

Annawan Alba Fire Protection District
Annawan, IL 61234



FIRE APPARATUS SPECIFICATIONS

***Commercial Interface Engine
Vision Series 220 CFM CAFS Pumper
Freightliner 4 Door 4x2 M2 Chassis***

For

***Annawan Alba Fire Protection District
Annawan, IL***

Darley Job 3272

APPROVED BY (PRINT NAME): _____ Fire Chief Daniel Johnson _____

SIGNATURE: _____ Fire Chief Daniel Johnson _____

DATE: _____ Approved 10-23-15 specifications on 10-28-15 _____

Representative Name: Neal Brooks
Date: October 23, 2015
12-7-15 (official entry specifications)

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00-00-6000

GENERAL INFORMATION

These specifications are a detailed description of the apparatus, and equipment (if specified), 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 that which is furnished to Fire Departments in general.

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

00-00-9500

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.

TRADE SHOWS NOTE

NOTE: Per the proposal specifications and the signed Contract Agreement amount, the Annawan Alba Fire Protection District and Annawan Alba VFD agree to allow the display of this apparatus at one or all of the following trade shows; Wisconsin Fire Chiefs, Monroe Fire School, Illinois Trustees, and Illinois Fire Chiefs. All expenses for shows, fuel, and lodging shall be the responsibility of W.S. Darley & Co.

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00-01-0000

FIRE APPARATUS SPECIFICATIONS

00-01-0700

ADMINISTRATION

00-05-1000

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.
- 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.

00-10-1000

NFPA COMPLIANCE

The apparatus detailed herein shall meet applicable NFPA recommendations current at the time of the proposal.

00-15-0600

PAYMENT REQUIREMENTS

00-16-1500

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.

00-38-0300

DELIVERY REQUIREMENTS

00-39-4200

DELIVERY AFTER CONTRACT

The completed apparatus shall be ready for delivery within approximately 330-365 calendar days, following the signing of a contract by the purchaser, and the counter-signing of the same contract by Darley.

00-39-2200

F.O.B. DARLEY

The completed apparatus shall be picked up by the customer, at the Darley manufacturing facility in Chippewa Falls, Wisconsin.

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00-42-4000

PRECONSTRUCTION MEETING

A pre-construction meeting shall be held at the purchaser's location prior to any construction processes at the Darley manufacturing facility. Authorized representatives of both the purchaser and Darley shall be present. Darley shall supply complete apparatus drawings and specifications at the meeting for review and purchaser approval.

00-45-0750

INSPECTION TRIPS

There are no inspection trips specified for this apparatus.

00-50-0600

DRAWING REQUIREMENTS

00-50-3000

APPARATUS PROPOSAL DRAWINGS

Darley has submitted, with their proposal, 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 (when applicable) and pump gpm (when applicable) are also be stated on the drawings.

00-50-4000

CONSTRUCTION APPROVAL DRAWINGS

Prior to construction, two (2) sets of apparatus drawings shall be supplied to the purchaser. 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 shall be on the drawings.

Water tank size (when applicable) and pump gpm (when applicable) shall also be stated on the drawings.

The purchaser shall review the drawings. Any discrepancies and/or mutually agreed upon modifications shall be noted on the drawings. The purchaser shall return one complete set of drawings, with authorized approval signature(s), to the Darley representative.

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00-55-0700

WARRANTY REQUIREMENTS

00-55-1400

WARRANTY

The following warrantees shall be provided:

00-60-2200

ONE YEAR DARLEY APPARATUS WARRANTY

The Darley apparatus detailed herein shall be conditionally warranted against defects in materials and workmanship for a period of twelve (12) months, or 36,000 miles, whichever comes first, effective upon pick up of the apparatus at Darley, or delivery to the purchaser (depending on contract terms of pickup/delivery, and payment); with the exception of the chassis and certain other components not manufactured by Darley us such as noted below.

Under this warranty, Darley shall furnish replacement parts for those that have failed due to defective materials or workmanship; where there is no indication of abuse, neglect, unusual or other than normal service, providing that such parts are, at Darley's option, made available for inspection; and at Darley's request, returned to the Darley manufacturing facility or other location designated by Darley (transportation charges prepaid) within thirty (30) days after the date of failure or within a designated time agreed to by Darley. Darley, or a designated party, shall inspect said parts for indication that the failure was attributed to defective material or workmanship.

Darley further agree to furnish or reimburse, at an agreed upon cost before the work is conducted, for the labor to install the replacement part(s), if all condition outlined above are met.

The warranty on a chassis, engine, transmission, tires and tubes, batteries, electrical lamps, and other devices not manufactured by Darley, which are subject to deterioration or normal wear, etc., is limited to the warranty of the manufacturer, thereof.

This warranty shall not apply to any fire apparatus, which shall have been repaired or altered without Darley's authorization.

00-60-4800

LIFETIME DARLEY FIRE PUMP WARRANTY

The Darley Company guarantees to replace, irrespective of the length of service, 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. Excessive overloading of the pump beyond recommended limits of capacity and pressure shall void this warranty.

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00-60-5500

LIFETIME TANK WARRANTY

WATER TANK PRO ONE™ WARRANTY

WHAT THIS WARRANTY COVERS:

Pro Poly of America, Inc. (hereinafter "PPA") is committed to assuring Customer satisfaction with PPA Booster, Elliptical and all other Polyprene® water and foam Tanks (hereinafter "Tank"). PPA warrants to the original owner of the apparatus (hereinafter "Purchaser") the Tank to be free from defects in material and workmanship for the normal service life of the apparatus in which the Tank is installed. If this Tank is an Advantage™ skid unit, then this warranty shall expire twenty years from the date of purchase; a Protector™ skid unit warranty shall expire five years from the date of purchase. If this Tank is utilized outside North America, then this warranty shall expire one year from the date of purchase.

Installation of the Tank must be in accordance with PPAs instructions. This warranty extends to the Purchaser and may not be assigned without the prior written approval of PPA; except an original equipment manufacturer may assign this warranty to the first titled owner of the apparatus.

If a Tank has a defect in material or workmanship covered by the warranty, PPA will repair at PPAs cost, by authorized personnel or authorized third parties in North America only. PPA will make an effort to effectuate repair within 48 hours following initial notification of a covered defect. If outside North America, then PPA will provide Purchaser a copolymer repair kit for Purchasers use in repair of the Tank, and PPA will reimburse Purchaser for Purchasers reasonable costs associated with said repair during the warranty period. PPA will make a reasonable effort to repair tank at most convenient location to end user.

The Purchaser is responsible for all costs associated with rendering Tank accessible to PPA, including, but not limited to, removal and reassembly of the hose bed floor. PPA has sole discretion as to repair of defects covered by this warranty, or replacement of the tank. PPAs responsibilities as described herein shall not exceed the amount of the purchase price of the Tank.

WHAT THIS WARRANTY DOES NOT COVER:

PPAs warranty does not extend to Tanks which have been misused, abused, improperly installed or for which payment has not been made. The warranty is void if repairs or alterations to the Tank are made by unauthorized persons, or the Tank serial numbers have been altered or defaced. PPA Tanks are not to be used as pressure vessels. The water supply should be shut off as soon as water begins to exit the overflow.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. PPAS MAXIMUM OBLIGATION AND LIABILITY UNDER THIS WARRANTY SHALL BE LIMITED TO AN AMOUNT EQUAL TO THE PRESENT PURCHASE PRICE FOR THE PPA TANK. PPA SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER DIRECT OR INDIRECT, INCIDENTAL, CONSEQUENTIAL OR OTHERWISE ARISING OUT OF BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY. Some states do not allow limitations on how long an implied warranty will last or the exclusion or limitation of incidental or consequential damages.

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00-61-7055

DARLEY LIFETIME COPOLYMER APPARATUS BODY WARRANTY

The Darley Company (hereinafter "Darley") provides a limited lifetime warranty on its Darley Copolymer Body products (hereinafter "Body"). Darley warrants to the original owner of the apparatus (hereinafter "Purchaser") the Body to be free from defects in material and workmanship for the following term: Darley warrants the Body to be free from rust and corrosion for the normal service life of the vehicle. Further, Darley warrants the Body to be free from defects in material and workmanship for the normal life of the vehicle. As to defects in material and workmanship of the subframe, door hinges, latches, body components and so forth, this warranty is limited to one year from the date of purchase. If this Body is utilized outside North America, then this warranty shall expire one year from the date of purchase. Installation of the Body must be in accordance with Darley's instructions. This warranty extends to the Purchaser and may not be assigned without the prior written approval of Darley; except an original equipment manufacturer may assign this warranty to the first titled owner of the apparatus.

If a Body has a defect in material or workmanship covered by the warranty, Darley will repair at Darley's cost, by authorized personnel or authorized third parties in North America only. Darley will make a reasonable effort to effectuate repair within 48 hours following initial notification of a covered defect. If outside North America, then Darley will provide Purchaser a copolymer repair kit for Purchaser's use in repair of the Body.

The Purchaser is responsible for all costs associated with rendering the Body accessible to Darley, including, but not limited to, removal and reassembly of the hose bed floor. Darley will not reimburse any costs associated with warranty repair. After ten (10) years of service life, Darley will repair the Body only in a Darley facility. Darley has sole discretion as to repair of defects covered by this warranty, or replacement of the Body. Darley's responsibilities as described herein shall not exceed the amount of the original purchase of the Body. Darley shall not be responsible for repair to defects in material due to sun exposure.

WHAT THIS WARRANTY DOES NOT COVER

Darley's warranty does not extend to a Body which has been misused, abused, improperly installed or for which payment has not been made. The warranty is void if repairs or alterations to the Body are made by unauthorized persons, or the Body serial numbers have been altered or defaced.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. DARLEY'S MAXIMUM OBLIGATION AND LIABILITY UNDER THIS WARRANTY SHALL BE LIMITED TO AN AMOUNT EQUAL TO THE PRESENT PURCHASE PRICE FOR THE DARLEY BODY. DARLEY SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER DIRECT OR INDIRECT, INCIDENTAL, CONSEQUENTIAL OR OTHERWISE ARISING OUT OF BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY. Some states do not allow limitations on how long an implied warranty will last or the exclusion or limitation of incidental or consequential damages.

00-62-2500

FIVE YEAR DARLEY COPOLYMER BODY PAINT WARRANTY

Subject to the provisions, limitations, and conditions set forth in this warranty, the Seller 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.

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For this warranty to remain in effect, the Purchaser must arrange to have the apparatus body paint inspected annually by an authorized Darley representative. Failure for the Purchaser to make an appointment for an annual inspection shall void the warranty.

If, during the course of said warranty period, and to the satisfaction of the Seller, the body paint is found to be defective, the Seller shall arrange for the repair of the defective area. Whether to repair or replace the defect in question shall be at the discretion of the Seller. In the event the Seller determines the body needs to be returned to the Seller's facility, it shall be returned by the Purchaser F.O.B. the Seller's facility.

Such action is contingent upon the Buyer notifying the Seller of such warranty claim, and such claim shall be forwarded to the Seller, in writing, within ten (10) working days of defect discovery.

The Seller is not obligated, nor does this warranty cover, the following:

Internal cabinet paint, accessories (when applicable), misuse or use other than the intended purpose of this product including strain or use in excess of what is considered reasonable, and/or repairs or alterations by an unauthorized party.

If the apparatus is involved in a collision or other occurrence damaging the body, the warranty automatically becomes null and void.

This warranty is conditioned upon normal use and reasonable maintenance of such body.

A \$5,000.00 maximum limitation is allowed for the total amount of any and all body paint warranty claims.

This warranty is supplemental and inclusive of a standard one year body paint warranty.

00-65-0600

DEMONSTRATION REQUIREMENTS

00-65-7000

ONE DAY DEMONSTRATION AT PURCHASER

Upon delivery of the completed apparatus, a minimum of one Darley authorized and trained individual shall conduct a one day demonstration session for purchaser personnel. Demonstration shall include all aspects of apparatus operation. The demonstration schedule shall be mutually agreed upon by the purchaser and the manufacturer's representative.

00-68-0500

MANUAL AND DATA REQUIREMENTS

00-68-4500

FIRE APPARATUS DOCUMENTATION

At the time of delivery, Darley shall supply two (2) copies of the following:

The manufacturer's record of construction details, including the following:

- (a) Owner's Name and address.
- (b) Apparatus manufacturer, model and serial number.
- (c) Chassis manufacturer, make, model, and serial number.
- (d) GVWR of front and rear axles.
- (e) Front tire size and total rated capacity in lbs.
- (f) Rear tire size and total rated capacity in lbs.

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- (g) Chassis weight distribution in pounds with water and manufacturer mounted equipment (front and rear).
 - (h) Engine make, model, serial number, rated horsepower and related speed, and governed speed.
 - (i) Type of fuel, and fuel tank capacity.
 - (j) Electrical system voltage and alternator output in amps.
 - (k) Battery make, model, and capacity in cold cranking amps (CCA.).
 - (l) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s), make model, and gear ratio.
 - (m) Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number.
 - (n) Pump transmission make, model, serial number, and gear ratio.
 - (o) Auxiliary pump make, model, rated capacity in gallons per minute (liters where applicable), and serial number.
 - (p) Water tank certified capacity in gallons or liters.
 - (q) Aerial device type, rated vertical height in feet, rated horizontal reach in feet, and rated capacity in pounds.
 - (r) Paint manufacturer and paint numbers.
 - (s) Company name and signature of responsible company representative.
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- 2.) Certification of slip resistance of all stepping, standing, and walking surfaces.
 - 3.) Manufacturer's certification of pump suction capability (when a pump is present).
 - 4.) A copy of the apparatus manufacturer's approval for stationary pumping applications (when a pump is present).
 - 5.) Engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum no load governed speed (when a pump is present).
 - 6.) If the apparatus has a fire pump or an industrial supply pump, the pump manufacturer's certification of the hydrostatic test.
 - 7.) If the apparatus has a fire pump or an industrial supply pump, the certification of inspection and test for the fire pump, or the industrial supply pump.
 - 8.) If the apparatus has an aerial device, the certification of inspection and test for the aerial device.
 - 9.) If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1914.
 - 10.) If the apparatus has a fixed line power source, the certification of the test for the fixed power source.
 - 11.) If the apparatus is equipped with an air system, test results of the air quality, the SCBA fill station, and the air system installation.
 - 12.) Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus [with the water tank full (when present) but without personnel, equipment, and hose].
 - 13.) Written load analysis and the results of the electrical system performance tests required.
 - 14.) When the apparatus is equipped with a water tank, the certification of water tank capacity.

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OPERATIONS AND SERVICE DOCUMENTATION

Darley shall supply a minimum of two (2) sets of complete operation and service documentation, covering the completed apparatus as delivered and accepted. The documentation shall address the inspection, service, and operation of the apparatus and major components thereof.

Documentation shall also be provided for the apparatus, and major components and operating systems as follows:

- 1.) Manufacturer's name and address.
- 2.) Country of Manufacturer.
- 3.) Source for service and technical information.
- 4.) Parts replacement information.
- 5.) Descriptions, specifications, and ratings of the chassis, pump (if present), and aerial device (when present).
- 6.) Wiring diagrams for low voltage, and line voltage systems, including the following:
 - a.) Pictorial representation of circuit logic for all electrical components and wiring.
 - b.) Circuit identifications.
 - c.) Connector pin identification.
 - d.) Zone location of electrical components.
 - e.) Safety interlocks.
 - f.) Alternator and battery power distribution circuits.
 - g.) Input/output assignment sheets, or equivalent circuit logic implemented in multiplexing systems.
- 7.) Lubrication charts.
- 8.) Operating instructions for the chassis, any major components, such as a pump or aerial device, and any auxiliary systems.
- 9.) Precautions related to multiple configurations of aerial devices, if applicable.
- 10.) Instructions regarding the frequency and procedure for recommended maintenance.
- 11.) Overall apparatus operating instructions.
- 12.) Safety considerations.
- 13.) Limitations of use.
- 14.) Inspection procedures.
- 15.) Recommended service procedures.
- 16.) Trouble shooting guide.
- 17.) Apparatus body, chassis, and other components manufacturer's warranties.
- 18.) Special data required by the standard.
- 19.) Copies of required manufacturer's test data or reports, manufacturer certifications, and independent third party certifications of test results.
- 20.) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus.

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00-70-0500

PERFORMANCE REQUIREMENTS

00-70-2000

Darley apparatus complies with the general apparatus requirements and requirements by apparatus type as recommended, including the following (if present on the apparatus proposed):

- Fire pump or pumps
- Water tank
- Aerial Device
- Foam Proportioning System
- Compressed Air Foam System
- Line Voltage Electrical System
- Command and Communications
- Air System
- Winch System
- Motor Vehicle Laws and Regulations
- Personnel Protection
- Controls and Instructions
- Component Protection
- Vehicle Stability
- Apparatus Performance
- Roadability
- Serviceability
- Road Tests

00-80-0500

CHASSIS PROVIDER

00-80-2000

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.

00-99-2500

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.

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05-00-9100

CHASSIS SPECIFICATIONS

Freightliner M2 106 Four Door Chassis
2017 model year

Front GVWR: 14,000 lbs
Rear GVWR: 26,000 lbs
Total: 40,000 lbs

242" wheelbase
129" CA
48" AF

On board diagnostics
300 amp alternator
Two (2) 1900 CCA batteries
Data recorder

Jacobs C brake
Right side vertical exhaust
1000 watt block heater

3000 series Allison EVS transmission

Detroit 14,700 non drive front axle	14,600 front suspension
RS-25-160 27,000 rear axle	31,000 rear suspension
ABS with traction control	Brake stability package
Steel main frame with inner channel frame	

Three piece chrome steel front bumper
60 gallon aluminum fuel tank - left side

Goodyear G622RDS 12R22.5 16 ply radial front tires
Goodyear G622RSD 12R22.5 16 ply radial front tires
Alcoa aluminum wheels

Dual hood mounted air horns	Halogen headlights
LED marker lights	Front turn signals
Heated remote controlled mirrors	Convex mirrors
Heater/defroster/air conditioning	12 volt power on dash

Seats Inc 911 high back air suspension driver seat
Seats Inc 911 high back air suspension SCBA officer seat
Seats Inc 911 non-suspension SCBA crew seats with storage beneath (3)

AM/FM radio with speakers
AM/FM antenna on forward left roof

Paint: L3781 Viper Red Elite BC

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07-00-1000

CHASSIS MODIFICATIONS

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

07-00-1110

TIRE PRESSURE MONITORING SYSTEM (SINGLE REAR)

There shall be a six (6) wheel stabilizer kit with extensions and LED indicators provided with the apparatus. The tire pressure monitoring system shall indicate if there is improper air pressure in the tire.

The inner tires on the rear dual wheels shall have an extension provided that will pass through the outside rim and attach to the stabilizer providing an unobstructed view for inspection of the inner tire air pressure.

The tire pressure indicators shall be shipped loose and installed by the department. The indicators shall be installed after the unit has been fully equipped. The indicators will calibrate to the initial air pressure setting upon installation and will intermittently flash when the tire pressure is reduced by 10% from its original calibrated pressure.

07-00-3010

HELMET HOLDER(S)

Five (5) Ziamatic UHH-1 universal helmet holder(s) shall be provided and installed in the cab.

NOTE: The helmet holders shall be shipped loose for customer installation upon delivery. Darley shall not be responsible for mounting helmet holders.

07-02-8400

CONTROL CONSOLE BETWEEN SEATS

A control console shall be installed, on the cab floor, between the driver and officer seats. The console shall be unpainted, "DA" finished, smooth aluminum material with a black vinyl covered aluminum top.

The top shall be hinged toward the rear to allow easy access to components and wiring inside the console. The cover shall be fastened on the sides and front.

The top of the console shall contain items such as the rocker switch panel and door and accessory ajar lighting. It shall also contain the electronic siren head, fire pump shift control, and generator controls (as applicable).

There shall be two (2) "DA" finished, smooth aluminum slots on the rear of the console designed to store Department maps and books. Each shall be approximately 3" wide x the length of the console x 12" deep.

07-07-1200

AIR PACK BRACKET(S)

Four (4) Ziamatic SCBA air pack mounting bracket(s) with a 6.75" clamp shall be mounted in SCBA seating in the cab. The bracket(s) shall include a collision restraint strap.

Each bracket shall have a positive mechanical latch designed to hold an SCBA in place. The design shall be such, that if the latch is not engaged, the SCBA shall not be able to be retained in the stowed position. If the bracket is mounted in a seat back, the latch shall be accessible to the user while seated.

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07-14-6900

BRUSH GUARD

One (1) brush guard shall be installed at the cab front to prevent damage to the grill and components contained behind the grill (similar to photo below). Materials and design is subject to engineering review and acceptance by both the department and Darley engineering.



07-16-1500

12V PORTABLE ELECTRIC WINCH

A 12 volt portable electric winch shall be provided. It shall be a Warn Industries ZEON® 10-S Multi-Mount Kit - portable winch system. The WARN ZEON Multi-Mount Kits allow users to have a portable winch for use on multiple receivers on one truck. All ZEON Multi-Mount Kits include winch, hawse fairlead, and carrier. The Multi-Mount cradle slides into any standard 2" (Class III) receiver.

ZEON 10-S MULTI-MOUNT SPECS

Part Number: 90360

Rated Line Pull: 10,000 lbs. (4536 kgs)

Motor: 12V DC, Series Wound

Controls: Remote switch, 12' (3.7m) Lead

Gear train: 3-Stage Planetary

Gear Ratio: 216:1

Clutch (Freespool): Rotating Ring Gear

Brake: Automatic Direct Drive Cone

Drum diameter/length: 3.15"/9.3" (8.0cm/23.6cm)

Kit Shipping Weight: 100 lbs (45.4 kgs)

Rope: Synthetic, 3/8" x 100' (9.5mm x 30.5m)

Fairlead: Hawse

Recommended Battery: 650CCA Minimum for winching

Duty Cycle: Intermittent

Battery leads: 2 GA, 90" (2.2m)

Finish: Black Powder Coat

Mounting Bolt Pattern: 10.0" x 4.5" (254mm x 114.3mm)

Winch Dimensions: 24.25 L x 7.14" D x 10.52" H (615.9mm L x 181.6mm D x 267.1mmH)

07-16-7500

SIDE WINCH RECEIVER ASSEMBLIES

There shall be a rescue winch receiver tube, for a portable winch, below the body, behind the rear axle on the left and right side. Each receiver tube shall have a 2" square opening to allow a portable rescue winch to be installed. There shall be a label placed near the winch receiver tube stating the maximum load rating of the tube assembly. A quick connect receptacle shall be supplied adjacent to each winch receiver tube; 12 volt wired for a portable electric winch. There shall be one (1) rubber cover/plug for each receiver tube.

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07-16-8000

REAR WINCH RECEIVER ASSEMBLY

There shall be a rescue winch receiver tube, for a portable winch, at the center rear of the body, below the rear tailboard. The receiver tube shall have a 2" square opening to allow a portable rescue winch to be installed. There shall be a label placed near the winch receiver tube stating the maximum load rating of the tube assembly. A quick connect receptacle shall be supplied adjacent to the winch receiver tube; 12 volt wired for a portable electric winch. There shall be one (1) rubber cover/plug for the receiver tube.

TRAILER WIRING

Wiring shall be installed to the rear of the vehicle to provide electrical connections for trailer towing. The wiring shall terminate below the tailboard center. The wiring shall terminate with a 7-way female round receptacle with ground, left turn, right turn, and clearance lights power.

07-24-6700

AIR HORNS (Chassis Provided)

There shall be air horns provided, as supplied with the chassis.

07-28-2400

TREADPLATE RUNNING BOARDS

Running boards fabricated from bright aluminum treadplate shall be supplied and installed below the cab doors. An intermediate step shall be provided if the stepping height from the running boards to the floor of the cab exceeds 18". The running board height, from the ground to the top of the first step shall not exceed 24". A bright aluminum diamond plate vertical backsplash, from the top of the running board to below the cab shall be provided and installed. The backsplash shall be mounted to allow for independent movement of the cab.

07-30-0500

MASTER BATTERY SWITCH (Chassis Provided)

A master battery switch shall be provided as detailed in the chassis specifications.

07-31-5400

CHARGER/COMPRESSOR

A Kussmaul PumpPlus #091-9-1200 combination air compressor/battery charger system shall be installed in the cab.

The Auto-Pump air compressor shall operate off the vehicle batteries to maintain brake tank pressure. There shall be a selector switch on the charger to allow the compressor to operate either as a DC or AC compressor. In either position the compressor shall run off the vehicle batteries.

The PumpPlus 1000 charger shall be an automatic to charge the batteries only as needed. A built in battery saver feature shall be included for auxiliary electrical loads such as handlights and portable radios. A weatherproof bar graph display shall be included and mounted in a remote location outside the cab. The maximum charger output shall be 40 amps.

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07-31-7700

120V SUPER AUTO-EJECT

A Kussmaul #091-55-20-120, 20 amp, 120 volt Super Auto Eject receptacle with yellow 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 arcing at the contacts.

A mating plug shall be furnished and shipped loose.

The receptacle shall be located below the driver door area.

07-39-2400

CUSTOMER ANTENNAS

Two (2) customer supplied radio antennas shall be installed on the cab roof near the light bar. The lead wires shall be run into the cab and terminate beneath the officer seat. The wires shall be concealed where possible.

07-39-5200

RADIOS

Radios supplied by the Department shall be installed in the cab by the Apparatus Manufacturer prior to apparatus delivery. Location shall be mutually agreed upon between the Apparatus Manufacturer and the Department.

NOTE: Final connections shall be made by a certified radio installer, at the customer's expense.

07-39-8000

12 VOLT DASH OUTLET

There shall be a 12 volt "cigarette" type outlet installed in the dash for a cell phone or other accessories.

07-40-0500

COVER FOR TRANSMISSION SHIFT

A hinged clear Plexiglas type guard shall be installed over the transmission push button shift pad, to protect the push button controls when not in use, and to prevent accidental activation or shifting.

07-52-1000

FRONT MUDFLAPS

Two (2) black hard rubber mudflaps shall be installed behind the front wheels, one each side.

07-52-2000

REAR MUDFLAPS

Two (2) black hard rubber mudflaps shall be installed behind the rear wheels, one each side. The apparatus manufacturer's logo shall be on each rear mudflap.

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07-60-1500

AUTOMATIC TIRE CHAINS

One (1) set of OnSpot automatic tire chains shall be installed at the rear axle of the chassis. The chains shall be installed as per the manufacturer's requirements.

A labeled switch and indicator light shall be installed in the cab. When the switch is engaged, the chains shall be lowered into position and a wheel shall contact the tires to activate the chain system with the vehicle in motion. The chains shall run between the rear tires and the road surface.

07-90-0500

BACK-UP ALARM

One (1) electronic back up alarm shall be provided at the rear of the apparatus. The alarm shall sound when the transmission is placed in reverse.

07-95-0500

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 (as applicable):

- 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
- Cab tilt mechanism fluid
- Transfer case fluid
- Equipment rack fluid
- Air compressor system lubricant
- Generator system lubricant

The ID plate shall also include the following:

- 1.) Build Date
- 2.) Delivery Date
- 3.) Paint Information
- 4.) VIN Number

07-95-2000

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.

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07-95-4000

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.

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09-00-0050

PUMP, MODULE, AND RELATED ITEMS

09-03-1000

NFPA 1901 COMPLIANT PUMP

The fire pump and related plumbing on the specified apparatus shall be installed in accordance with applicable NFPA 1901 guidelines at the time the contract was placed.

17-00-1000

SIDE DESIGN PUMP OPERATOR'S PANEL & MODULE

17-04-5000

SIDE PANEL MODULE

A pump operator's side panel 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 prior to finishing. All welded areas shall be ground smooth before finishing. The exterior module shall be sanded, prepped, and primed using the paint manufacturer's recommendations. The module structure shall be finish painted to match the primary body and chassis cab color.

A heavy duty rubber isolation material shall be provided between dissimilar metals during the mounting process. The substructure shall be painted before mounting to the chassis frame.

17-10-2000

SIDE OPERATED PUMP PANEL [RIGHT (CURB) (OFFICER) SIDE]

The pump operator's curb side control panel shall be located on the right side of the pump module.

PANELS

The pump panels shall be removable.

TRIM RINGS (Unless Color Graphics side Panel Used)

All suction and discharge ports shall be fitted with removable polished stainless steel trim rings.

GAUGES AND CONTROLS

All controls and gauges shall be functionally grouped and installed to allow easy access for service and replacement. The central midpoint or center line of any control shall not exceed 72 inches vertically above the base of the operators standing position. Gauges (and/or flowmeters if present) shall be located as nearly adjacent to the valve control as possible. The height of all gauges shall not exceed 84 inches above the base of the operator's standing position.

17-10-5200

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.

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17-30-1500

GAUGE PANEL - STAINLESS STEEL

The pump operator's upper gauge panel shall be located on the right side of the 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.

17-30-2500

ACCESS PANEL - STAINLESS STEEL

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

17-35-2000

COLOR CODED LABELS

A set of color coded and function described labels shall be provided 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 with a durable adhesive on the back.

17-32-1000

PUMP PANEL LIGHT SHIELD (LED) LEFT

One (1) polished, extruded aluminum light shield assembly shall be provided above the left side pump panel area. 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.

17-32-2000

PUMP PANEL LIGHT SHIELD (LED) RIGHT

One (1) polished, extruded aluminum light shield assembly shall be provided above the right side pump panel area. There shall be LED lights installed within the shield. A switch, located at the pump operator's panel shall be provided to activate the lights.

17-32-2200

PUMP COMPARTMENT LIGHTS (LED)

Two (2) clear LED lights shall be provided inside the pump compartment area. Each shall be switched.

17-32-3000

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 treadplate. Each shall be a minimum of approximately 11" deep x the width of the side panel module. The running boards shall have a 1-1/4" upward bend on the inside edge to act as a kick plate.

The aluminum treadplate 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.

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17-33-3500

SUCTION HOSE WELLS

Two (2) suction hose storage wells shall be built into the pump compartment running boards, one left and one right. Each hose well shall be approximately 8" wide x 26" long x 10" deep. Drain holes shall be provided.

17-34-6810

ALUMINUM HOSE WELL COVERS

There shall be an aluminum cover for each hose well. The cover shall be 1/8" bright aluminum treadplate and shall be hinged with a stainless steel hinge. The cover shall open and swing up toward the pump module. The cover shall latch in the closed position.

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10-41-5515

SINGLE STAGE FIRE PUMP (CAFS)

The pump shall be a Darley LDMBC single stage fire pump, capable of a 1500 gpm rating.

Power to drive the pump shall be provided by the same engine used to propel the apparatus. The pump shall be midship mounted and designed to operate through an integral transmission, including a means for power selectivity to the driving axle or to the fire pump.

The pump casing shall be a fine grain cast iron alloy, vertically split, with a minimum 30,000 PSI tensile strength and bronze fitted.

The pump shall contain a cored heating jacket feature that, if selected, can be connected into the vehicle antifreeze system to protect the pump from freezing in cold climates.

The impeller shall be a high strength bronze alloy of mixed flow design, accurately balanced and splined to the pump shaft for precision fit and durability. The impeller shall feature a double suction inlet design with opposed volute cutwaters to minimize radial thrust.

The seal rings shall be renewable, double labyrinth, wrap around bronze type.

The pump shaft shall be precision ground stainless steel with long wearing titanium hard coating. The shaft shall be splined to receive broached impeller hubs, for greater resistance to wear, torsional vibration, and torque imposed by engine.

The bearings provided shall be heavy duty, deep groove, radial type ball bearings. They shall be oversized for extended life. The bearings shall be protected at all openings from road dirt and water splash with oil seals and water slingers.

The transmission case shall be heavy-duty cast iron alloy with adequate oil reserve capacity for low operating temperatures. The transmission case shall contain a magnetic drain plug for draining the gearcase oil and a dipstick for checking and filling the level of the gear case through its opening. The transmission shall also allow the use of an external heat exchanger for increased cooling under extreme conditions.

The pump driveshaft shall be precision ground, heat-treated alloy steel, with a minimum 2-1/2" x 10" splined ends. Gears shall be helical design, and shall be precision cut for quiet operation and extended life. The gears shall be cut from high strength alloy steel, heat-treated and gas nitrided. The gear face shall be 3-1/2" minimum.

The gearshift shall be a heat-treated alloy steel splined spur gear to engage either the pump drive gear or the truck drive shaft gear. The gear ratio of the pump shall be selected by the pump and apparatus manufacturer's Engineering Department.

Due to the advantages of the above gear and drive feature, chain drive and designs requiring additional lubrication are not acceptable.

A discharge manifold, as supplied as part of the pump by the pump manufacturer, shall include a discharge check valve assembly to allow priming of the pump from draft with discharges open and caps off.

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Due to the importance of the above discharge manifold and check valve assembly, intended to be included with the overall pump design, there shall be no exception allowed to this requirement.

Discharge outlets shall have extensions with companion flange openings to allow ease of service. Two ports shall be provided on a pump panel for testing of vacuum and pressure readings. A weather resistant Performance Data Plate shall be installed on a pump panel.

The pump priming system, heat exchanger system, discharge and suction valves, relief valves, pump shift, and master drain shall be as detailed elsewhere in these specifications.

Two (2) manuals covering the fire pump, pump transmission, and selected options of the fire pump shall be provided with the apparatus.

CAFS COMPATIBLE

The pump transmission shall be designed to accommodate an integrated, air compressor mounting bracket. This bracket shall be installed to properly align a rotary screw air compressor with an external sprocket driven by the pump transmission. The air compressor shall be driven using a Gates "Poly Chain GT" belt drive system. The air compressor drive sprocket shall be supplied with an electric over air, multi plate, industrial clutch designed to be engaged at idle and allow disengagement at any rpm. The clutch shall incorporate an automatic, high CAFS oil temperature shut down to avoid damage to the rotary screw air compressor. An interlock shall be installed to disallow air compressor engagement if engine rpm is higher than recommended.

10-47-1200

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.

10-90-1500

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

11-00-1200

PUMP SHIFT

One (1) air powered pump shift shall be installed in the cab. The shift shall engage the fire pump. The 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.

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10-44-3000

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.

10-48-5700

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.

10-49-0100

DRIVELINE MODIFICATION

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

11-00-0000

PUMP OPERATION DVD(s)

One (1) DVD(s) explaining proper fire pump operating procedures and maintenance for the fire pump shall be included upon delivery. The DVD(s) shall be produced and provided by the same company that manufactures the fire apparatus.

11-00-5250

AIR COMPRESSOR SHIFT (CAFS)

A CAFS air compressor shift shall be provided on the pump operator's panel to engage the CAFS air compressor (see Darley AutoCommander in the CAFS section of these specifications).

11-01-2005

ELECTRIC PRIMER WITH TWO CONTROLS (FLUIDLESS)

The fire pump priming system shall consist of one (1) 12V positive displacement type rotary vane "fluidless" primer. The primer shall not require a lubrication fluid reservoir. The priming pump shall be constructed of heat treated aluminum and hard coat anodized.

A push-pull control shall be located on the pump operator's panel with a "Pull to Prime - Push To Close" label.

A second push-pull control shall be located on the pump operator's panel with a "Pull to Prime - Push To Close" label. The control shall activate the primer for an intake as specified. The label shall designate what intake the second control is for.

The second primer control shall be for the following:

- 1.) Rear suction.

11-01-2800

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".

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17-64-5200

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 6-1/2" x 7-1/2" control unit shall include the following features:

DISPLAY:

--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.

--Three (3), 10 segment bar graphs for battery voltage, engine oil pressure, and engine temperature. The bar graph display shall flash if low voltage, low oil pressure, 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.

FUNCTION SWITCHES:

Idle Mode - Preset - Increase - Decrease - Silence.

This system shall utilize information from the chassis engine ECU.

An audible alarm buzzer shall be included.

11-02-4000

INTAKE RELIEF VALVE

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

11-04-1000

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.

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11-11-1000

MASTER DRAIN

One (1) rotary style master drain shall be 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. An "open and closed" label with arrows indicating direction shall be installed.

11-11-5000

1/4 TURN DRAINS

Each gated 1-1/2" 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. Inlets & discharges shall be plumbed to each drain at the lowest point. Each drain 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 T-handle control with a recess in the "T" for a color coded function label.

12-01-6000

SUCTION INLETS

12-03-7800

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 185 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.

12-04-2000

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.

12-03-8400

6" RIGHT SIDE INLET WITH BUTTERFLY

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. 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 185 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.

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12-04-2000

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.

17-35-1000

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.

17-35-1200

WARNING - PUMP OPERATOR

A warning plate shall be installed on the pump operator's panel that states the following:

WARNING: Death or serious injury might occur if proper operating procedures are not followed. The pump operator as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with water hydraulics hazards and component limitations.

10-62-9999

PORTABLE PUMP

One (1) Darley Davey 13 HP two stage pump shall be supplied and installed. The pump shall be mounted in the dunnage area and shall be plumbed to the main pump discharge manifold to supply discharges specified for pump and roll operations. There shall be a control panel located on the pump operator's panel to start and control the portable pump.

The pump shall meet the following performance:

- 120 gpm (454 L/M) @ 40 psi (2.8 bar)
- 95 gpm (378 L/M) @ 108 psi (7.4 bar)
- 60 gpm (227 L/M) @ 133 psi (9.2 bar)
- 20 gpm (76 L/M) @ 146 psi (10.0 bar)

NOTE: Regular maintenance shall be able to be performed without removing the pump. The pump shall be installed in the dunnage area.

11-10-2000

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.

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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 2-1/2" 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 1-1/2" and larger intakes and discharges shall be equipped with drains. All drain valves shall be operational without the operator having to get under the apparatus. 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.

12-07-0100

NO LEFT SIDE AUXILIARY INLET REQUIRED

There is not a left side auxiliary inlet required.

12-08-1000

2-1/2" SUCTION(S) - RIGHT SIDE (Darley)

One (1) 2-1/2" brass suction valve(s) shall be installed on the right 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 2-1/2" 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.

12-13-7100

REAR SUCTION INLET

One (1) electrically controlled 5" rear suction inlet shall be provided. The valve shall be controlled electrically at the pump operator's panel. The inlet shall terminate out the left side rear body panel, to the left of the rear compartment.

12-13-8100

REAR SUCTION ADAPTER 6"

The rear inlet shall terminate as a 6" inlet.

12-13-8285

STORZ ADAPTER

A 6" Storz x 6" NSTF 30 degree swivel elbow with cap and cable shall be supplied and mounted on the rear inlet.

12-18-0500

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 valve shall be manually controlled from the pump operator's panel.

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12-19-2000

TANK TO PUMP CHECK VALVE

The Darley fire pump suction inlet manifold shall be provided with an integral tank to pump check valve. The check valve shall be designed to automatically open when drafting from an onboard water tank, and close if the pump suction receives water pressure from an outside source.

13-01-2000

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.

14-02-4150

220 CFM COMPRESSED AIR FOAM SYSTEM

The apparatus shall be equipped with the latest, high energy, automatic, compressed air foam system (AutoCAFS II).

Ratings: The fire pump and air compressor shall be sized to provide at least 220 CFM (cubic feet per minute) of compressed air while simultaneously flowing at least 440 GPM (gallons per minute) of water flow. The pressure of the system shall be set at 125 PSI for the duration of this test.

This rating is as outlined with the NFPA recommendation that the water pump shall discharge two gallons of water for every one CFM of compressed air discharge. Fire pumps with UL ratings in excess of 1000 GPM commonly flow near capacity while simultaneously operating the air compressor at full output.

Components: The air compressor shall be a high quality, industrial rated, modulating, continuous duty, and of rotary screw design. The air compressor shall be mechanically driven by the main pump and shall be so designed as to provide optimum performance at 70% of rated engine RPM. Air compressor drive train shall provide a means to engage and disengage the air compressor as required.

The air compressor system shall include a pressurized oil lubrication system, oil reservoir with receiver/separator elements, oil filter, inlet air filter, and modulating air inlet control. The air compressor shall be provided with a pressure control system to automatically balance air pressure to water pressure. The air compressor air inlet valve shall open and close to provide the air flow desired while maintaining the air system pressure to water pump pressure to within 5 PSI differential. This balancing system is essential for safe operation of a compressed air foam system.

The air compressor lubrication system shall require cooling water to be supplied from the fire pump through a heat exchanger to cool the air compressor oil. The essential water flow to this oil cooler shall be supplied using a self-cleaning, flushed strainer system to ensure a consistent flow of cooling water. The oil temperature shall be thermostatically controlled to remain at a consistent operating temperature within the range from 170° F to 190° F.

AUTO CAFS COMMANDER

Panel Mounted Controls: The air compressor system shall have mounted on the operators control panel an "AutoCAFS Commander" electronic control used to engage and disengage the AutoCAFS air compressor. It includes an On/Off button with engagement light as well as the following features.

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Additional Features

- Digital Air Pressure Gauge
- Mode button to switch between RPM readout, Hourmeter, and optional Air flow meter.
- Digital Air Compressor Oil Temperature Reading
- Programmable Engagement Speed Protection
- Automatic Blow Down Pressure Protection
- Programmable OverSpeed Warning with light and flashing message in Info Center
- Programmable High Speed Automatic Disengagement System
- Programmable Over Heat Warning
- Programmable High Temperature Automatic Disengagement System

CAFS AIR INJECTION - AUTOMATIC

The AutoCAFS II shall utilize automatic air flow switch controls to inject the proper volume of compressed air into the foam discharges. A panel mounted toggle switch control shall automatically regulate the precise amount of compressed air independently into each compressed air foam system discharge of 2" plumbing or less. The air flow amount shall be factory preset to the proper levels. Each foam discharge shall include a manually adjustable valve mounted inside the pump compartment for fine tuning when desired.

The automatic control shall consist of a weatherproof toggle switch which electrically activates an air flow valve sized according to the SCFM requirement of the discharge. Each automatic air flow injection switch, mounted on the panel, shall be installed using a red protective switch cover. Each CAFS air injection switch shall be appropriately labeled.

AIR OUTLETS 1/4" CAFS SUPPLY

There shall be brass 1/4" female air hose quick-disconnect fittings mounted on each side pump panel. A bulkhead fitting with a removable coupling shall be mounted to the panel to allow for panel serviceability. The fittings shall be connected to the apparatus CAFS air compressor discharge outlet using 3/8" red flexible hose. There shall be an adjustable regulator installed on the discharge side of the air compressor separator to provide clean oil free compressed air to the side panels. Two (2) male quick disconnect fittings shall also be supplied.

STANDARD FOAM SUPPLY VALVE

The foam system shall be installed with a 3-way foam system supply valve. This 3/4" valve functions as a multipurpose valve control. In the standard position, the valve provides foam supplied from the foam tank to the foam proportioner. In the next position, the valve provides a drain using a short rubber hose connected to this valve. In the final position, the valve provides an "Off" position to allow for cleaning of the inline foam concentrate strainer. In this final position, the drain hose can also be utilized as an overboard secondary foam pickup hose.

This alternate source to the foam proportioner shall be provided near the inlet to the foam pump using a 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 yellow hose approximately four feet long. This hose shall be provided near the pump panel on the side of the truck and is intended to work best with the pail of foam concentrate setting on the running board.

This compressed air foam system shall include an air pressure gauge for use with CAFS.

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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 installed to produce a well operating and reliable CAFS unit.

This (AutoCAFS II) compressed air foam system shall be completely assembled and tested by the fire pump manufacturing facility before delivery. The system shall then be installed by the fire apparatus manufacturer and retested for complete NFPA compliancy.

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.

14-14-2500

CAFS IN SERVICE REQUIREMENTS

The Darley Company is the leader in compressed air foam technology. Darley has CAFS systems throughout the United States and around the globe, operating successfully and effectively.

A listing of CAFS customers' names with addresses, phone numbers, contact persons, and in service dates is available upon request.

14-14-2800

CAFS TESTING - DEMONSTRATION - MANUALS

Every Darley compressed air foam system is tested prior to delivery. After testing is completed, the foam system is flushed. Demonstration for proper operation and maintenance can be provided for the Purchaser's designated personnel at Darley, or at a mutually agreed upon location. Two (2) manuals for the CAFS pumping system are provided upon delivery.

14-20-3000

FOAM SYSTEM (2002 system)

A FoamPro 2002 Class A automatic, electronic, direct injection, foam proportioning system will be installed on the discharge side of the pump. It will 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 will 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 will inject the proper amount of foam into the foam discharge(s).

The system is capable of providing precise foam solution concentration rates from 0.1% to 6%, and is operator adjustable with the push button digital display control.

System Capacity - Foam Pump is capable of up to 5 gpm of foam output @ 175 psi. Pump motor is 3/4 HP 12 volt.

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Foam Concentration.....Water Flow Range

0.1%.....	20-5000 gpm
0.2%.....	20-2500 gpm
0.3%.....	20-1666 gpm
0.5%.....	20-1000 gpm
1.0%.....	20-500 gpm
3.0%.....	20-166 gpm
6.0%.....	20-83 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 being flowed out of the foam discharge(s). Foam system need not be enabled to function in this mode.
- 2) Total Water mode: When selected shows the total amount of water flowed out of the foam discharge(s) since the unit was in operation.
- 3) Foam Percentage % mode: When selected shows the percentage rate that foam is being injected at if the system was turned on. This percentage can be changed by pressing the up or down arrow buttons at the bottom of the display.
- 4) Total Foam mode: When selected shows the total amount of foam that has been injected since the unit was turned on.

System will be provided with a low foam tank level switch which will alert operator of low foam concentrate level and will automatically shut unit 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.

System will be completely installed inside pump compartment, with digital control unit and instruction plate mounted on the pump operator's panel and will be calibrated, and tested before delivery.

15-20-0300

2-1/2" LEFT SIDE DISCHARGE (Darley)

One (1) 2-1/2" discharge outlet with 2-1/2" pipe and valve and NST threads shall be supplied at the left 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.

15-50-6100

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

The valve shall have a chrome 30 degree elbow, with a chrome cap and a stainless steel retaining chain.

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17-42-3200

PRESSURE GAUGE

A 2-1/2" liquid filled gauge with a stainless steel bezel shall be provided for the discharge. The gauge shall be located on the pump operator's panel near the discharge control.

15-20-3000

3" LEFT SIDE DISCHARGE

One (1) 3" discharge outlet with 3" pipe and valve and chrome NST threads shall be supplied at the left 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 from the operator's panel.

15-50-6770

STORZ ADAPTER

The discharge shall have a 3" NSTF x 5" Storz 30 degree elbow with cap and retaining cable.

17-42-3200

PRESSURE GAUGE

A 2-1/2" liquid filled gauge with a stainless steel bezel shall be provided for the discharge. The gauge shall be located on the pump operator's panel near the discharge control.

15-30-0400

2-1/2" RIGHT SIDE DISCHARGES (Darley)

Two (2) 2-1/2" discharge outlets with 2-1/2" pipe and valve with NST threads shall be supplied at the right 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.

15-50-6150

Each valve shall have a chrome 30 degree elbow, with a chrome cap and a stainless steel retaining chain.

17-42-3300

PRESSURE GAUGES

Two (2) 2-1/2" liquid filled gauges, each with a stainless steel bezel shall be provided, one for each discharge. The gauges shall be located on the pump operator's panel near the respective discharge control.

15-54-1100

DECK GUN DISCHARGE

One (1) 3" deck pipe assembly with a 3" bronze slo-cloz valve shall be provided above the pump as a discharge for a deck gun. The piping shall terminate with NPT threads.

A manually operated control handle shall be located on the pump operator's control panel.

15-58-1100

DECK PIPE FLANGE

One (1) deck gun pipe outlet flange shall be installed on the deck gun piping. It shall be a four bolt flange installed for mounting a deck gun.

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17-42-3200

PRESSURE GAUGE

A 2-1/2" liquid filled gauge with a stainless steel bezel shall be provided for the discharge. The gauge shall be located on the pump operator's panel near the discharge control.

15-54-4100

2-1/2" CAFS DECK GUN DISCHARGE

One (1) electrically controlled 2-1/2" CAFS line with mixer plumbing with mixer and 2-1/2" bronze ball valve shall be installed to supply CAFS to the deck gun discharge outlet detailed elsewhere in these specifications. The CAFS line and electric valve shall be connected to the deck gun piping above the 3" deck gun valve. The CAFS discharge control shall be located on the operators control panel.

15-72-2000

CROSSLAY AND SPEEDLAY HOSEBEDS

There shall be two (2) speedlays and one (1) crosslay installed as part of the pump module, located on the front of the module.

---The bottom speedlay shall have capacity for 200 ft. of 2.5" double jacket fire hose and piped with a 2.5" self-locking valve and terminate with 2.5" NPT x 2.5" NST chicksan swivel at the center of the speedlay.

---The middle speedlay shall have the capacity for 200 ft. of 1.75" double jacket fire hose and shall be piped with 2" pipe and 2" self-locking valve, and terminate with a 2" NPT x 1.5" NST chicksan swivel at the center of the speedlay. The swivel shall allow hose out either side of each speedlay.

---The top crosslay shall have the capacity for 200 ft. of 1.75" double jacket fire hose and shall be piped with 2" pipe and 2" self-locking valve, and terminate with a 2" NPT x 1.5" NST chicksan swivel at the center of the speedlay. The swivel shall allow hose out either side of each crosslay.

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

15-72-8050

SPEEDLAY TRAYS

Two (2) trays constructed from 3/16" smooth aluminum with a brushed finish shall be supplied and installed in the two (2) "enclosed" speedlays. One tray shall have the capacity to hold 200 ft. of 1.75" hose with nozzle (the middle speedlay); and 200 ft of 2.5" hose and nozzle (for the bottom speedlay).

Each tray shall have a hand hold cutout in each end and the opening shall be deburred and trimmed with black vinyl. Each tray shall have appropriate holes for drainage and ventilation. Each tray shall lift and slide-out of the respective speedlay opening. Each tray shall be properly supported and shall have nylon slides. All exposed edges shall be deburred.

15-73-4053

HOSE STRAPS

Three (3) Fire Research JackStraps shall be provided; designed to attach 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. An adjustable hose loop shall fit on supply and working hose from 1-1/2 to 5 inches. A separate shoulder loop shall help the firefighter when pulling a supply line or help support a working hand line.

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When used on a hydrant line, the shoulder loop shall be capable of firmly holding hose to the hydrant during a hose stretch. There shall be a side pocket on the shoulder loop to hold a hydrant tool.

17-42-3300

PRESSURE GAUGES

Three (3) 2.5" liquid filled gauges, each with a stainless steel bezel shall be provided, one for each discharge. The gauges shall be located on the pump operator's panel near the respective discharge control.

15-75-1000

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 rubber type bumper shall be used to protect the cab paint from the cover.

15-76-6000

LEFT FRONT HOSEBED PRECONNECT (CAFS)

One (1) 2-1/2" preconnect with 2-1/2" pipe and 2-1/2" self-locking valve shall be piped to the left front of the hosebed. The preconnect shall terminate with a chrome 2-1/2" adapter. The preconnect shall be controlled manually at the operator's panel.

The preconnect shall be piped, including required check valves and air flow injection control, to provide water, foam, or compressed air foam.

17-42-3200

PRESSURE GAUGE

A 2-1/2" liquid filled gauge with a stainless steel bezel shall be provided for the discharge. The gauge shall be located on the pump operator's panel near the discharge control.

15-80-4500

BOOSTER REELS OVER PUMP

Two (2) aluminum booster reels shall be installed in a recess bin above the pump with appropriate piping and valve.

Each reel shall have a welded base, and a 12 Volt electric motor to chain drive the reel drum. All 12 volt electric switch connections shall be coated to protect against moisture.

A manual rewind feature with crank shall be provided for each. Chrome rollers shall be provided each side of the pump compartment, or on the reels, for deploying and rewinding hose smoothly.

An automatic brake shall be supplied on each reel to prevent involuntary unwinding of the hose.

Each shall have a capacity for a 100 ft. of 1" booster hose. The booster reel discharge controls shall be located at the operator's control panel.

15-80-9000

REEL REWIND SWITCHES

Two (2) push button rewind switches shall be provided for the reel, on the respective side of the pump module.

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15-82-8000

CAFS FOR REELS

Each booster reel shall be plumbed for CAFS, including all necessary hardware, check valve, etc.

NOTE: Each reel shall be plumbed for CAFS in stationary pumping mode; and plumbed to the Davey pump, from the foam manifold, for pump & roll operations.

71-50-5000

BOOSTER HOSE

Two (2) 100 ft. length(s) of 1" Neidner Reeltex booster hose, with a 600 PSI rating shall be supplied; one 100 ft for each reel. The hose jacket shall be RED in color and made from spun polyester. Swivel couplings shall be of an aluminum finish.

17-34-1200

DUNNAGE AREA

A recessed, removable dunnage (storage) compartment shall be provided above the pump compartment and shall be full width of the pump compartment. The compartment shall be smooth aluminum material and shall be one piece. It shall be removable if needed.

17-41-7010

WATER LEVEL GAUGE

One (1) Fire Research "**TankVision**" 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. A built in calibration system shall allow a bottom tank mounted transducer to be mounted with any tank configuration.

17-41-7200

FOAM LEVEL GAUGE

One (1) Fire Research electronic "**Tank Vision**" foam tank level gauge shall be installed on the pump operator's panel. The gauge shall have a LED display which flashes when the tank level reaches 25% of capacity. A built in calibration system shall allow the two transducers to be mounted with any tank configuration.

17-80-3000

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.

17-80-4000

ACCESS HANDRAILS - MODULE

Two (2) access 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 handrails.

NOTE: The handrails shall be provided, one each side, at the pump module. See the Darley job drawings.

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19-00-3100

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.

The width of the apparatus body from the outside face of the left compartments to the outside face of the right compartments shall be 96.00" wide.

19-01-0425

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.

31-03-0100

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 copolymer (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 subframe 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.

Only builders who can show examples of previously constructed copolymer bodies shall be accepted.

31-19-1000

REAR TOW EYES

Two (2) heavy duty steel tow eyes, approximately 3/4" thick, shall be provided beneath the rear tailboard. The tow eyes shall be painted black unless specified otherwise.

31-24-3050

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 forward wall of the front compartments, and 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.

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31-30-1000

FENDER PANELS

Side fender panels above the rear wheels shall be heavy duty smooth copolymer material. Each shall be painted the same color as the exterior body.

FENDER LINERS

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

31-40-0073

HOSE BED

There shall be a hose bed furnished on this apparatus.

31-40-1000

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.

The interior surface of the walls in the hose bed area shall be overlaid with textured black copolymer material for ultimate protection.

31-41-1200

HOSE BED CAPACITY

The hose bed shall have the recommended minimum cubic foot of usable capacity for a hose load.

NOTE: The hose bed shall have capacity for:

- 700 feet of 5" LDH
- 600 feet of 2.5" DJ hose
- 400 feet of 3" DJ hose

31-42-1100

HOSE BED FLOORING

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

31-43-1500

HOSE BED DIVIDER(S)

Three (3) adjustable copolymer hose bed divider(s) 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.

31-46-6015

HOSE STRAP(S)

Four (4) Fire Research JackStrap(s) shall be provided; designed to attach hose ends to the apparatus, to help prevent fire hose from inadvertently coming off the apparatus while responding to or returning from an incident.

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The JackStrap shall be made of heavy duty 2-inch wide polypropylene webbing. An adjustable hose loop shall fit on supply and working hose from 1-1/2 to 5 inches. A separate shoulder loop shall help the firefighter when pulling a supply line or help support a working hand line. When used on a hydrant line, the shoulder loop shall be capable of firmly holding hose to the hydrant during a hose stretch. There shall be a side pocket on the shoulder loop to hold a hydrant tool.

31-46-3200

ALUMINUM HOSE BED COVER

A two piece bright aluminum tread plate hose bed cover, with NFPA compliant tread, shall be provided over the hose bed. Each cover shall have a continuous stainless steel hinge. Each cover shall have a heavy duty hold open device at the front of the cover.

Each cover shall have an extruded aluminum handrail, with rubber grip inserts, mounted at the rear edge of the cover. The cover assembly shall support an individual, weighing a maximum of 250 lbs., walking on the surface.

The portion of the cover over a fill tower shall have a hinged treadplate door, with latch, for access to the tower. If the tower extends above the cover, there shall be a cutout for the tower.

The cover assembly shall include a center hose bed divider to allow the covers to close and nest upon the divider.

NOTE: The aluminum hose bed covers shall also serve as covers for the top opening ("coffin") compartments located on each side of the body. Each cover shall have heavy duty struts to hold the covers in the open position.

31-50-0100

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.

31-51-0200

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.

The front face of the body sides shall be overlaid with bright aluminum treadplate. The rear of the apparatus inside of the side compartments, and the rear panels below the hose bed shall be covered with bright aluminum treadplate.

31-70-0500

RUBRAILS

Rubrails shall be installed using solid black rubber material designed to help protect the lower body and cushion against accidental contact. Each rubrail shall be mounted below the lower side compartments and at the vehicle rear body, next to the rear tailboard. 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.

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31-80-0300

FRONT FOLDING STEPS LEFT

Four (4) large, heavy duty 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.

31-80-2300

FRONT FOLDING STEPS RIGHT

Four (4) large, heavy duty 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.

31-80-4100

REAR FOLDING STEPS

Six (6) large, heavy duty chrome folding steps shall be furnished and located, three each side, at the apparatus rear. There shall be a barrier material installed between the body surface and the steps.

31-92-4200

HORIZONTAL REAR CROSSRAIL

One (1) horizontal rear crossrail 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 1-1/4" 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.

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20-07-6200

750 GALLON TANK - COPOLYMER

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 width wise 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 in 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.

20-30-9501

TANK OVERFLOW

The fill tower shall have a 4" overflow that shall discharge beneath the tank, behind the rear wheels.

21-10-2000

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.

28-00-1000

DIRECT TANK AUTO FILL SYSTEM

One (1) automatic direct tank fill system shall be supplied and installed at the rear of the body

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 shall get an electronic signal from a Fire Research Vision Series 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%. The valve system shall be able to be manually overridden in case of electric failure.

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

- 1) Auto - Fully automates the water 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

The valves and actuator will be rated to the following specifications:

- 1) Totally sealed and waterproof to a NEMA 6P rating
- 2) CF8M body w/316 ball and stem
- 3) PTFE seats and stem packing
- 4) Compact Design
- 5) 3-piece Swing out style
- 6) Full Port valve waterway
- 7) Full Valve body rated to 1000 psi max
- 8) Manually over ride able
- 9) 1.5" valve - 170 GPM @ 1 CV
- 10) 2" Valve 376 gpm @ 1 CV
- 11) 2.5" Valve

Base System shall include the following components:

- 1) Operator control and placard with Weather-Pac connectors
- 2) Valve and electric actuator
- 3) All wiring harnesses and Weather-Pac connect

An installation and operation manual shall be provided, along with a one year limited warranty by the manufacturer.

---**NOTE:** The rear direct fill shall be in an area that is not more than 5 feet from ground level.

---**NOTE:** The valve control shall be a weatherproof toggle control mounted on the driver side pump operator's panel.

---**NOTE:** The AutoFill valve shall be located and integrated into the left rear suction. If there is a plumbing conflict, the AutoFill valve shall be located at the right rear of the apparatus, and shall be an independent tank auto refill.

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31-12-0300

SUBFRAME

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. The subframe shall be completely powder coated prior to installation of the subframe on the chassis. No welding shall be allowed to the truck frame. Rubber isolator strips shall be installed at all contact points between body and subframe.

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

31-31-1000

FENDERETTES

Bright anodized aluminum fenderettes shall be bolted to the wheel well openings.

31-61-3000

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 a minimum of 10" deep and constructed of embossed fire apparatus quality bright aluminum treadplate with a "DiamondBack" extruded aluminum punched deck plate inset (or equal). The insert and aluminum treadplate shall meet recommended requirements for non-slip surfaces.

The rear tailboard shall be full width between the extended side compartments.

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

The step height from ground to first step shall not exceed 24".

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33-08-0050

COPOLYMER COMPARTMENTS - LEFT

COMPARTMENT #1

One (1) full height compartment ahead of the rear wheels, approximately 34" wide x 62" high x 25" deep lower x 14" deep upper. The door opening shall be approximately 32" wide x 57" high.

COMPARTMENT #2

One (1) compartment above the rear wheels, approximately 63" wide x 33" high x 14" deep. The door opening shall be approximately 61" wide x 28" high.

COMPARTMENT #3

One (1) full height compartment behind the rear wheels, approximately 35" wide x 62" high x 25" deep lower and upper. The door opening shall be approximately 33" wide x 57" high.

35-07-1800

The side compartment door openings shall be fitted with a roll-up style doors.

33-09-0050

COPOLYMER COMPARTMENTS - RIGHT

COMPARTMENT #4

One (1) full height compartment ahead of the rear wheels, approximately 34" wide x 62" high x 25" deep lower x 14" deep upper. The door opening shall be approximately 32" wide x 57" high.

COMPARTMENT #5

One (1) compartment above the rear wheels, approximately 63" wide x 33" high x 14" deep. The door opening shall be approximately 61" wide x 28" high.

COMPARTMENT #6

One (1) full height compartment behind the rear wheels, approximately 35" wide x 62" high x 25" deep lower and upper. The door opening shall be approximately 33" wide x 57" high.

35-07-1800

The side compartment door openings shall be fitted with a roll-up style doors.

33-10-4100

COPOLYMER COMPARTMENT - REAR

COMPARTMENT #7

One (1) compartment at the rear, approximately 48" wide x 55" high x 25" deep upper x 9.5" deep lower. The door opening shall be approximately 46" wide x 50" high. The rear compartment shall be closed off from the side compartments.

35-20-3000

REAR ROLL UP DOOR

The rear compartment door opening shall be fitted with a roll-up style door.

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35-17-0202

REAR ROLL UP DOOR FINISH

The rear roll up door shall be in a natural aluminum brushed finish.

35-90-1150

ROLL UP DOOR CONSTRUCTION

Robinson brand roll-up style doors shall be provided at the specified door locations. Each door shall be manufactured in the United States. The door slats shall be double wall box frame extrusion. The exterior surface of slat shall be flat and interior surface to be concave to prevent loose equipment from jamming the door. Door slats shall be anodized to prevent oxidation. Door slats to have interlocking end shoes on every slat to be secured by a punch dimple process. The door slats shall have interlocking joints with a folding locking flange. A PVC/vinyl inner seal to prevent any metal to metal contact shall be provided between each slat. Each track shall be one piece construction with attaching flange and finishing flange incorporated into the design. The flange design eliminates any requirement for additional trim or caulk. Each track shall have a replaceable seal to prevent water and dust from entering the compartment. Each assembly shall include an aluminum drip rail with a replaceable wiper seal. Each roll-up door shall have a 4" counterbalance spring in the roller assembly to assist in lifting and help prevent the accidental closing. A full width lift bar shall secure each door.

35-17-0102

SIDE ROLL UP DOOR FINISH

The side roll up doors shall be in a natural aluminum brushed finish.

37-10-1050

LADDER STORAGE - RIGHT

A ladder storage compartment shall be provided at the right side of the apparatus between the water tank and the body compartments. It shall be located just below the hose bed level. Access shall be from the rear of the apparatus. Appropriate stops shall be provided at the front of the ladders.

A vertically hinged aluminum door with push button style latches shall be provided to enclose the ladders at the rear. A switch shall be provided to activate compartment door ajar circuit. A stainless steel scuff plate shall be provided at the bottom edge of door opening.

In order to provide a comfortable and safe level of access to the ladders, and allow maximum compartmentation, there shall be no exception allowed to this feature.

37-10-2280

The ladder storage shall have capacity for one (1) aluminum 20 ft. two section extension ladder, and one (1) aluminum 12 foot roof ladder.

37-10-2400

Storage shall be provided for one (1) 10 ft. folding attic ladder.

37-10-2600

There shall be two (2) pike pole storage tubes included.

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37-20-2010

SUCTION HOSE STORAGE LEFT

A suction hose storage compartment shall be provided at the left side of the apparatus between the water tank and the body compartments. The compartment shall be constructed from the same material as the body. It shall be located just below the hose bed level. Access shall be from the rear of the apparatus.

In order to provide a comfortable and safe level of access to the hoses, and allow maximum compartmentation, there shall be no exception allowed to this feature.

Two (2) "slots" shall be provided in the storage area for the hose to slide on and be held in position when stored. Appropriate stops shall be provided.

A vertically hinged aluminum door with push button style latches shall be provided to enclose the suction hose at the rear. A switch shall be provided to activate the compartment door ajar circuit. A stainless steel scuff plate shall be provided at the bottom edge of door opening.

37-42-3000

UPPER STORAGE COMPARTMENTS

Four (4) weather resistant upper storage compartments shall be provided atop the body, two each side. The compartments shall be accessible at the top of the apparatus.

Each shall be approximately, as long as the body will allow x as wide as the top portion of the body will allow x as deep as the top portion of the body will allow. Bulb type seals shall be provided in the proper areas. A compartment door for each shall extend down over the compartment edges. Each door shall have latches. Each door shall have an appropriate hold open device on each side of the door.

Each door shall be a bright tread brite aluminum with a stainless steel piano style hinge. Each door shall be a suitable walking or standing surface and compliant with NFPA standards.

Each compartment area shall be illuminated with LED "strip" lighting, when each respective door is opened.

37-50-2400

WHEEL WELL SCBA COMPARTMENTS

Four (4) wheel well air bottle compartments shall be provided and located at the rear wheel wells, two each side. Each compartment shall be a tube shaped design, fabricated from the same material as the body, and shall be properly supported to prevent cracking or breaking.

The front opening shall be seam welded to the wheel well. Each compartment shall have a drain to dispel moisture. Compartments of metal material shall be lined with black rubber to protect the finish of the air bottles.

Each compartment door shall be unpainted cast aluminum with latch.

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38-00-0200

SHELVING TRACKS

Unistrut type tracks shall be provided in seven (7) 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:

---Each body side and rear compartment.

38-02-1000

ADJUSTABLE SHELVING

Seven (7) heavy duty adjustable aluminum shelving, with edges turned up approximately 2" for added strength, shall be provided. Shelving shall be located as follows:

---To be determined.

38-25-2200

ROLL-OUT TRAYS

Five (5) smooth aluminum rollout trays shall be provided. Each tray specified shall be constructed of 3/16" smooth aluminum with a minimum 2" lip on all four sides. All corners shall be welded and ground smooth, all edges shall be deburred and trimmed with black vinyl edging, and bolted to roll-out mechanism. Isolating strips for dissimilar metals shall be used between tray(s) and the rollout mechanism. The trays shall be installed on heavy duty roller bearing slides, and shall have a lock at the in and out positions. The trays shall have a load capacity of 600 lbs. evenly distributed, with a 1000 lbs tip load. The trays shall extend out 100% from the closed position.

The trays shall be located as follows:

---To be determined.

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40-00-0000

PAINT, STRIPING, AND LETTERING SECTION

40-10-2300

PAINT FINISH

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.

A pint of touch up paint shall be provided for each color used.

40-12-0950

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.

40-13-4000

WHEEL RIMS

The chassis wheels shall be as furnished by the chassis OEM. No additional finishes shall be provided by apparatus manufacturer.

40-20-8000

LETTERING

Up to sixty (60) 4" twenty two carat "sign gold" vinyl letters with black outline shall be supplied and installed on the apparatus.

NOTE: The lettering layout shall be provided by the Fire Department.

40-25-0200

REFLECTIVE STRIPE

To comply with current NFPA standards, 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 CONTROLTAC reflective striping (or equal).

40-25-1000

The stripe shall be a 4" wide reflective stripe

40-25-2000

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

40-25-4200

The reflective stripe shall be applied in a straight line along each side of the apparatus at the front. A "Z" design shall be applied to the front body compartment door on each side and then continuing straight to the rear.

40-26-3100

There shall be 1" gold reflective striping provided above and below the main reflective striping. There shall be a 1" gap between the 1" gold reflective striping and the main reflective striping.

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40-26-4100

CAB DOOR REFLECTIVE MATERIAL

There shall be a minimum of 96 square inches of reflective material installed on the lower interior portion of each cab door.

40-26-4150

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.

40-26-4300

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

40-27-8100

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.

40-27-8212

CHEVRON STRIPE WIDTH (6")

The chevron stripes shall each be 6" wide.

40-27-8310

CHEVRON COLORS

The chevron pattern shall be alternating RED and YELLOW stripes.

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50-00-0000

12 VOLT ELECTRICAL SECTION

50-00-0700

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. The wiring shall be resistant to grease, oil, fluids, and abrasion.

All insulated wire and cable shall conform to SAE J1127, Low Voltage Battery Cable, or SAE J1128, Low Voltage Primary Cable, type SXL, GXL, or TXL. Recommended temperature range for SXL, GXL, or TXL Wire is -60°F (-51°C) to +257°F (+125°C).

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.

50-00-2300

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.

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50-01-0200

RUNNING LIGHTS & REFLECTORS

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

50-01-0800

LICENSE PLATE HOLDER & LIGHT

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

50-01-1050

MIDSHIP TURN SIGNAL (LED)

Two (2) Whelen 500 Series amber LED midship turn signals, each with a chrome trim plate, shall be mounted, one each side, at the rear wheel wells.

50-02-2100

REAR DIRECTIONALS

Rear directional lighting shall be supplied as follows:

Two (2) Whelen 6" x 4" LED stop and tail lights, one each side - Red.

Two (2) Whelen 6" x 4" LED turn signals, one each side - Amber.

Two (2) Whelen 6" x 4" LED back up lights, one each side - Clear.

50-02-5200

HOUSINGS FOR DIRECTIONALS

The Whelen signal lights shall each be housed in a model CAST4 cast aluminum bezel designed to hold four (4) lights each. The fourth light location shall be utilized for lower rear warning lights.

50-03-0200

REAR STEP LIGHTS (LED)

Two (2) clear LED step lights with non-corrosive rubber shock mounting shall be furnished and shall be located, one each side at the apparatus rear to illuminate respective stepping surfaces.

The lights shall be activated with a switch located in the cab.

50-03-0800

FRONT BODY STEP LIGHTS (LED)

Two (2) clear LED step lights with non-corrosive rubber shock mounting shall be furnished and located, one each side, at the front face of the apparatus body to illuminate the respective stepping surfaces. The lights shall be activated with a switch located in the cab.

50-05-4100

COMPARTMENT LIGHTING (LED)

Each body compartment shall contain one (1) LED clear vertical strip light assembly, as provided by ROM. Wide and shallow compartments over a wheel well shall have two strip lights, one on each side of the door.

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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.

50-05-5100

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.

50-05-5500

"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 engaged.

In addition, accessories such as a ladder rack (or similar storage rack), any extendable light or tower, or a telescoping deck gun device shall also be connected to this ajar circuit, to activate the light when any of these items are not properly nested, and the parking brake is not engaged.

50-07-0400

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 apparatus is in the "park" position.

50-07-1000

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 apparatus is in the "park" position.

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.

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51-00-1000

WARNING LIGHT SYSTEM

The following warning lights shall be installed in zones, and properly switched.

The upper and lower level zones shall be provided as one certified package by one light manufacturer.

54-00-3000

WHELEN WARNING LIGHT SYSTEM (LED)

NOTE: Any blue warning lights specified need to be approved by Whelen and Darley Engineering as NFPA compliant.

54-12-1300

LIGHT BAR

Zone A - (Upper Front) - A Whelen Freedom FN72VLED light bar shall be furnished, mounted centered on the front of the cab roof.

The lightbar shall be have six (6) red LED lights, two blue LED lights, two (2) clear LED lights, and two (2) clear halogen dual alley lights. The clear flashing lights shall be disabled with park brake engaged.

The layout shall be as follows:

- There shall be two red LED lights at the front of the light bar left side.
- There shall be two blue LED lights at the front of the light bar right side.
- There shall be two clear LED lights at the front of the light bar, centered.
- There shall be four red LED corner lights, front and rear corners.
- There shall be two dual alley lights, one each end of the light bar.

54-20-1000

Light bar shall be mounted on the centered forward section of the cab roof.

54-30-4000

Zone A (Lower Front) - Two (2) Whelen 600 series LED warning lights shall be mounted, one each side, on the front face of the cab or cab grille.

54-32-1000

The light color shall be as follows:

Driver's Side - **Red**, Officer's Side - **Blue**

54-40-0400

Zone B (Right Side-Lower) - Three (3) Whelen 600 series LED warning lights shall be mounted at the lower front side corner, midship area, and rear side corners of the apparatus.

Zone D (Left Side-Lower) - Three (3) Whelen 600 series LED warning lights shall be mounted at the lower front side corner, midship area, and rear side corners of the apparatus.

54-42-1000

The light colors shall be as follows:

Driver's Side - **Red and Blue (the midship warning shall be blue)**
Officer's Side - **Red and Blue (the midship warning shall be blue)**

54-60-0565

Zone C (Rear-Upper) - Two (2) Whelen LED beacons shall be mounted, one each side, at the upper rear corners of the apparatus.

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54-62-1150

The light colors shall be as follows:

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

54-70-0400

Zone C (Rear-Lower) - Two (2) 600 series LED warning lights shall be mounted, one each side, at the lower rear of the apparatus.

54-72-1000

The light colors shall be as follows:

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

54-98-0000

CERTIFICATE

This warning light system shall be certified by the light manufacturer to meet the requirements of the applicable chapter of the NFPA, current at the time of contract.

57-30-3000

TRAFFIC DIRECTIONAL LIGHTING

One (1) Whelen Traffic Advisor™ model # TAL65 shall be provided. The traffic advisor shall incorporate a rectangular extruded black powder coated aluminum chassis with six amber 5mm series LED lights with waterproof connectors. The 5mm series lights shall be installed with an amber non-optic hard coated polycarbonate lens. The 5mm series lights shall incorporate 40 amber 5mm LEDs. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The encapsulated coated PC board and foam in place gasket shall provide additional protection against environmental elements. The 5mm lights are installed with waterproof connectors.

The solid state traffic advisor shall be vibration resistant. The TAL65 shall include model TACTLD1 control head that includes remote flash control. The TACTLD1 shall have four programmable directional sequence flash patterns of left, right, split, and flash. The LED display on the control head shall replicate the TAL65 directional sequence. The traffic advisor control head shall have a rear panel dip switch for the ability to set eight additional Scan-Lock™ flash patterns. The TACTLD1 shall contain a 10 amp external fuse for reverse polarity protection. The TACTLD1 shall include a bail strap mounting kit. The TAL65 will contain a 9/C 18GA 15' interconnecting cable with quick disconnect feature. Customized cable lengths are available for the TAL65 for an additional charge. The TAL65 has the ability function as an auxiliary flash option when connecting the blue/white wire from the TACTLD1 installation kit. The LED modules are covered by a five year factory warranty. The TAL65 shall have for mounting PEM nuts/thu-bolt end caps with stainless steel hardware to surface mount.

The Whelen Traffic Advisor (model TAL-65) LED traffic directional light system shall be installed at the rear of the vehicle.

57-32-1000

RECESS MOUNTING

The rear directional light bar shall be recess mounted into the rear body panel of the apparatus, centered at the upper rear portion. The recess shall be a removable "box" enclosure.

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58-00-0610

SIREN

One (1) Whelen electronic siren, model # 295SLSA1 shall be furnished and installed. It shall be 100 watts and feature wail, yelp, phaser, air horn and manual wail. The microphone shall have noise canceling circuitry and Public Address override.

58-09-1400

The electronic siren control shall be recessed in center console between driver and officer seats.

58-10-0200

SIREN SPEAKER

One (1) siren speaker, with a 100 watt driver shall be provided and installed.

58-10-9000

The siren speaker shall be recessed in the left side front bumper.

58-60-1000

REAR VIEW VIDEO SYSTEM

A rear view video system with built in night vision function shall be supplied and installed. The system shall include one (1) day-night camera mounted at the upper rear center of the body; one (1) color monitor mounted in the cab.

58-60-1900

WATER TANK LEVEL LIGHTS

There shall be two (2) Whelen PSTANK water level light strips surface mounted vertically, one each side, at the upper side rear body panel ("coffin" compartment sides).

The light strips shall feature four (4) colors of LED lights to indicate the fluid level of a tank. The colors from top to bottom shall be green, blue, amber, and red.

59-10-0005

12 VOLT TELESCOPING LIGHTING

59-10-3550

TELESCOPIC LED FLOODLIGHTS

Two (2) Fire Research Evolution LED model FCA510-V15 top mount, pull up telescopic lights shall be installed in the rear of the pump module, one each side. Each 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.

Two (2) Fire Research Evolution LED model FCA530-V15 side mount push up telescopic lights shall be installed at the rear of the apparatus body, one each side. Each 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.

Each lamphead shall have eight (8) ultra-bright white LEDs. It shall operate at 12/24 volts DC, draw 13/6.5 amps, and generate 15,000 lumens. The lamphead shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area.

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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 incorporate heat-dissipating fins and be no more than 5 3/16" deep by 3 5/16" high by 11 1/2" wide. The lamphead and mounting arm shall be powder coated white. The floodlight shall be for fire service use.

TELELIGHT SWITCHING

The 12 volt telelights shall be switched in cab and at the pump operator's panel (also see scene light switching).

59-00-5370

SCENE LIGHTS

Two (2) Whelen 900 series 7" x 9" scenelights, each with 26 degree downward angled optics and clear lenses shall be surface mounted on the upper body sides, one each side.

NOTE: The lights shall be Located at the upper side front of the body, one each side.

NOTE: The lights shall be wired to be activated by the opening of the respective chassis cab doors; in addition to the manual switching as described in 59-09-9320.

59-09-9320

SCENE LIGHT SWITCHING

All of the 12 volt scenelights shall be switched in cab and at the pump operator's panel. There shall be three (3) switches at each location, with an indicator light and properly labeled.

- One (1) switch shall control all the left side scene lights (module telelight and 900 series body light)
- One (1) switch shall control all the right side scene lights (module telelight and 900 series body light)
- One (1) switch shall control the rear scene scenelights (the two rear telelights).

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60-00-1100

120/240 VOLT ELECTRICAL SECTION

60-00-1150

120 VOLT ELECTRICAL SYSTEM

The 120 Volt AC electrical system shall conform to applicable standards for automotive fire apparatus at the time of the bid.

All required testing shall be performed before the apparatus is delivered. All required test documents shall be supplied with the owner's manual at the time of delivery.

All wiring shall be installed in a professional manner, protected in loom or conduit. Grommets shall be installed where wire passes through body panels. All wiring shall be of adequate size to carry the required necessary load.

A power source system specification label shall be provided and permanently attached near the operator's control station. It shall contain the following information:

Rated voltage(s) and Type (AC or DC)

Phase

Rated frequency (at rated voltage(s))

Rated amperage

Continuous rated watts

Power source engine speed

The power source shall meet all applicable installation and testing requirements.

An exact electrical diagram of the apparatus wiring as delivered shall be supplied at time of delivery, without exception, including gauge of wire used.

61-21-0800

HYDRAULIC GENERATOR

One (1) ONAN 8 KW modular hydraulic generator system shall be installed. It shall not interfere with usable compartment storage space, when possible. The entire unit shall be enclosed in a stainless steel enclosure and mounted in a concealed area.

The unit shall be capable of 120/240 volts and 68/34 amps.

All hydraulic hoses shall be high pressure type, approved for this application. The hoses shall be wire braid with steel crimp on couplings. The hoses shall be securely held in place and protected from oil, heat and /or other mechanical damage.

The hydraulic generator module shall contain all system components and related items necessary to comprise a complete hydraulic generating system with exception of the system pump and hoses. The system shall be assembled and tested prior to installation into fire apparatus. The components shall be grouped and assembled into a compact modular unit with overall dimensions of 31" long x 14" high x 16" deep.

The hydrostatic pump shall be driven by a power take off at the truck transmission. The hydraulic pump shall be close-coupled to the PTO or driven by balanced propeller shaft as installation requires.

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A modified load sensing variable displacement pump is used that produces the exact flow to maintain 60 HZ regardless of RPM changes.

PERFORMANCE

Rating	8,000 watts
Volts	120/240
Phase	Single
Cycles	60 hertz
Amp rating	68 amps at 120 volts - 34 amps at 240 volts
Weight	230 lbs.

GENERATOR DISPLAY

One (1) frequency regulation of generators display unit shall be supplied. It shall display vital statistics of the generator including voltage, amps per line, frequency, and total accumulated run time. It shall be mounted on the pump operator's control panel.

61-60-0750

GENERATOR LOCATION

The generator shall be mounted in the forward hose bed.

61-80-1420

REMOTE START FOR GENERATOR

A remote start/stop system shall be provided for the generator. A generator run light shall be included and properly labeled. The remote system shall be located in the cab.

62-00-1000

BREAKER BOX

One (1) 110V/220V circuit breaker box shall be provided and located in the forward right side body compartment (unless location specified otherwise).

The breaker panel shall contain up to eight (8) places for required breakers. Each breaker shall be function labeled.

62-00-5100

SHORELINE TRANSFER

One (1) 110V receptacle with a spring loaded weatherproof cover shall be furnished below the driver door area. The receptacle shall allow 110V to be connected to the apparatus 110V system.

A transfer switch shall be provided next to this receptacle to allow power to be transmitted to the 110V electrical system from either an outside source, through the receptacle, or an on board generator. There shall be no back feed to the shoreline from the generator.

Proper labeling shall be provided.

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The specific 110 components to be charged through the shoreline shall be as follows:

62-21-1200

110V TWIST LOCK RECEPTACLES (SIDE BODY)

Two (2) 20 amp, 110 volt twist lock receptacles (NEMA L5-20), each with a weatherproof cover shall be provided. The receptacles shall be located, one each side, at the apparatus body rear wheel wells.

62-21-2000

110V TWIST LOCK RECEPTACLE(S) (COMPT)

Two (2) 20 amp, 110 volt twist lock receptacle(s) (NEMA L5-20), with a weatherproof cover shall be provided. The receptacle(s) shall be located in compartment(s) as follows:

---To be determined.-

68-51-1000

ELECTRIC REWIND CORD REEL(S)

One (1) Hannay model 1600 series electric cord reel(s), each with a capacity for 250 ft. of 12/3 or 200 ft of 10/3 wire shall be provided and installed. Each reel specified shall have a 12 volt rewind motor wired to the 12 volt electrical system. A push button switch shall be provided and installed to activate rewind motor.

A label shall be provided for each reel specified. The label shall contain the following information:

Current Rating

Current Type

Phase

Voltage Total Cable Length

68-51-2600

The reel finish shall be polished stainless steel frame, polished stainless steel discs, with a chrome plated sprocket.

68-51-5000

REEL LOCATION

Each electric cord reel specified shall be mounted to the rear wall or the ceiling of the rear compartment, as appropriate.

68-52-3275

ELECTRIC CABLE

Each cord reel specified shall have 200 ft. of YELLOW 10/3 electrical cable installed on the reel.

68-54-1550

JUNCTION BOX(ES)

One (1) Extenda-Lite #EJB electrical box(es) shall be provided for the specified cord reel(s).

For each junction box specified: the electrical junction box shall be a heavy duty cast aluminum with a minimum thick corner edges to withstand rugged use. There shall be a larger carrying handle integral with the box casting. The handle shall be able to be carried with a gloved hand. Each side of the electrical junction box shall be fitted with a 1/4" thick polypropylene faceplate. The face plate shall be backlit to help locate the receptacles. The junction box shall include four electrical receptacles. Each receptacle shall be equipped with a spring loaded snap cover and be marked with voltage and amperage rating.

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The box shall have four black rubber feet on the bottom. All receptacles, plugs and snap type weather proof covers shall be UL listed.

Each receptacle shall be a _L5-20R__ receptacle.

68-54-2600

The junction box shall be fitted with a pigtail and twist-lock plug. A matching receptacle shall be provided on end of the cord reel.

68-54-3000

The junction box shall have a natural aluminum finish.

68-54-4100

The junction box shall be housed in an aluminum treadplate enclosure. The box shall have appropriate drain holes.

68-54-0500

BALL STOP ON CABLE

Each cord reel and cable specified shall have an adjustable ball installed near the end of the cable to act as a stop when the cable is being retracted through rollers and/or an opening.

68-54-0700

REEL ROLLERS

Each reel specified shall have chrome 4-way rollers installed on or near the reel.

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70-00-0050

EQUIPMENT SECTION

EQUIPMENT

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

70-00-4200

One (1) 10 ft. Duo Safety #701-10 "Fresno" aluminum attic ladder shall be furnished.

70-00-7200

One (1) 12 ft. Duo Safety #775-A aluminum roof ladder, with folding roof hooks and prong feet, shall be provided.

70-01-2000

One (1) 20 ft. Duo Safety #900-A two-section aluminum extension ladder, with prong feet, shall be provided.

71-06-6100

Two (2) section(s) of 10 ft. X 6" clear PVC Kochek or equal suction hose, with lightweight, 6" Storz couplings shall be provided.

71-70-0159

Two (2) PAC Jumbo Lok 1070 positive locking brackets with 3/8" - 3 1/4" opening range for mounting of nozzles for the hose reels. To be located, one each side, on the side panels of the pump module dunnage area.



NOTE: The straps shall be black.

Location to be determined

75-01-0500

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.

75-01-1000

One (1) pair of Zico horizontal mount folding wheel chock brackets shall be installed in front of and behind the driver side rear wheels.

75-10-2200

One (1) six foot (6 ft) I-Beam fiberglass pike pole(s) shall be provided.

75-10-4200

One (1) ten foot (10 ft) I-Beam fiberglass pike pole(s) shall be provided.

99-99-1000

PURCHASER RESPONSIBILITY

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