigerant
--- Air conditioning lubrication oil
--- Power steering fluid
--- Transfer case fluid
--- Air compressor system lubricant

The ID plate shall also include the following:
1.) Build Date
2.) Delivery Date
3.) Paint Information
4.) VIN Number

OCCUPANT PLATE

An identification plate shall be installed in the driver's area of the cab, specifying the quantity of personnel allowed to ride in the apparatus.

TRAVEL HEIGHT AND GVWR LABEL

A "high visibility" plate shall be permanently mounted in the cab, visible to driver when seated.

The plate shall show the overall height of the completed apparatus in feet and inches (or meters), the overall length of the completed apparatus in feet and inches (or meters).

The plate shall also show the gross vehicle weight rating (GVWR) in pounds or kilograms.

Text shall also be supplied on the plate, indicating that the information shown is current upon completion of the apparatus. If the overall height of the apparatus changes after the apparatus is put into service, then the purchaser must revise the dimensions on the plate.

PUMP, MODULE, AND RELATED ITEMS

NFPA COMPLIANT PUMP

The fire pump and related plumbing shall be installed in accordance with applicable NFPA guidelines at the time the contract was placed.

SIDE DESIGN PUMP OPERATOR'S PANEL & MODULE

SIDE PANEL PUMP MODULE

A pump operator's side panel controlled pump module shall be provided. It shall be assembled and mounted independently from both the chassis and the body, to allow sufficient flexing and prevent component fatigue. The module shall be constructed using square aluminum tubing. The welded ends of the tubing shall be chamfered prior to welding and shall be ground smooth. A heavy duty isolation material shall be provided between dissimilar metals during the mounting process.

SIDE OPERATED PUMP PANEL

The pump operator's control panel shall be located on the left side of the pump module.
PANELS
The pump panels shall be removable.

TRIM RINGS
All suction and discharge ports shall be fitted with removable trim rings.

GAUGES AND CONTROLS
All controls and gauges shall be functionally grouped and installed to allow easy access for service and replacement. Gauges (and/or flowmeters if present) shall be located as nearly adjacent to the valve control as possible.

PRESSURE GAUGES

A total of seven (7) 2.5" liquid filled gauges, each with a stainless steel bezel shall be provided for the standard discharges. Each gauge shall be located on the pump operator's panel near the respective discharge control.

Each gauge shall be a back lit 2.5” glycerin filled pressure gauge with the following features:

---Glycerin filled
---Full 2.5” dial for easy readability
---Case material: Zytel nylon
---Pointer: Aluminum
---LED lighted
---Freeze and clog proof
---Bezel material: chrome plated nylon
---Made in the USA

SIDE PANELS

The pump compartment module shall have left and right side pump panels constructed of brushed stainless steel sheets. The side pump panels shall be removable.

GAUGE PANEL - STAINLESS STEEL

The pump operator's upper gauge panel shall be located on the left side pump module above the main control panel. It shall be constructed from brushed stainless steel. It shall be vertically hinged and shall have two latches.

ACCESS PANEL - STAINLESS STEEL

There shall be a hinged upper access panel located above the main pump panel on the right side pump module. It shall be constructed from brushed stainless steel. It shall be vertically hinged and shall have two latches.

COLOR CODED LABELS WITH BEZELS

A set of color coded and function described labels shall be provided on the apparatus for the pump operator's controls, gated inlets, discharge outlets, drains, and pressure gauges (as applicable). The labels shall be a high quality plastic material mounted in an adhesive backed chrome plated bezel.

PUMP PANEL LIGHT SHIELDS (LED)

Light shield assemblies shall be provided above the left and right side pump panels. There shall be LED lights installed within the shield. A switch located on the pump operator's panel shall be provided to activate the lights.

PUMP COMPARTMENT LIGHTS (LED)

A LED strip light shall be provided inside the pump compartment area. This light shall be controlled with a switch on each side panel for servicing the pump area.

RUNNING BOARDS

Running boards shall be installed on each side of the pump compartment module. The running boards shall be constructed of 1/8" embossed bright aluminum tread plate. Each shall be a minimum of approximately 11" deep x the length of the module. The running boards shall have a 1.25" upward bend on the inside edge to act as a kick plate. The aluminum tread plate shall meet recommendations for slip resistant surfaces at the time of proposal.

The running boards shall be attached to a frame mounted outrigger support structure. Each running board to have a 3" downward bend on the front and side faces with a 1" underside return for superior strength.

The stepping surface of the pump module running boards shall line up closely with the chassis cab running boards.

GRIP INSERTS IN RUNNING BOARDS

Two (2) extruded aluminum inserts, each with an open grated grip type surface, shall be installed, one each side, in the pump module running boards. The inserts shall occupy nearly the entire running board surface area.

SINGLE STAGE FIRE PUMP (CAFS)

The pump shall be a Darley PSMC single stage pump, rated at 1500 GPM.

A split shaft driven centrifugal pump rated up to 1500 GPM @ 150 PSI, shall be provided. The pump shall be placed in gear from the chassis cab. The pump shift shall be clearly labeled.

The pump shall have a nickel alloy casing. A bronze, double hubbed impeller, mechanically and hydraulically balanced, shall be installed on a splined stainless steel shaft.

The impeller shaft shall be supported by oil lubricated ball bearings. The pump gear case shall be silent running, with helically cut gears, fully supported by ball bearings, and shall have a replaceable, bronze seal ring.

CAFS COMPATIBLE

The pump transmission shall be designed to accommodate an integrated continuous duty, rotary screw air compressor for CAFS.

DARLEY MECHANICAL SEAL

The fire pump shall be furnished with a Darley maintenance free mechanical seal; manufactured using the material silicon carbide (no exceptions). The mechanical seal shall be a non-contacting, non-wearing dual seal design. The lip seal shall eliminate leakage on a wet pump while parked on standby. The second seal shall allow a drip rate for cooling and lubrication while pumping.

U.L. CERTIFICATION - 1500 GPM

The fire pump shall meet and perform the following tests to receive a U.L. Certification.

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

PUMP SHIFT

One (1) air powered pump shift shall be installed in the cab. The shift shall engage the fire pump. The apparatus pump shift shall be engaged only when apparatus is in a stationary position and the parking brake is engaged. The following indicator lights shall be included with pump shift.

A green indicator light labeled "**PUMP ENGAGED**" shall indicate pump shift has successfully been completed.

A green indicator light labeled "**OK TO PUMP**", shall indicate the chassis transmission is in pump gear and parking brake is engaged.

AIR SYSTEM PACKAGE

A compressed air package shall be installed on the chassis to provide compressed air for the pump shift and other pneumatic accessories. This package shall include a 12 volt DC powered piston type air compressor rated at no less than 1.0 CFM at 125 PSI. A pressure switch shall be installed to keep the system pressure maintained between 90 and 120 PSI. An air reservoir shall be installed under the driver's side rear cab area outside the frame rail and shall include a pressure protection valve as well as a manual petcock drain.

PUMP ANODES

The pump shall be supplied with two (2) anodes for corrosion protection. The anodes shall be mounted at a 3/4" tap location on the pump manifolds. One (1) anode shall be mounted on the suction side of the pump and one (1) anode on the discharge side of the pump.

TRANSMISSION LOCK-UP DEVICE

The automatic chassis transmission shall be delivered to the body builder with high gear lock up device installed on the automatic transmission, to allow proper gear ratio for pump operation. The transmission shall be programmed by the chassis manufacturer to include this feature.

DRIVELINE MODIFICATION

The chassis driveline shall be modified to accommodate any changes required by the installation of the fire pump.

ELECTRIC PRIMER (FLUIDLESS)

One (1) 12 volt positive displacement type rotary vane primer of a fluidless design shall be provided for the fire pump priming system. A single, push-pull control shall be located on the pump operator's panel with a "Pull to Prime - Push To Close" label. The primer shall not require a lubrication tank. The priming pump shall be constructed of heat treated aluminum and hard coat anodized.

The pump priming system shall include a light to indicate when the pump priming system has been activated. The light shall be red in color and shall be labeled "WARNING - Primer Engaged".

PRESSURE GOVERNOR

A Darley "***AUTO CONTROL***" electronic pressure governor and engine monitoring system shall be installed on the pump operators control panel. The governor shall be configured to operate with the chassis engine. It shall regulate engine RPM to maintain a consistent pressure out of the water pump over a wide range of outgoing flows. The unit shall operate in both RPM and PSI modes. The 6" tall x 7-1/2" wide control unit shall include the following features:

<u>DISPLAY</u>:

--A 4-digit LED readout for pump discharge pressure.
--A 4-digit LED readout for pump intake pressure.
--A 20 segment LED bar graph for the pressure or RPM setting.
--A 4-digit readout for engine RPMs.

--Four (4), 10 segment bar graphs for engine oil pressure, engine temperature, transmission temperature, and battery voltage. The bar graph display shall flash if low voltage, low oil pressure, high transmission temperature, or high engine temperature condition occurs.

--"Throttle Ready" green LED. It shall indicate that the pump is engaged in the proper stationary pumping position, and that the parking brake is set.

<u>FUNCTION SWITCHES</u>:

Idle Mode - Preset - Increase - Decrease - Silence.
This system shall utilize information from the chassis engine ECU.

An audible alarm buzzer shall be included.

INTAKE RELIEF VALVE(S)

One (1) bronze, Elkhart intake relief valve(s) shall be provided and mounted on the suction side of the pump, adjustable from 50-250 psi, on the valve itself. Each valve specified shall be factory preset at approximately 125 psi. The system does not include an on/off control.

HEAT EXCHANGER & HEATED PUMP CORE

An automatic heat exchanger system shall be provided in the pump. Antifreeze from the vehicle engine shall flow through the pump core jacket. Water flow from the fire pump shall be used to cool the engine antifreeze. This feature shall assist against the pump freezing in cold climates.

MASTER DRAIN

One (1) rotary style master drain shall be installed with the control installed on the lower portion of the side control panel. It shall be of brass construction and use a rotary screw mechanism against a rubber sealing surface. Each port shall be isolated. The drain valve shall be mounted as low as necessary to drain the lowest ports on the pump, but as high as possible to provide as much ground clearance as possible under the pump. An "open and closed" label with arrows indicating direction shall be installed on the drain valve control.

1/4 TURN DRAINS - LIFT TO OPEN

Each gated 1.5" or larger inlet and discharge shall have a quarter turn drain valve installed. The drain valves shall be located along the bottom on each pump panel and are operated by lifting the handle to open the drain/bleeder. Inlets & discharges shall be plumbed to each drain at the lowest point. Each drain/bleeder shall be plumbed with low pressure hose to drain below the module and be directed away from the pump operator. Each drain valve shall have a long handled control lever with a color coded function label installed near the respective drain control.

SUCTION INLETS

6" LEFT SIDE INLET WITH BUTTERFLY

One (1) 6" suction steamer inlet with male NH threads shall be provided, on the left side pump panel. The inlet shall have a removable screen. The inlet shall have a 6" butterfly valve with an automatic relief and electric control installed in the side suction sleeve casting, completely behind the panel.

A switch with indicator lights shall be mounted on the operator's control panel. The relief valve shall be mounted on the intake side of butterfly valve and factory preset to 125 psi with a maximum pressure of 300 psi. The valve shall relieve excess pressure to atmosphere.

A green "open" indicator light and a red "closed" indicator light shall be provided.

There shall be no exception to the above requirements.

INLET CAP

The inlet shall have a polished chrome cap, engraved with the pump manufacturer's logo and name. The logo and name shall be painted with a high quality urethane paint.

6" RIGHT SIDE INLET

One (1) 6" suction steamer inlet with male NH threads shall be provided, on the right side pump panel. The inlet shall have a removable screen.

INLET CAP

The inlet shall have a polished chrome cap, engraved with the pump manufacturer's logo and name. The logo and name shall be painted with a high quality urethane paint.

PUMP PANEL ID PLATE

An identification plate, prepared by the fire pump manufacturer, shall be installed on the pump operator control panel to identify the fire pump serial number, model number, and performance.

WARNING - PUMP OPERATOR

A sign shall be provided on the pump operator's panel that states the following:

"WARNING - SERIOUS INJURY OR DEATH COULD OCCUR IF INLET(S) ARE SUPPLIED BY A PRESSURIZED SOURCE WHEN THE VALVE IS CLOSED". "SEE PUMP MANUAL FOR COMPLETE OPERATION INSTRUCTIONS".

PLUMBING SYSTEM (STAINLESS/BRASS)

All auxiliary suction and discharge plumbing related fittings, waterways, and manifolds shall be fabricated with stainless steel pipe, brass or high pressure hose with stainless steel couplings. Galvanized components and/or iron pipe components are not acceptable.

Upon completion, the entire system shall be fully pressure tested.

The plumbing and valve arrangement shall be capable of delivering water to the pump at a minimum flow rate of 500 GPM while pumping at 150 psi pressure.

Each gated intake shall be equipped with a 3/4 inch bleeder valve located in close proximity to the intake. All intakes shall be provided with suitable closures (valves or caps) capable of withstanding 500 PSI.

When any 3" or larger intake or discharge is gated (except tank to pump valve), the valve shall have a mechanism to allow the valve to fully open or fully close no faster than 3 seconds.

Any 2.5" or larger discharge outlet, mounted 42" or higher from ground, which hose is to be connected, and which is not in a hose storage area, shall be supplied with a sweep elbow of at least 30 degrees.

All 1.5" and larger intakes and discharges shall be equipped with drains. All drain valves shall be operational without the operator having to get under the plumbing area. All drains shall be detailed elsewhere in these specifications.

All discharges and intakes shall terminate with chrome NST adapters, with chrome caps and chains, unless detailed otherwise in these specifications.

2.5" SUCTION(S) - LEFT SIDE (Darley)

One (1) 2.5" brass suction valve(s) shall be installed on the left pump panel with the valve body mounted behind the pump panel. The control handle(s) shall be the quarter turn ball type, of the fixed pivot design, and located alongside the suction valve.

The suction(s) shall terminate with a 2.5" female NST chrome inlet swivel, a chrome male plug, chain, and a brass inlet strainer.

The valve(s) shall be Darley brand with a polished stainless steel ball.

TANK TO PUMP LINE (MANUAL)

One (1) 3" tank to pump line shall be provided for connection between the water tank and the fire pump. The valve shall be a 3" bronze, quarter turn ball type. The line shall terminate 4", for water tanks 500 gallons and more; and shall terminate 3", for water tanks under 500 gallons. The valve shall be manually controlled from the pump operator's panel.

CHECK VALVE

One (1) 3" swing type check valve shall be provided inline of the 3" water tank to pump line.

2" TANK FILL

One (1) 2" pump to tank fill shall be provided with a 2" inline bronze valve. The valve shall be manually controlled and properly labeled at the pump operator's panel.

AUTOCAFS - COMPRESSED AIR FOAM SYSTEM

There shall be provided, a high energy, automatic compressed air foam system (AutoCAFS). The system shall be designed to meet all applicable NFPA requirements. It shall be sized to provide at least 240 gallons per minute water flow and 120 cubic feet per minute air flow at 125 PSI.

The air compressor shall be a high quality, industrial rated, modulating, continuous duty, rotary screw design. The air compressor shall be mechanically gear driven by the main pump split shaft transfer case and shall be so designed as to provide optimum performance at 70% of rated engine RPM.

The air compressor gear train shall provide a means to engage and disengage air compressor as required.

The air compressor system shall include a pressurized oil lubrication system, oil separator, oil filter, inlet air filter, and modulating inlet air control. The air compressor system shall be provided with an air pressure balancing system to automatically balance the air pressure to match water pressure for CAFS use. Operator can operate the pump at 100 PSI while recirculating water from the tank when operating air tools from the CAFS air chuck on the pump panel. The air compressor system shall also have a compressor engaged light mounted on the panel, compressor pressure gauge, and an oil temperature gauge with a high oil temperature warning.

Gauges and controls shall be positioned and clearly marked to provide simple and easy operation.

Each of the components of this Automatic Compressed Air Foam System - (air compressor, drive system, foam proportioner, control and instrumentation system) shall be sized, driven and controlled to produce a well operating and reliable CAFS unit.

This Darley automatic compressed air foam system (Darley AutoCAFS) shall be completely installed and tested before delivery by the factory.

FOAM OUTLETS

The compressed air foam system shall be plumbed to provide both foam solution and compressed air to the specified discharges. Detailed descriptions of these discharges shall be provided elsewhere in these specifications.

CAFS AIR COMPRESSOR SHIFT

An air powered (CAFS) air compressor shift shall be installed to engage the air compressor complete with a single green colored “ENGAGED” indicator light. The air compressor shift shall include an interlock system, installed to eliminate the possibility of improperly shifting the compressor while the water pump is rotating. The compressor can be engaged only when the water pump is disengaged and the apparatus is in a stationary position. NO EXCEPTIONS

CAFS AIR PRESSURE GAUGE

The compressed air foam system shall utilize an air pressure gauge. It shall be installed on the operator’s control panel. This CAFS gauge shall be installed by the CAFS pumping system manufacturer.

AIR OUTLET 1/4" CAFS SUPPLY

There shall be a brass 1/4" female air hose quick disconnect fitting mounted on the right side pump panel. The fitting shall be connected to the CAFS air compressor. There shall be an adjustable regulator installed to provide compressed air to the side panel.

FOAM PROPORTIONER (2001 System)

A FoamPro 2001 Class A automatic, electronic, direct injection, foam proportioning system shall be installed on the discharge side of the pump. It shall provide foam to predetermined foam discharge(s). This foam system is completely automatic and requires only one push button to turn it on before the system is functioning.

The system shall incorporate a paddle wheel flow meter to measure the water flow and based on the foam percentage selected at the controller the direct injection pump shall inject the proper amount of foam into the foam discharge. The system is capable of providing precise foam solution concentration rates from 0.1% to 3% and is operator adjustable with the push button digital display control. System Capacity - Foam Pump is capable of 2.5 gpm of foam output @ 150 psi. Pump motor is 1/2 HP 12 volt. The system shall include an "auto on" feature.

Foam Concentration.....Water Flow Range
0.1%.....20-2600 gpm
0.2%.....20-1300 gpm
0.3%.....20-833 gpm
0.5%.....20-520 gpm
1.0%.....20-260 gpm
3.0%.....20-85 gpm

A check valve shall be installed between the flowmeter and the injection fitting to avoid foam contamination back into the rest of the pump.

System Features: Four (4) selectable modes for operator information:

1) Flow mode: Displays the total amount of water flowing out of the foam discharge(s). Foam system need not be enabled to function in this mode.

2) Total Water mode: When selected, this mode shows the total amount of water flowed out of the foam discharge(s) only since the unit was in operation, regardless of if foam system was activated or not.

3) Foam Percentage % mode: When selected, this mode shows the percentage rate that foam would be injected at if the system was turned on. This percentage can be changed by pressing the up or the down arrow buttons at the bottom of the display.

4) Total Foam mode: When selected, this mode shows the total amount of foam concentrate that has been injected into the water flow since the unit was turned on.

The system shall be provided with a low foam tank level switch which shall alert operator of low foam concentrate level and shall automatically shut foam system off after two minutes.

Foam system flushing is achieved by simply turning off the unit and flowing water out of the discharge(s) that were previously flowing foam solution.

The system shall be completely installed inside the pump compartment, with digital control unit and instruction plate mounted on the pump operators control panel. An installation and operation manual shall be included with the system. The system shall be installed by a certified FoamPro dealer only and shall be fully calibrated and tested for proper operation prior to delivery.

DARLEY FOAM TANK REFILL

A Darley 12 volt power foam tank fill system DFRS001-KITshall be installed to eliminate the need to climb up onto the hosebed to fill the foam tank through the fill tower. The system shall operate completely while standing on the ground. The system shall operate by attaching a suction hose to a pre-plumbed panel connection using a stainless steel cam-lock fitting. The pick-up wand shall then be placed in the foam concentrate container. The operator then lifts a toggle switch to activate the 12 volt pumping system, which manually fills and stops only when the switch is released. When the "on board" foam tank is full, a green light will illuminate. All components are designed to be used with Class A foam and therefore require no flushing.

System includes:

---High-capacity concentrate pump
---Continuous-duty 12-volt motor
---"Tank Full" Indicator light
---Panel plate
---Stainless fittings and cap
---1″ concentrate pick-up wand
---Check valves
---6′ of one inch hard suction hose with wand

POWERFILL CONTROL

The Foam Tank refill inlet and control shall be at the right side pump panel.

SECONDARY FOAM PICKUP HOSE

This unit will be provided with a secondary foam pickup tube. This alternate source to the foam proportioner will be provided with a manual 3/4" three-way valve to disconnect foam flow from the tank and allow foam to be drawn from a pail or other source through a 3/4" inside diameter hose approximately four foot long. This hose will be provided near the pump panel on the side of the truck and is intended to work best with the pail of foam setting on the running board.

RIGHT SIDE CONTROLS

The right side discharges shall be controlled from the left side module pump operator's panel, and also from the right side module, as a Darley standard.

2.5" LEFT SIDE DISCHARGES (Darley)

Two (2) 2.5" discharge outlets with 2.5" pipe and valve with NST threads shall be supplied at the left side panel. Each valve shall be a quarter turn ball type, self-locking, fixed pivot design and shall be operated with a lever control from the pump operator's panel.

Each valve shall be Darley bronze valve with a high polished stainless steel ball.

2.5" RIGHT SIDE DISCHARGE (Darley)

One (1) 2.5" discharge outlet with 2.5" pipe and valve and NST threads shall be supplied at the right side panel. The valve shall be a quarter turn ball type, self-locking, fixed pivot design and shall be operated with a lever control from the operator's panel.

The valve shall be Darley bronze valve with a high polished stainless steel ball.

3" RIGHT SIDE DISCHARGE

One (1) 3" discharge outlet with 3" pipe and valve and NST threads shall be supplied at the right side panel. The valve shall be a bronze valve. The valve shall be a quarter turn ball type, self-locking, fixed pivot design and shall be operated with a manual control lever from the operator's panel.

STORZ ADAPTER

The discharge shall have a 3" NSTF x 4" Storz 30 degree elbow with cap and retaining cable. This same adapter is also listed in the equipment section of the specifications for convenience.

THREE CROSSLAYS 2 x 1.5" & 1 x 2.5" (CAFS)

Two (2) crosslays for storage of 1-3/4" hose shall be installed above the pump. Each crosslay shall have capacity for 200 ft. of 1.75" double jacket fire hose. The crosslays shall each have 2" plumbing and 2" self-locking valve and terminate with a 1.5" NSTM chicksan type swivel up through the center of the crosslay flooring. The swivels shall allow hose deployment out either side of the crosslay.

One (1) 2.5" crosslay shall also be installed above the pump. The crosslay shall have capacity for 200 ft. of 2.5" double jacket fire hose. The crosslay shall have 2.5" plumbing and a 2.5" self-locking valve and terminate with a

2.5" NSTM chicksan type swivel up through the center of the crosslay flooring. The swivel shall allow hose out of either side of the crosslay.

The outside edges of each side opening shall be trimmed with polished stainless steel. A manual valve control shall be furnished at the pump operator's panel for each.

CAFS/FOAM CAPABLE

Each crosslay shall be piped, including the required check valves, CAFS air injection switch, and 1/4 turn, adjustable air flow control valves to provide water, foam solution, plain air, or compressed air foam.

ALUMINUM CROSSLAY COVER

There shall be an aluminum cover for the crosslay(s). The cover shall be constructed of a minimum of 1/8" aluminum tread plate and be hinged with a stainless steel knuckle hinge. The cover shall be hinged to open toward the chassis cab. The cover shall have a hold down system that shall hold the cover down. A pair of brackets with rubber bumpers shall be installed and used to prop the cover open for reloading hose.

DUNNAGE AREA

A recessed, removable dunnage (storage) compartment shall be provided above the pump compartment and shall be the full width of the pump compartment. The compartment interior shall be made of smooth aluminum material. The ends shall be left open with hinged access doors provided on each side of the pump house.

WATER LEVEL GAUGE

One (1) Fire Research ***"Tank Vision"*** water tank level gauge shall be installed on the pump operator's panel. The gauge shall have an LED display, which flashes when the tank level reaches 25% of capacity. The calibration system shall allow the tank bottom transducer to be calibrated to work with most any tank configuration.

FOAM LEVEL GAUGE

One (1) Fire Research ***"Tank Vision"*** foam tank level gauge shall be installed on the pump operator's panel. The gauge shall have an LED display which flashes when the tank level reaches 25% of capacity. The calibration system shall allow the tank bottom transducer to be calibrated to work with most any tank configuration.

AIR HORN SWITCH

There shall be a RED air horn activation switch mounted on the pump operator's panel. It shall be a weather resistant momentary rocker switch and shall be clearly labeled.

HANDRAILS (MODULE TOP)

Two (2) handrails, approximately 10" long, shall be provided. Each handrail shall be 1-1/4" extruded aluminum tubing, with rubber grip inserts, in chrome or stainless steel stanchions. Drain holes shall be provided to allow moisture drainage. There shall be a barrier material installed between the body surface and the handrail.

--The handrails shall be located on the upper side of the left and right sides of the pump module.

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WATER TANK, FIRE BODY & RELATED COMPONENTS

BODY CONSTRUCTION

The body and water tank shall be fabricated using special high strength copolymer materials, providing a durable, impact resistant, corrosion resistant, and lightweight design.

INTEGRAL BODY/TANK CONSTRUCTION

The water tank shall be integral with the body. The body and water tank shall be fabricated using the same special high strength copolymer materials, providing a durable, impact resistant, corrosion resistant, and lightweight design. Due to the added strength and durability provided with this integral design, there shall be NO EXCEPTION to this requirement.

COPOLYMER BODY CONSTRUCTION

The body shall be fabricated using special high strength, copolymer sheet materials, providing a durable, impact resistant, corrosion resistant, and lightweight body. The body shall be fabricated using Aristech TI-4007-L polymer (or equal) extruded sheets. All seams shall be fully welded. All outside corners on the body shall have a minimum 1/2" radius. The entire body shall be a welded assembly; assembled and painted prior to mounting on the sub frame and the chassis.

Due to the importance of the strength and impact resistance of the copolymer material, there shall be no exception to these requirements.

REAR TOW EYES

Two (2) heavy duty laser cut steel tow eyes, 1/2" thick with a 1.5" I.D. cutout, shall each be bolted to the rear chassis frame rails with 3/4" grade 8 bolts. These black tow eyes shall extend through the rear body panel and include stainless steel trim plates.

COMPARTMENT CONSTRUCTION

The compartments, including the floors, shall be constructed of the same heavy duty smooth copolymer material as used for the body. All seams shall be completely welded. Divider walls between compartments shall be single wall construction with a minimum wall thickness of 3/8". Compartment floors shall be a minimum of 1-1/8" thick and shall have a minimum of a 3/4" lip above bottom of the door opening, providing a sweep out design. All compartment door opening lips shall be protected with polished stainless steel trim. For adequate ventilation and air displacement, each compartment shall be properly louvered with square black heavy plastic vents. The rearmost wall of the rear compartments shall have removable panels, constructed from the same body material, to cover and protect all 12 volt electrical accessories mounted on the walls. The panels shall be removable to provide access to those components. Compartment interiors shall be provided in a natural unpainted finish.

FENDER PANELS

Side fender panels customized with a larger radius cut out to accommodate the larger tires shall be constructed of heavy duty smooth copolymer material.

FENDER LINERS

Copolymer fender liners shall be welded into the wheel well area, above the rear wheels. Adequate clearance shall be provided for the optional installation of customer provided single tire chains. The inner liners shall be textured black copolymer material.

HOSE BED CONSTRUCTION

The hose bed walls shall be of the same copolymer material as the body, reinforced at the corners. The upper, outer edges shall have a solid tube type design for strength and stiffness. The hose bed shall be free from all projections, which may interfere with the unloading of hose. See drawing for dimensions.

HOSE BED FLOORING

A hose bed floor shall be provided and constructed of textured black copolymer slat style material. The slats shall be properly spaced to allow passage of air between the hose and the booster tank.

HOSE BED DIVIDER(S)

Two (2) adjustable polymer hose bed dividers shall be provided and installed in extruded tracks to allow adjustment from side to side for alternate hose capacities. The divider(s) shall have a textured black finish and shall have a radius corner on the rear portion with a hole drilled for the JackStrap.

FASTENERS

All fasteners used to mount or secure components to the body shall be of stainless steel construction. Items fastened directly into the copolymer shall use sheet metal screws, stainless steel T-nuts or threaded brass inserts, depending on application. Upon request by the department, the manufacturer shall be required to provide a sample of the fasteners to be used in the body construction.

TREADPLATE AND TRIM

All treadplate shall be bright aluminum. Any horizontal surfaces with aluminum treadplate shall be overlaid with embossed 1/8" bright aluminum treadplate. The aluminum treadplate shall meet recommended requirements for non-slip surfaces.

RUB RAILS

Rub rails shall be installed using solid black rubber material designed to help protect the lower body and cushion against accidental contact. Each shall be mounted below the lower side compartments. Each end shall have a hard black rubber end cap.

There shall be bright polished scuff strips mounted between the body surface and the rub rails.

FRONT FOLDING STEPS LEFT - LIGHTED

Three (3) large, heavy duty lighted folding steps shall be furnished and located at the front body face of the left side compartments. There shall be a barrier material installed between the body surface and the steps.

FRONT FOLDING STEPS RIGHT - LIGHTED

Three (3) large, heavy duty lighted folding steps shall be furnished and located at the front body face of the right side compartments. There shall be a barrier material installed between the body surface and the steps.

REAR FOLDING STEPS - LIGHTED

Four (4) large, heavy duty chrome, lighted folding steps shall be furnished and located, two each side, at the apparatus rear. There shall be a barrier material installed between the body surface and the steps.

ACCESS HANDRAIL(S)

One (1) approximately 10" long access handrail(s) shall be provided. Each handrail specified shall be 1-1/4" extruded aluminum tubing, with rubber grip inserts, in chrome or stainless steel stanchions. Drain holes shall be provided to allow moisture drainage. There shall be a barrier material installed between the body surface and the handrail(s).

--The handrail shall be on the inside top left end of the body (hosebed) at the rear. None on the right due to ladder storage.

HORIZONTAL REAR CROSS RAIL

One (1) horizontal rear cross rail shall be provided at the upper rear portion of the rear body panel. The rail shall be the approximate width of the rear body, between the width of any side compartments. It shall be 1.25" extruded aluminum tubing with rubber grip inserts, mounted in chrome stanchions. There shall be a barrier material installed between the body surface and the handrail.

300 GALLON TANK - COPOLYMER

A 300 gallon water (booster) tank shall be provided. The booster tank shall be constructed of a copolymer material, properly baffled.

The tank shall be provided with at least one (1) full length swash partition (baffle) and a sufficient number of widthwise baffles so that the maximum dimension of any spaces in the tank, either transverse or longitudinal, shall not exceed 46", and not less than 23".

Baffles shall have openings at both the top and bottom to permit movement of air and water between spaces to allow maximum flow requirements. Baffles shall form an integral part of the tank, and design shall be to provide and maintain safe road stability regardless of water level.

Tank shall have an overflow designed to prevent damage to the tank under high flow conditions and enclosed in front tank filler. The overflow is to be designed and located to prevent water loss on fast stops or starts, and is also to be located not to affect traction on the rear tires.

Tank outlet connection shall be designed with a 12" anti-swirl baffle plate above tank outlet to prevent air from mixing with the water when pumping from the tank.

A fill tower shall be installed on the tank top. It shall be of adequate size, minimum 10" X 10", to accommodate overflow and vents, to have a hinged cover and screen installed.

The tank shall be mounted to the chassis frame, per manufacturer's requirements.

FOAM TANK

One (1) 25 gallon foam tank shall be provided, integral with the water tank and shall have a rectangular fill tower, approximately 10" x 10", with a hinged cover and a removable screen. A tank drain shall be provided inside the pump compartment.

2.5" LEFT REAR AUTO TANK FILL

One (1) 2.5" electronic tank fill shall be provided at the left rear of the apparatus. It shall have a chrome female swivel with strainer, plug and chain, and NST threads.

A quarter turn 3/4" drain bleeder valve shall be supplied and installed with the control knob approximately 6" below the inlet swivel. A drain hose shall be extended through the compartment floor to remove the water from the piping outboard of the electric 2.5" AutoFill valve.

The left rear direct tank fill shall include an automatic direct water tank fill system.

The system shall operate refilling operations independently, without monitoring by the engineer. Refill operation shall not require apparatus or fire pump to be running. The system shall be capable of handling pressurized sources up to 300 psi. The system gets an electronic signal from the water level gauge.

The water level gauge supplies a programmed signal to stop filling when the tank level is at 85% full, and resume filling when the tank level reaches 50%. Valve system shall be able to be manually overridden in case of electric failure.

The controller shall have three toggle positions, with command signals to the fill valve:

1) Auto - Fully automates the fill process, opens and closes the valve from signals sent by the water level gauge
2) Off - Closes the valve
3) Open - Opens the valve

The system shall enable the operator to perform the following control / operation functions and status indicators for the refill operation:

1) Provide toggle positions for Auto/Off/Open for control of electric refill valve
2) Solid green light advises the valve is open
3) Solid red light advises the valve is closed

DIRECT FILL CONTROL

The direct fill control shall be located at the pump operator's panel.

SUBFRAME HOT DIPPED GALVANIZED

The body shall be attached to and supported by a heavy duty, spring loaded, steel subframe bolted to the truck frame. The subframe shall be spring mounted to the chassis frame to allow for independent flexing of the body in relation to the chassis frame. The subframe shall be constructed from structural steel angle and C-channels. No welding shall be allowed to the truck frame. Isolator strips shall be installed at all contact points between the body and subframe.

The subframe shall be carbon steel, sandblasted, then be treated with a hot dipped galvanizing process to offer the best protection against corrosion.

Due to the importance of the subframe's flexibility and corrosion resistance, there shall be no exception to these requirements.

FENDERS

Flexible black textured fenders shall be attached to trim out the wheel well openings and to protect the sides of the body from mud and debris from the tires.

PIKE POLE - LADDER COMPARTMENTS

Rear slide in pike pole and folding ladder storage compartments shall be installed at the left and right side upper rear. The left compartment shall include tubes for two (2) max. 8 ft long pike poles. The right compartment shall include storage for up to an 8' folding attic ladder and 8' max length pike pole. Note: The attic ladder will protrude out the front of the body and a few inches into the dunnage area.

Each compartment shall run the full length of the body and shall utilize the space in the upper portion of the side compartments, to the rear of the roll of each roll up door. A smooth aluminum door with latch shall be installed to cover the ends of each compartment. The compartment shall measure approx. 7 inches wide x 5 inches high.

REAR TAILBOARD

The rear tailboard shall be bolted to a heavy duty steel support assembly attached to the chassis frame. The rear tailboard shall be approximately 13" deep x 47" wide and constructed of embossed fire apparatus quality bright aluminum treadplate with an extruded aluminum grip type insert. The insert and aluminum treadplate shall meet recommended requirements for non-slip surfaces.

The rear tailboard shall be bolted to the support assembly with a drain gap provided at the rear and each side of the tailboard.

COPOLYMER COMPARTMENTS

LEFT SIDE

1.) One (1) lower compartment ahead of the rear wheels, approximately 15" wide x 23" high x 22" deep. The door opening shall be approximately 15" wide x 23" high. A vertically hinged stainless steel "box style" door with perimeter gasket and latches shall be provided.

2.) One (1) compartment over the rear wheel, extending to the front of the body, approximately 63.5" wide x 38.25" high x 22" deep. The framed door opening shall be approximately 58.75" wide x 35.75" high.

3.) One (1) compartment behind the rear wheels, approximately 36" wide x 57.50" high x 22" deep. The framed door opening shall be approximately 33.75" wide x 55" high.

RIGHT SIDE

4.) One (1) lower compartment ahead of the rear wheels, approximately 15" wide x 23" high x 22" deep. A vertically hinged stainless steel "box style" door with perimeter gasket and latches shall be provided.

NOTE: SCBA STORAGE: The above #4 lower front compartment shall have dividers built in to form a copolymer 6 cubicle rack, designed to hold five (5), or six (6 - if diameter <6”), SCBA air bottles that are 23.25” long or less.

5.) One (1) compartment over the rear wheel, extending to the front of the body, approximately 63.5" wide x 38.25" high x 22" deep. The framed door opening shall be approximately 58.75" wide x 35.75" high.

6.) One (1) compartment behind the rear wheels, approximately 36" wide x 57.50" high x 22" deep. The framed door opening shall be approximately 33.75" wide x 55" high.

REAR COMPARTMENT

7.) One (1) compartment at the apparatus rear, approximately 48" wide x 31.25" high x 26" deep. The useable door opening shall be approximately 42" wide x 28.75" high.

REAR ROLL UP DOOR FINISH

The rear roll up door shall be provided in an anodized natural satin aluminum or brushed finish.

SIDE COMPARTMENT DOORS

---Compartment #1 and #4 shall have vertically hinged, smooth aluminum, "box style", pan doors with push latches, and perimeter gaskets. These doors shall be painted job color.

---Compartments #2, #3, #5, and #6 shall have natural aluminum roll up doors in satin or brushed finish.

ROLL UP DOOR CONSTRUCTION

Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized aluminum. Compartment doors shall be equipped with smooth opening and closing roll-up doors complete with the following features:
- 1” aluminum double wall slats with continuous ball & socket hinge joint designed to prevent water ingression and weather tight recessed dual durometer seals
- Double wall reinforced bottom panel with stainless steel lift bar latching system
- Bottom panel flange with cut-outs for ease of access with gloved hands
- Reusable slat shoes with positive snap-lock securement
- Smooth interior door curtain to prevent equipment hang-ups
- One-piece aluminum door track / side frame
- Non-marring recessed side seals with UV stabilizers to prevent warping
- Dual leg bottom seal (wear component material to be Type 6 Nylon)
- Door ajar switch system shall be provided using magnetic switches
- Door striker w/support beneath the lift bar to prevent door curtain bounce and potential false door ajar indications.

SIDE ROLL UP DOOR FINISH

The side roll up doors shall be provided in an anodized natural satin aluminum or brushed finish.

S**LIDE ON LADDER STORAGE W/BACKBOARD STORAGE**

A set of "Slide-On" brackets shall be designed and mounted to secure the specified 3-section ladder. It shall include "Slide-In" backboard storage below the ladder(s). This storage system shall be provided on top of the right side apparatus body. The ladders shall be designed to slide up onto the track from the rear of the truck and slide

off that same way. Slide in track shall be provided with a Velcro strap or other method to secure the ladder(s). Backboard storage shall be sized to accommodate a backboard measuring 16" wide x 72" long and 2" high.

A polished diamondplate front hat section enclosure shall be installed to cover the front of the ladders.

The ladder storage shall have capacity for one (1) aluminum 19'/20 ft. three section extension ladder (measuring 100" when collapsed), and one (1) aluminum 8 foot roof ladder.

HARD SUCTION TROUGHS

Two (2) unpainted aluminum troughs shall be provided and mounted above the body side compartment area, on the left side. A third hose shall be situated on top of the other two hoses in a pyramid shape. There shall be two heavy duty Velcro straps installed to hold hose(s) in a secure position.

SHELVING TRACKS

Unistrut type tracks shall be provided in five (5) body compartment(s). The tracks shall be mounted vertically from floor to ceiling. A minimum of four (4) tracks shall be provided for each compartment specified.

The following compartments shall have unistrut track installed: Compartments 2, 3, 5, 6, and 7

HORIZONTAL TRACKS

Unistrut type tracks shall be provided in one (1) body compartment(s). The tracks shall be mounted horizontally on the back wall of the specified compartment(s). The tracks shall be used to mount components such as air bottle brackets. The tracks shall allow side to side adjustment of mounted components. A minimum of two (2) tracks shall be provided for each compartment specified.

The following compartments shall have unistrut track installed:

---One (1) set in the left side body compartment #2 over the rear wheel well.

ADJUSTABLE SHELVING

There is no shelving included in the base price. Shelving and other compartment storage solutions are optional and priced specifically for each compartment. Please evaluate your equipment list and request shelving, pull out trays, and tool-boards based on your specific fire department equipment storage needs.

PAINT, STRIPING, AND LETTERING SECTION

The apparatus shall be finish painted with DuPont/Axalta system paint. The compartment doors, if painted, shall be painted separately to ensure proper paint coverage on the body edges. The apparatus shall be prepared and painted using the following procedures.

All surfaces to be painted shall be properly prepared and cleaned. Painting, including primers and final coatings to be applied per the paint manufacturer's recommendations and instructions.

The compartment interiors shall be unpainted and in their natural white finish.

PAINT COLOR

The apparatus body paint shall be "cross referenced" from the chassis paint and shall be painted to match the main chassis color as close as possible.

LETTERING

The lettering for the apparatus shall be supplied and installed by the Purchaser/End User following payment and delivery of the apparatus.

REFLECTIVE STRIPE

Reflective striping shall be applied to the side of the vehicle chassis and body on at least 50% of the overall length of the vehicle. At least 50% of the rear and 25% of the front of the vehicle width shall have reflective striping applied. Striping shall be 3M Scotchlite with ControlTac adhesive brand reflective striping (or equal).

The stripe shall be a **4"** wide reflective stripe

The reflective stripe color shall be **WHITE**.

The reflective stripe shall be applied in a straight line along each side of the apparatus. The height of the stripe from the ground to the center of the stripe shall be per NFPA recommendations.

CAB DOOR REFLECTIVE MATERIAL

There shall be a reflective material installed on the lower interior portion of each cab door.

CAB DOOR REFLECTIVE MATERIAL

The reflective material shall be installed on the lower interior portion of the driver and officer cab doors, and each of the two crew doors.

The color of the reflective material shall be **WHITE**.

REAR CHEVRON STRIPING

There shall be alternating reflective striping provided at the apparatus rear, in a chevron stripe pattern. At least 50% of the apparatus rear shall have the retroreflective chevron striping.

The chevron pattern shall slant downward on both sides of the vehicle at an angle of 45 degrees, pointing in the direction of the bottom rear corners of the apparatus. The pattern shall resemble an inverted "V", with the point of the chevron pattern at the top center of the apparatus.

CHEVRON STRIPE WIDTH (6")

The chevron stripes shall each be 6" wide.

CHEVRON COLORS

The chevron pattern shall be alternating RED and LEMON YELLOW stripes.

12 VOLT ELECTRICAL SYSTEM (Multiplexing)

MULTIPLEXING

A multiplexed wiring system shall be installed, controlling all electrical functions installed by the apparatus manufacturer. The system shall be driven by "nodes" in key locations around the vehicle.

ELECTRICAL LOAD MANAGEMENT

Electrical Load management shall also be part of this multiplex system, allowing diminished and load shedding capabilities of particular functions.

GENERAL WIRING

Apparatus body wiring shall be high temperature compatible wire, insulated with chemically cross-linked polyethylene and to withstand prolonged temperatures of up to 350 degrees Fahrenheit. The wiring shall be resistant to grease, oil, fluids, and abrasion and shall meet or exceed S.A.E. Certification J1128. It shall be stranded copper alloy conductors of a gauge rated to carry 125% of the maximum current for which the circuit is protected. Wiring not within the multiplexed system shall be individually color coded and function labeled every three (3) inches on the insulation.

All required testing shall be performed before the apparatus is delivered. All required test documents shall be supplied at the time of apparatus delivery.

All wiring for the apparatus shall be installed in accordance with quality electrical standards, protected in loom or conduit. Grommets shall be installed where wire passes through body panels, where applicable.

WIRING DIAGRAMS

Electrical wiring diagrams of the specific apparatus shall be furnished with the completed apparatus.

12 VOLT SWITCHES (CENTER CONSOLE)

There shall be a rocker switch panel provided in the cab console between the driver and officer seats.

This switch panel shall control warning lights and 12 volt accessories. The switches shall be rocker style switches. Each switch shall have a pilot light indicating the "on" position. There shall be a main master rocker switch to cut power to all warning light rocker switches. The master switch shall be red in color with a red pilot light. Each switch shall be labeled as to its function.

RUNNING LIGHTS & REFLECTORS

There shall be LED running lights and reflectors mounted on the body. The lights shall be recess mounted in rub rails or the body. They shall be at any running boards, body sides, and rear tail board. The lights and reflectors shall meet USA Federal Motor Vehicle Safety Standard #108.

LICENSE PLATE HOLDER & LED LIGHT

A license plate holder with LED light shall be provided on the rear of the apparatus body. The light shall be wired to illuminate with the parking/headlights.

REAR DIRECTIONALS (LED)

Rear directional lighting shall be supplied as follows:

Two (2) 6" x 4" LED stop and tail lights, one each side - Red.
Two (2) 6" x 4" LED turn signals, one each side - Amber.
Two (2) 6" x 4" LED back up lights, one each side - Clear.

HOUSINGS FOR DIRECTIONALS

The signal lights shall each be housed in a chrome finish bezel designed to hold four (4) lights each. The fourth light location shall be utilized for lower rear warning lights.

REAR STEP LIGHTS (LED)

Two (2) clear LED step lights shall be furnished and shall be located, one each side at the apparatus, rear to illuminate respective stepping surfaces. Lighted folding steps also satisfy this requirement.

The lights shall be activated with the parking brake.

FRONT BODY STEP LIGHTS (LED)

Two (2) clear LED step lights shall be furnished and located, one each side, at the front face of the apparatus body to illuminate the respective stepping surfaces. Lighted folding steps, if provided, also satisfy this requirement.

The lights shall be activated with the parking brake.

COMPARTMENT LIGHTING (LED)

Each body compartment shall contain one (1) LED clear vertical strip light assembly. The compartments over the body wheel and the rear compartment shall have two strip lights, one on each side of the door.

Each light strip provided shall be full height of the compartment. Strip lighting provides uniform light dispersion throughout the compartment even when shelves are installed. The compartment strip lighting shall be automatically activated whenever a compartment door is opened.

Each roll up door shall have an integral "door open" indicator magnet in the lift bar. If the bar is not properly closed, it shall activate the "Door Open" light in the cab.

"DO NOT MOVE APPARATUS" LIGHT (LED)

A flashing red LED light, properly labeled with the words "Warning - Do Not Move Apparatus When Light Is On", shall be located in the cab. The light shall be activated automatically when any cab or body compartment door is opened, as long as the chassis parking brake is not applied.

FOUR DOOR CAB GROUND LIGHTING (LED)

The four (4) door cab shall have a clear LED ground light below each stepping area of each entry door to illuminate the ground at the step area. The lights shall be wired to activate when the parking brake is set.

UNDER BODY GROUND LIGHTS (LED)

Four (4) clear LED ground lights shall be provided. Each shall have a clear lens and shall be mounted on brackets, angled outward, beneath the apparatus. The lights shall be wired to activate when the parking brake is set.

The lights shall be mounted as follows:

--Two (2) at the pump module running boards, one each side.
--Two (2) at the rear tailboard, one each side.

WARNING LIGHT SYSTEM
The following warning lights shall be installed in zones and properly switched.

WHELEN WARNING LIGHT SYSTEM (LED)
LIGHT BAR

Zone A - (Upper Front) - A 60" LED lightbar shall be provided and installed. The lightbar shall incorporate an anodized, extruded, heavy duty aluminum base and include two front and rear corner modules, and four forward facing interior modules. All LED light modules shall consist of both white and red linear LEDs.
The solid state lightbar shall be vibration resistant. All electronic components are covered by a five-year factory warranty. The bar shall include a mount kit with hardware. Lens Color: Clear
Light bar shall be mounted on the centered forward section of the cab roof. The light colors shall be as follows: Combination of red and white lights. All forward facing white lights shall be switched as Front Scene lights and be controlled with a switch inside the chassis cab.

Zone A (Lower Front) - Two (2) LED warning lights shall be mounted one each side, on the front face of the chassis cab, cab grille, or grille guard.
The light color shall be as follows:
Driver's Side - **Red**, Officer's Side - **Red**

Zone B (Right Side) – Three (3) LED warning lights, shall be mounted on the right side of the vehicle. One at the lower front fender area, one towards the rear in the wheelwell, and one in the upper rear corner of the body.

Zone D (Left Side) – Three (3) LED warning lights, shall be mounted on the left side of the vehicle. One at the lower front fender area, one towards the rear in the wheelwell, and one in the upper rear corner of the body.

The light colors shall be as follows:
Driver's Side - **Red**
Officer's Side - **Red**

Zone C (Rear-Upper) - Two (2) rear facing 6x4 LED warning lights shall be provided and installed on the upper rear body sides. The light colors shall be as follows:

Driver's Side - **Red**
Officer's Side – **Red**

Zone C (Rear-Lower) - Two (2) 6 x 4 LED warning lights shall be mounted, one each side, at the lower rear of the apparatus. The light colors shall be as follows:
Driver's Side - **Red**.
Officer's Side - **Red**.

TRAFFIC ADVISOR (LED)

A rear “arrowstick” or traffic advisor shall be provided. The traffic advisor shall incorporate a rectangular extruded black powder coated aluminum housing with six amber LED® lights with waterproof connectors. The solid-state traffic advisor shall be vibration resistant.
The traffic advisor shall include a control head mounted in the cab. It shall have four programmable directional sequence flash patterns of left, right, split, and flash. The LED display on the control head shall replicate the directional sequence. Lens Color: Amber

RECESSED MOUNTING

The rear directional light bar shall be recessed into the rear Poly body panel of the apparatus, centered at the upper rear portion. The recessed pocket in the body shall be trimmed with a decorative stainless steel enclosure around the arrowstick.

SIREN AMPLIFIER

A 12 volt siren amplifier shall be provided and installed on the center console. The siren shall have the ability for either 100 or 200 watt output. The operating controls will consist of a power switch, manual button, PA volume switch, horn button, and rotary switch. The siren amplifier shall include appropriate circuit protection. The solid state siren speaker amplifier shall be vibration resistant. The microphone shall be hardwired to the siren.
The electronic siren control shall be recessed in center console between driver and officer seats.

SIREN SPEAKER

One (1) siren speaker, with a 100 watt driver shall be provided and installed. The siren speaker(s) shall be mounted in a protected location that optimizes the sound projection from the speaker.

BACK-UP CAMERA INSTALLATION

A rear view, "back-up camera", system shall be installed as part of the chassis supplied package. The system shall include a camera mounted at the upper rear center of the body (when possible) and adjusted to provide a clear view of the back of the truck's tailboard and at least 30 feet behind the vehicle. The color display in the chassis dash shall be utilized as the monitor. The rear camera display shall activate when the vehicle is placed in reverse.

12V SCENE LIGHTING

There shall be 12 volt scene lighting installed on the apparatus as follows:

BODY SIDE SCENE LIGHTS (LED)

Hi-Viz "brow style" LED lighting shall be installed on each side of the vehicle. Each side of the body shall be equipped with two (2) black 19” long scene lights with 15 LED's each. They shall be installed under the aluminum compartment tops to provide perimeter lighting around the left and right sides of the vehicle. Each light measures 19" long x 2.06" high x 2.45" deep and produces over 5,500 effective lumens while drawing only 6.25 Amps at 12 volts.

BODY REAR SCENE LIGHTS (LED)

Two (2) LED scene lights shall be surface mounted on the rear of the body on the upper sides of the body, one each side. The lights shall mount with four (4) screws to a flat surface. Each light shall measure approximately 7” high by 9" wide and have a profile of about 2" beyond the mounting surface. The lamp head shall include a bezel.

LIGHT SWITCHING

The 12 volt scene lights shall be switched in cab and at the pump operator's panel. Three switches, at each location, labeled with an indicator light, shall control all the scene lights specified. One switch shall control all left side lights, one switch shall control all right side lights, and one switch shall control the rear scene lights.

EQUIPMENT

The following equipment shall be supplied with the apparatus. It shall be shipped loose unless detailed below or otherwise in these specifications.

LADDERS
One (1) 8 ft. aluminum folding “attic” ladder, with slip resistant safety end shoes, shall be provided.
One (1) 8 ft. aluminum roof ladder, with folding roof hooks and prong feet, shall be provided.
One (1) 19/20 ft. three-section aluminum extension ladder(s), with prong feet, shall be provided.

SUCTION HOSE
Three (3) section(s) of 8 ft. long x 6" lightweight suction hose, with pyrolite, NST 6" couplings shall be provided.

WHEEL CHOCKS
One (1) pair of Zico folding wheel chocks shall be provided. The chocks shall comply with NFPA 1901, current edition at time of proposal or order, and shall meet the SAE-J348 standard. The chocks shall be approximately 12" tall x 11-1/4" wide x 21" long, and weigh approximately 20 lbs. One (1) pair of Zico horizontal mount folding wheel chock brackets shall be installed in front of and behind the driver side rear wheels.

CAFS AIR FITTING
A male quick disconnect fitting shall also be provided and listed in the shipped loose equipment portion at the end of these specifications.

DOWNSPOUTS
A total of three (3) chrome downspouts are to be provided. Each 2-1/2” discharge shall be supplied with a chrome 30 degree elbow, with a chrome cap and a stainless steel retaining chain. Each cap shall be a vented rocker lug chrome plated brass cap, as per NFPA.

STORZ ADAPTER
A 3" NSTF x 4" Storz 30 degree elbow with cap and retaining cable is to ship on the 3” discharge.

JACK STRAPS
Five (5) Fire Research JackStraps shall be provided and shipped loose. They are designed to secure fire hose ends to the apparatus, to help prevent fire hose from inadvertently coming off the apparatus while responding to or returning from an incident. The JackStraps shall be made of heavy duty 2-inch wide polypropylene webbing.

WHIP HOSES
Two (2) whip hoses (1.75" x 48" long) shall be provided; designed to provide a means to connect/disconnect the preconnected hose load just at the side of the 1.5” crosslay hose beds.
One (1) whip hose (2.5" x 43" long) shall be provided; designed to provide a means to connect/disconnect the preconnected hose load just at the side of the 2.5” crosslay hose bed.

NOTE: Per the above, each crosslay shall be provided with a "whip line" of preconnected white hose with NST fittings, for ease of connecting and cleaning the fire hose. The whip lines shall also provide quick access to the CAFS discharge without having to unload the entire load of hose.

TOUCH UP PAINT
A pint of touch up paint shall be provided for each color used to paint the chassis or body.

PURCHASER RESPONSIBILITY

It shall be the responsibility of the Purchaser to furnish any NFPA recommended items not detailed in these specifications.