

Vision Odin Initial Attack Apparatus

Job 2824



APPARATUS PROPOSAL SPECIFICATIONS

***Darley Quick Attack Apparatus
For Darley Pump Division – Itasca, IL***

Featuring the Cobra by



An Exclusive Division of Darley

Vision Odin Initial Attack Apparatus

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FIRE APPARATUS SPECIFICATIONS

00-01-1500

INTENT OF SPECIFICATIONS

It is the intent of these specifications and instructions to secure delivery of apparatus equipped as herein specified, properly designed and engineered for years of dependable service.

These specifications are not intended to limit any competent bidder from submitting a proposal, however, they are intended to detail the design and quality of the apparatus necessary to satisfy the needs and requirements of the Purchaser.

Components and brand names specified are commonly used in the industry and are readily available from reputable fire apparatus manufacturers. Components specified by brand name and model are identified as such due to their known quality, performance, and parts and service availability. The Purchaser shall be the sole judge of any "or equal" components proposed.

The apparatus and equipment proposed shall be new, unused, and the manufacturer's latest production design. Details of design, materials, and construction, where not otherwise specified, shall be the sole responsibility of the bidder.

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified, and shall state the location of the facility where the apparatus is to be manufactured.

The bidder shall show capabilities to render prompt service and replacement parts for the apparatus. The bidder shall identify the service facility and contact person for warranty and service.

Each bid shall be accompanied by the bidder's detailed description (proposal specifications) of the apparatus and equipment they intend to furnish. The bidder's proposal shall be in the same sequence as the Purchaser's specifications. Due to the importance of analyzing bids in a competent manner, there is no exception to this requirement. Simply submitting a copy of the Purchaser's specifications and/or other literature or advertising materials is not acceptable and shall be cause for rejection.

All exceptions and clarifications shall be listed on a separate page titled "EXCEPTIONS TO SPECIFICATIONS". All items shall be identified by page number and topic. Where sections of the Purchaser specifications are specifically identified as "no exception", exceptions shall not be considered.

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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

00-15-1500

The balance of the contract shall be paid by the Purchaser before delivery of the completed fire apparatus when invoiced from the apparatus manufacturer.

00-30-7300

PARTS AVAILABILITY

00-30-7400

APPARATUS PARTS

The bidder shall provide a statement in the proposal to those replacement parts or equals for the proposed apparatus shall be available for a period of twenty (20) years from the date of apparatus completion at the manufacturer's facility.

00-30-7800

PUMP PARTS

The bidder shall provide a statement in the proposal to guarantee that replacement parts for the proposed fire pump shall be available within approximately 3 business days of notification of need for the part.

00-38-0300

DELIVERY REQUIREMENTS

00-38-1500

DELIVERY AFTER CONTRACT

Each proposal shall clearly state the proposed delivery time, in calendar days, after signing of a contract.

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00-38-2200

F.O.B. MANUFACTURER

The purchaser shall be responsible to pick up the completed unit at the manufacturer's factory. The purchaser shall be responsible for all travel costs to and from the manufacturer's facility. The purchaser shall provided a certificate of insurance and any information required to drive the apparatus to its final destination. Bidders shall include the location and contact with their proposal.

00-45-0750

INSPECTION TRIPS

There are no inspection trips specified for this apparatus.

00-50-0600

DRAWING REQUIREMENTS

00-50-1000

APPARATUS PROPOSAL DRAWINGS

All bidders shall submit, 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 shall be on the drawings.

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

00-55-1410

WARRANTY

The following warrantees shall be provided:

00-55-2200

ONE YEAR APPARATUS WARRANTY

The complete apparatus detailed herein shall be warranted against defects in materials and workmanship for a period of twelve (12) months, effective upon pick up or delivery of the completed apparatus to the purchaser. The detailed warranty document shall be available upon request.

Other warrantees, as provided by individual component manufacturers may extend beyond this warranty.

00-55-5500

LIFETIME TANK WARRANTY

The copolymer material water tank and/or foam tank provided shall be warranted for the life of the apparatus as detailed and provided by the tank manufacturer.

00-56-7055

LIFETIME COPOLYMER APPARATUS BODY WARRANTY

The CoPolymer apparatus body as detailed herein shall have a structural and corrosion

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warranty against defects in materials and workmanship for a period of the life of the apparatus, effective upon final payment in full by the Purchaser, and pick up or delivery of the completed apparatus to the Purchaser. This warranty applies only to the original body as mounted by the apparatus manufacturer on the original chassis. Any unauthorized alterations or modifications to the original body, or remounting of the body shall void this warranty.

00-57-2500

FIVE YEAR PAINT WARRANTY

The finish paint as used on the proposed apparatus shall be warranted against defects in materials and workmanship for a prorated period of five (5) years, effective upon pick up or delivery of the completed apparatus to the purchaser.

00-65-0600

DEMONSTRATION REQUIREMENTS

00-65-1500

DEMONSTRATION AT MANUFACTURER

While the purchasing personnel are present at the facility of the manufacturer, the manufacturer shall provide a one day demonstration session on the completed apparatus. Demonstration shall be conducted by a minimum of one manufacturer authorized and trained individual. Demonstration shall include all aspects of apparatus operation.

00-68-0500

MANUAL AND DATA REQUIREMENTS

00-68-1500

FIRE APPARATUS DOCUMENTATION

At the time of delivery, two (2) copies of the following shall be supplied:

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.
- (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.

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- (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.
- 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.

OPERATIONS AND SERVICE DOCUMENTATION

A minimum of two (2) sets of complete operation and service documentation shall be supplied, 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.

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- 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.

00-70-0500

PERFORMANCE REQUIREMENTS

00-70-1000

The bidder shall comply with 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
- 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

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CHASSIS PROVIDER

00-80-1000

The chassis, as detailed in these specifications, shall be supplied by the apparatus manufacturer.

00-99-2100

MANUFACTURER RIGHTS

The manufacturer shall be allowed to incorporate the latest technology or standards, including changes to apparatus features and brand names, or model or equipment being supplied with the vehicle, as long as the Purchaser is notified in advance of any changes of a major nature.

05-05-5100

CHASSIS SPECIFICATIONS

MODEL

Dodge Ram 5500 Heavy Duty SLT, Quad Cab, 4 x 4

DIMENSIONS

Wheelbase: 188"

C/A: 84"

GVW front: 7,000 lbs.

GVW rear: 13,500 lbs.

GVW total: 19,500 lbs.

ENGINE

6.7-Liter Cummins® Turbo Diesel Engine

305 HP @ 2,900 RPM

610 Lb / Ft of torque at 1,600 RPM

TRANSMISSION

Six speed automatic

With PTO provision

AXLES

7,000 lb. rated

Disc brakes

Power steering

7,000 lb. front suspension

Automatic front locking hubs

2-speed manual transfer case with shift on the floor

13,500 lb. rated

Disc brakes

13,500 lb. rear suspension

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BRAKE SYSTEM

Brake package
Power disc
Four wheel ABS

CHASSIS AND FUEL TANK

-Chrome front bumper
-52 gallon tank rear axle

TIRES AND WHEELS

225/70 R 19.5 Goodyear G622 RSD front tires on steel wheel rims
225/70 R 19.5 Goodyear G622 RSD rear tires on steel wheel rims

CAB

Individual driver and officer seats
Air conditioning
Dual driver and front passenger Air Bags
Mirrors
Tinted glass

GAUGES AND CONTROLS

Gauge package (volt/tach/trans temp)
Self-canceling turn signals with courtesy signal

ELECTRICAL AND LIGHTING

Dual 750 CCA batteries
Single electric horn
Halogen headlights
Marker lamps
Front turn signals
Windshield wipers
Four way flashers

PAINT

One color finish paint

07-00-1000

CHASSIS MODIFICATIONS

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

07-02-8200

CONTROL CONSOLE BETWEEN SEATS

COBRA –TMC3

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A control panel designed by Auto Additions in Salem, OR designed to fit an Odin Remote Start Panel and Odin AutoValve. Includes 1 storage compartment and 5 slots for Radio and Electronic Equipment

07-16-2100

12V ELECTRIC WINCH FRONT

One (1) Warn 8,000 front winch shall be provided. The winch shall have the following features:

- *An efficient 12V DC series wound electric reversible motor for increased pulling power.
- *A proven 3-stage planetary gear system design for fast line speed.
- *The motor and solenoids grounded directly to the battery.
- *An automatic load holding brake for strength and reliability.
- *An easy to use, spring loaded pull and rotate clutch design, for free spooling.
- *A weather resistant fully integrated solenoid assembly
- *A 12 ft. wire pendant remote.
- *90 ft. of 7/16" galvanized EIPS wire rope with replaceable self-locking clevis hook.
- *A 4-way roller fairlead.
- *A limited lifetime warranty.

SPECIFICATIONS

- *Rated line pull (single line) 8,000 lbs.

BUMPER GUARD

A chrome protective grille guard shall be provided with the winch. The grille guard shall be designed specifically for the Warn 8000# winch, and shall mount to the factory bumper and vehicle frame. The grille tubes offer a stylish front end grille protection.

07-27-0550

FUEL FILL

The chassis fuel fill inlet line shall be routed to a recess area at the side of the body, near the rear wheels. A fuel cap shall be provided. A label designating the type of fuel to be used shall be installed near the fuel fill.

07-28-2300

TREADPLATE RUNNING BOARDS

A set of NFPA compliant embossed aluminum diamond plate running boards shall be installed.

FRONT MUD FLAPS

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

07-30-1500

VEHICLE MASTER SWITCH - CHASSIS ALWAYS "ON"

A master switch shall be provided in the cab near the outside portion of the driver seat.

COBRA –TMC3

1/27/09

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This switch shall cut 12 volt power to the pump and body accessories. This master switch shall include a green/master switch "on" pilot light.

07-30-4500

BATTERY CHARGING RECEPTACLE

A 12V receptacle for charging the vehicle batteries from an external battery charger shall be provided and wired to the batteries. A polarized mating plug shall be included.

The receptacle shall be located on or around the pump panel on the driver's side.

07-52-2200

REAR MUDFLAPS WITH ANTI SAIL FEATURE

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

Each rear mudflap shall have a chrome anti sail framework installed to hold the mudflap in position, and not allow it to "sail" and rest against the chassis tailpipe located behind the rear wheels, on this type of chassis.

07-80-0185

CHASSIS EXHAUST

The chassis exhaust pipe shall discharge at the rear of the right rear wheels and shall be pointed downward.

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:

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- 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.

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.

10-00-5550

ODIN CAFS & PLUMBING

The following Odin Foam product and plumbing accessories shall be provided:

10-46-2300

ODIN Cobra (CAFS)

There shall be a complete modular engine driven CAFS system. The compressed air foam system shall be a high energy, engine driven, module type compressed air foam system. It shall include all of the following necessary components built into a compact frame assembly. This unit shall be designed to work cross-mounted behind a chassis cab of an apparatus.

The compressed air foam system shall be a high-output, engine-driven, module-type design. It shall include all of the following necessary components built into a compact frame assembly.

ENGINE

The power to drive the system shall be provided by a Deutz model BF4L2011, air/oil-cooled, direct injection, pressure lubricated, turbo-charged diesel engine. The heavy-duty rating for this engine is 79 hp @ 2800 rpm. Automotive engines or ratings will not be used. The engine shall have a cylinder head and crankcase of grey cast iron without liners. A cooling blower with a guard shall be provided along with a 14 VDC, 60-amp alternator and engine oil cooler with a thermostatic oil valve.

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WATER PUMP

The water pump shall be a *Darley* model 2-1/2 AGE single-stage, centrifugal pump with a vertically split aluminum case and bronze impeller on a stainless steel shaft. It is designed to provide up to 250 gpm (946.3 L/min) of plain water flow and pressures up to 250 psi (15.5 b). The pump seal shall be of a mechanical design. Helical cut gears shall be utilized in the pump transmission.

AIR COMPRESSOR

The air compressor shall be of the oil injected rotary screw type, designed and installed to supply a minimum of 120 cfm @ 125 psi (2831.7 L/min @ 8.6 b) of free air at maximum engine rpm. The compressor air/oil receiver shall be built and designed by the compressor manufacturer. A spin-on oil filter shall be integrated into the compressor system. Replacement elements shall be readily available.

A pneumatic modulating inlet valve mounted on the air end inlet shall control the compressor. An *AutoOdin* balancing system shall be provided to automatically maintain the air pressure within plus-or-minus 5% of the water pump pressure throughout the CAFS operating range.

All air lines shall be rated to a minimum of 250 psi (17.2 b). All control air fittings shall be of brass, stainless steel or chrome construction. Stainless steel or brass check valves shall be utilized at air injection points to prevent water/solution back-flow into air lines.

The cooling water to the heat exchanger shall be supplied through a dedicated, filtered line from the unit's water pump. Water shall flow through the heat exchanger whenever the water pump is operating. The air compressor cooling system shall incorporate a thermostat that maintains the system oil temperature within 168°F (75.6°C) to 225°F (107.2°C) range. The system shall be capable of maintaining recommended operating temperatures throughout the full operational range of ambient temperatures up to 115°F (46.1°C). A dry cartridge type air filter shall be provided on the compressor air intake.

DRIVE SYSTEM

The water pump shall be directly driven using a Centaflex coupling on an extension shaft inline with the crankshaft of the engine. The compressor shall be mounted to the engine flywheel housing and will be belt-driven using a Gates Poly-Chain®.

FOAM PROPORTIONER

The foam proportioner shall be a *FoamPro* model 2001 automatic, 12 VDC, direct-injection system. It will provide push-button control of foam proportioning rates from 0.1% to 9.9%, in 0.1% increments. The pump output shall be 2.6 gpm @ 150 psi (9.84 L/min @ 10.3 b). The motor shall be rated at ½ hp with a maximum amp draw of 40 amps. The proportioner shall be capable of using different types of liquid foam concentrates. This complete system will be mounted within the module.

ELECTRICAL SYSTEM

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All electrical equipment installed by the manufacturer shall conform to current automotive electrical system standards and the requirements of the applicable NFPA apparatus standards. The wiring shall be individually and permanently color and function coded. The installation shall meet SAE Standard J1128 in its latest edition for GXL or SXL temperature rating.

All exposed wiring shall run in loom with a minimum of 280°F (137.8°C) rating. All wiring loom shall be properly supported and attached to frame members along the entire run. At any point where wire or looms must pass through metal, rubber grommets shall be installed to protect the wire from abrasion.

The main low voltage electrical terminal block and circuit breaker panel shall be provided behind the pump operator's panel in a location providing easy service access. The electrical connections shall be made using heat shrink and/or weatherproof connectors. All electrical circuits shall be protected with automatic reset circuit breakers or fuses.

Engine Compartment Light

An engine compartment light shall be installed in the module. The panel lights switch shall control the engine compartment light.

Priming System

A *Darley* 12 VDC electric, oil-less, rotary-vane priming system shall be utilized. The primer is capable of priming the water pump through 20' of hard suction hose with a 10' lift. Primer controls and instruction plate shall be mounted on the operator's panel.

Relief Valve

The pump shall be equipped with a *Darley* automatic pressure control device. The relief valve control (pilot valve) shall be protected from malfunction due to sand or other sediment in the water by a strainer, which can be removed, cleaned, and replaced from the operator's panel while the pump is operating.

The relief valve indicator lights shall be provided and mounted on the pump panel adjacent to the pilot valve assembly. The indicator lights are to be amber, marked OPEN to indicate the relief valve is bypassing and green marked CLOSED to indicate the valve is closed.

Plumbing, Hose and Lines

All piping shall be stainless steel. Use of grooved end pipe couplings is required for flexibility and movement of system components on mobile equipment. All air compressor control lines shall be of stainless steel outer braid *Teflon* liner or supplied by the compressor manufacturer. Hydraulic hoses will only be used for air injection lines and not control air lines. Flexible piping may be used where applicable. Check valves are required throughout the system to maintain integrity and shall be placed so that the air, water foam and foam solution do not inadvertently mix. One (1) master drain valve shall be provided on the control panel to completely drain the system to prevent freeze damage.

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Tank to Pump

There shall be a 2½” tank-to-pump suction valve fitted in the module and controlled from the operator’s panel with a push/pull T-handle control.

Tank to Pump Check Valve

A 2½” check valve shall be installed in the water pump inlet plumbing, between the water tank and the pump inlet.

Inlets

There shall be a 2½” NH connection with cap on the operator’s panel for drafting.

Direct Tank Fill

There shall be a 2½” gated valve with a 2 ½” Female NPT on the operator’s panel for direct tank fill operations with a pressurized water source.

Tank Refill

There shall be a 1.5” tank refill valve, with push pull operator on the panel.

CAFS Outlets

There shall be a minimum of Three (3) mix points. Each mix point will consist of an independent control on the operator’s panel for air injection and an independent control on the operator’s panel for foam solution. Two (2) Crosslay mix points will have 2” plumbing with 1½” discharge outlets. One (1) Panel discharge to be 2” valve, with 2” plumbing. All outlets will be independent mix points for air and foam solution and shall be controlled from the operator’s panel. The CAF mix point controls shall be grouped together on the panel. Locking, push/pull, T-handle controllers inlaid with calibrated wet/dry foam labels shall be used for water and quarter-turn, ball valves for air injection points. Discharge threads are to be 1 ½” NH on crosslays.

Module Frame

The frame shall be constructed of aluminum and designed for rigorous fire service. The top of the module shall be a computer-cut, aluminum diamond-plate material, hinged for a complete service access door. The top access door shall use pneumatic gas shocks to maintain the door in the open position. The cab-side of the module shall be covered with a removable sheet of aluminum diamond plate.

The top of the module shall have two (2) pre-connect hose trays, installed complete with dividers. Both pre-connects shall be CAFS capable. They shall be sized to hold a minimum of 150 ft. of hose. Discharge threads are to be 1 ½” NH.

The module lid shall have an engine cooling air exhaust duct, which MUST be left open and free to emit hot air from the module.

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Corrosion Resistance Treatments

Dielectric tape (laminating type UHMW) is used through out the construction of the module for dissimilar metal contact surfaces. This will include, but not be limited to control panel to frame, engine mounts to frame, and solution injection unit to frame.

All SS screws, which secure the SS panel to the aluminum frame, will be treated with dielectric liquid. The majority of fasteners throughout the module will be SS. All electrical ground connections to the frame will be treated with dielectric silicone compound. Wire ends will have waterproof and corrosion resistant shrink tube, adhesive lined type terminals and connectors.

All electrical plugs in the module will be environmentally sealed Deutsch type. The entire surface of the electric fuse / connection box will be treated with a urethane seal coat, to seal out moisture

Control Panel

A brushed stainless steel, laser-cut control panel shall be provided on the operator's side of the module. A stainless steel engine control door shall be mounted to the control panel, which shall be of a water resistant design. The following items shall be positioned and clearly marked in a logical manner on the control panel to provide for simple and easy operation.

1. **Shielded Control Panel Light Cluster**
2. **Water Tank Level Gauge**
3. **Foam Tank Level Gauge A**
4. **Auxiliary Air Outlet**
5. **Foam Proportioner System Control**
6. **4" Master Water Pressure Gauge**
7. **4" Master Air Pressure Gauge**
8. **4" Master Inlet Compound Gauge**
9. **Pump Test Ports**
10. **Primer Control**
11. **Vernier Throttle**
12. **Operation Instruction Placard**
13. **Master Drain Valve**
14. **Discharge Pressure Relief Valve**
15. **Three (3) Separate Sets of Mix Point Controls**
 - a) **Water Solution Valve**
 - b) **Quarter-Turn Air Injection Control Valve**
 - c) **Quarter-Turn Mix Point Pressure Drain Valve**
 - d) **Mix Point Pressure Gauge 2½ "**
16. **2½" NH Male Suction Inlet with Cap & Lanyard**
17. **2½" NH Female Swivel Direct Tank Fill Inlet with Plug & Lanyard**
18. **Locking, Push/Pull, T-Handle Valve for Direct Tank Fill**
19. **Locking, Push/Pull, T-Handle Valve for Tank to Pump**
20. **Locking, Push/Pull, T-Handle Valve for Tank Refill**
21. **2½" NH Male CAF with Cap & Lanyard**
22. **Electrical Door**

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- a) **Low Oil Pressure Light**
- b) **Oil Pressure Gauge**
- c) **Engine High Temperature Light**
- d) **Engine Temperature Gauge**
- e) **Volt Meter**
- f) **Alternator Light**
- g) **Compressor High Temperature Light**
- h) **Compressor Temperature Gauge**
- i) **Ignition Switch**
- j) **Tachometer with hour meter**
- k) **97dB Audible Alarm**
- l) **Panel Light Switch**

Labels

All controls, inlets and discharges shall be clearly labeled. The labels shall comply with applicable NFPA standards.

Testing

The completed unit shall undergo a manufacturer's run-in test prior to delivery. The engine, pump and air compressor shall be operated for a minimum period of six (6) hours, during which time the test operator shall monitor and record the functions and performance of each system component. Compressed air foam shall be produced during the test.

This testing shall be performed to ensure proper system operation and performance prior to shipment. The manufacturer shall provide written certifications that the tested unit meets all performance criteria contained herein (NFPA). Water flow performance shall be tested in accordance with NFPA 1901. The pump will meet the stated flow as per specifications below, in the performance section. System to meet all Airflow performance shall be measured with a temperature and pressure compensated air flow meter.

Manuals

One (1) copy of the *Operation and Maintenance Manual* and a CD copy shall be provided to the purchaser with each unit. This manual shall include detailed instructions in the operation and maintenance of the overall unit, engine, water pump, and air compressor and foam proportioner.

10-49-2000

CAFS SYSTEM MOUNTING

The cross mount CAFS module shall be mounted behind the cab. It shall be bolted to the frame per the manufacturer's recommendations.

15-80-4500

BOOSTER REEL – REAR COMPARTMENT

One (1) silver painted steel booster reel shall be installed in the right rear compartment with appropriate piping and valve. The 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.

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Job 2824

Chrome rollers shall be provided at the rear of the body with a weather resistant black vinyl cover for deploying and rewinding hose smoothly. An automatic brake shall be supplied on the reel to prevent involuntary unwinding of the hose. The reel shall have a capacity for a 100 ft. of 1" booster hose. The booster reel discharge control shall be located at the operator's control panel. An additional valve shut-off shall be provided at the reel in the supply hose.

15-80-9000

REEL REWIND SWITCH

One (1) push button rewind switch shall be provided and mounted on the rear of the body near the hose deployment area.

15-82-8000

CAFS FOR REEL

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

71-50-5000

One (1) 100 ft. length(s) of 1" booster hose, with a 400 PSI rating shall be supplied. The hose jacket shall be RED in color. Swivel couplings shall be of a chrome finish.

15-50-7000

SIDEWINDER BUMPER TURRET (CAFS) w/AutoValve Control

There shall be 2" plumbing supplied to the front bumper for a turret discharge. The turret shall be an Elkhart Model #8494-01 Sidewinder remote control monitor with a #187 CAFS smooth bore tip.

The discharge outlet shall be controlled at the joystick by an electric 2" inline valve. The valve shall be a quarter turn ball type of fixed pivot design and be constructed of bronze. The discharge control shall be located in the cab.

This discharge shall be capable of delivering water, foam solution, or compressed air foam. A CAFS air flow injection control shall be mounted adjacent to the water flow discharge valve mounted in the cab.

19-00-5100

WATER TANK, FIRE BODY & RELATED COMPONENTS

31-03-0100

COPOLYMER PUMPER 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. Sheet thicknesses shall be 3/8", 1/2" and 3/4". All seams shall be welded. All outside corners on body shall have a minimum 1/2" radius. The entire body shall be a welded one piece module, 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.

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Job 2824

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

31-03-0750

ANGLED REAR

For improved angle of departure, the apparatus rear body line, behind the rear axle shall be angled upward from the ground, beginning at the rear wheels and angling upward to the apparatus rear, creating an approximate 36 degree angle of departure.

31-19-0599

REAR RECEIVER HITCH

A heavy duty, black powder coated, receiver hitch shall be mounted at the rear of the vehicle bolted to the frame rails of the chassis using grade 8 bolts. The receiver shall extend through the rear angled copolymer panel and be even with the back of the body.

Wiring shall also be provided and installed mounted in a Bargman 7 trailer wiring plug.

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.

31-31-1000

FENDERETTES

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

31-40-0300

HOSE STRAP(S)

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A total of two (2) Fire Research JackStrap(s) shall be provided for the two (2) pre-connected crosslay hose lines. They are 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. There shall be carabiners mounted to the crosslay hosebed divider for securing the JackStrap.

The JackStrap shall be made of heavy duty 2-inch wide polypropylene webbing. An adjustable hose loop shall fit on 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.

31-50-0100

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.

31-51-0575

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.

31-80-0050

NO LEFT FRONT BODY STEPS

There are no access steps provided on the left front body face of this apparatus.

31-80-2050

RIGHT FRONT BODY STEPS

There are three (3) large, heavy duty chrome folding steps provided on the right front body face of this apparatus.

SUCTION HOSE STORAGE

There are to be two (2) aluminum suction hose storage troughs mounted on top of the body, one (1) each side. They shall be provided with black nylon Velcro straps to secure the flexible hard suction hoses listed in the equipment section of these specs.

31-92-1000

HANDRAILS

Two (2) handrails, approximately 14" long, shall be provided, one on the front of the body and one on the side near the top of the apparatus. These are to be used when climbing the three (3) folding steps when accessing the top of the vehicle. Each shall be 1-1/4" extruded aluminum tubing with rubber grip inserts, mounted in chrome stanchions.

20-03-5100

300 GALLON TANK - COPOLYMER

COBRA –TMC3

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Job 2824

Booster tank shall be constructed of a Copolymer, material properly baffled.

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

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

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

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

A fill tower shall be installed 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.

21-10-2000

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

FOAM TANK

One (1) 25 gallon foam tank shall be provided, integral with the water tank and shall have a rectangular fill tower, approximately 10" x 10", with a hinged cover and a removable screen. A tank drain shall be provided inside the pump compartment. A label shall be provided stating not to mix brands and types of foam.

31-12-0375

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.

33-01-1140

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

COPOLYMER COMPARTMENTS

LEFT SIDE

1.) One (1) compartment ahead of the left side rear wheels, approximately 22" wide x 57" high x 21" deep. The door opening shall be approximately 18" wide x 47" high.

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2.) One (1) compartment over the left side rear wheels, approximately 45" wide x 36" high x 21" deep. The door opening shall be approximately 38" wide x 27" high.

3.) One (1) compartment behind the left side rear wheels, approximately 38" wide x 45" high x 21" deep. The door opening shall be approximately 37" wide x 35" high.

RIGHT SIDE

4.) One (1) compartment ahead of the right side rear wheels, approximately 22" wide x 57" high x 21" deep. The door opening shall be approximately 18" wide x 47" high.

5.) One (1) compartment over the right side rear wheels, approximately 45" wide x 36" high x 21" deep. The door opening shall be approximately 38" wide x 27" high.

6.) One (1) booster reel compartment behind the right side rear wheels, approximately 38" wide x 45" high x 21" deep. The door opening shall be approximately 37" wide x 35" high.

33-07-0140

REAR COMPARTMENT

7.) One (1) compartment at the apparatus rear, approximately 49" wide x 40" high x 54" deep. The door opening shall be approximately 42" wide x 35" high.

The compartment shall have a roll up door.

35-17-0202

REAR ROLL UP DOOR FINISH

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

35-02-1050

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

35-90-1170

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. Replacement parts shall be available within 2-3 working days.

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.

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Job 2824

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.

38-00-0200

SHELVING TRACKS

Unistrut type tracks shall be provided in four (4) 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:

---The left front, right front, left over-wheel, and right over-wheel compartments.

38-02-1100

ADJUSTABLE SHELVING

Six (6) heavy duty adjustable black copolymer shelves shall be provided and installed. The shelving floor and sides shall be constructed from 1/2" black textured copolymer. The sides shall be 3" high and welded to the floor and corners. The top edges shall be rounded to eliminate sharp edges.

Shelving shall be located as follows:

- 1 & 2) Left front lower and upper
- 3 & 4) Right front lower and upper
- 5) Left over-wheel compartment
- 6) Right over-wheel compartment

40-00-0000

PAINT, STRIPING, AND LETTERING SECTION

40-10-1950

PAINT FINISH

The apparatus shall be finish painted with DuPont Chroma 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 prepared and cleaned using soap and water. Prep Sol 3919S or Kwik Clean 3949S shall be used to remove any tar, wax, polish and grease.

All surfaces to be painted shall be scuffed using 80-150 grit sandpaper. All surfaces shall receive a final wipe using Lacquer and Enamel Cleaner 3939S followed up with Plastic

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Job 2824

Prep 2319S.

Two medium wet coats of adhesion promoter for Plastics 2322S shall be applied to all surfaces to be painted.

All surfaces to be painted shall be primed with URO Primer Filler 1140S. The primer mixture shall contain four (4) parts primer, one (1) part Activator 1125S, one and a half (1.5) parts Converter 1130S, and one half (.5) parts Flex Additive 2350S.

Two applications of primer shall be applied. The first application shall be four (4) coats and the second application shall be three (3) coats.

A final application of sealer shall be applied using URO Primer Filler 1140S. The sealer mixture shall contain four (4) parts primer, one (1) part Activator 1125S, two (2) parts Converter 1130S and one half (.5) Flex Additive 2350S.

The base coat shall be Dupont ChromaBase. The paint shall be applied according to DuPont base coat application instructions. The base coat shall be ChromaBase mixed with 5% Flex Additive 2350S.

The clearcoat shall be DuPont ChromaClear. The clearcoat shall be applied according to DuPont clear coat application instructions. The clear coat shall be ChromaClear Multi Use 7500S and mixed with 5% Flex Additive 2350S.

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.

A five (5) year warranty from the paint manufacturer shall be included. The warranty shall include 100% product and 100% labor.

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 KIT - FRONT AND REAR

The painted steel chassis wheels shall be fitted with a full set of polished stainless steel wheel covers as well as braided stainless steel air hose extensions connected to the fill stems for easier access.

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

COBRA –TMC3

1/27/09

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The stripe shall be a **6"** wide reflective stripe.

40-25-2000

The reflective stripe color shall be **WHITE** with a ¼" black pinstripe on the edges.

40-25-4000

The reflective stripe shall be applied in a straight line along each side of the chassis cab and then angled up and then straight along the top of the apparatus. The height of the stripe from the ground to the center of the stripe shall be per NFPA recommendations.

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 of the four (4) chassis cab doors.

40-26-4300

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

50-00-0720

12 VOLT ELECTRICAL SYSTEM GENERAL WIRING

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

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

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

WIRING DIAGRAMS

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

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.

50-01-0200

RUNNING LIGHTS & REFLECTORS

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There shall be LED running lights and reflectors mounted on the body. The lights shall be mounted on 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 left rear of the apparatus body. The light shall be wired to illuminate with the parking/headlights.

50-02-2100

REAR DIRECTIONALS

Rear directional lighting shall be supplied in aluminum housing and shall include: Federal Signal LED warning light / Brake / Tail / Turn light.

50-03-0200

STEP LIGHTS

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

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

50-05-4050

COMPARTMENT LIGHTING

Each body compartment shall contain one (1) 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.

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.

50-05-5550

"DO NOT MOVE APPARATUS" LIGHT

A flashing red 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 is not in the park position.

In addition, accessories such a telescoping light shall also be connected to this ajar circuit, to activate the light when any of these items are not properly nested, and the vehicle is not in park.

50-07-0400

FOUR DOOR CAB GROUND LIGHTING

COBRA –TMC3

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The four door cab shall have a 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

Four (4) 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.

51-00-1100

WARNING LIGHT SYSTEM (LED)

The following warning lights shall be installed.

54-12-1350

LIGHT BAR

Zone A - (Upper Front) - One (1) Federal Signal LED-ARJENT SL 53" light bar (582NFPA53-AS1), Red Top

Clear warning lights shall be shut down with the parking braking for "Blocking Right-Of-Way" mode.

54-20-1000

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

54-21-1200

The lens colors shall be as follows:

Driver's Side of Lightbar - **Red**, Officer' Side of Lightbar - **Red** Two Center Front Sections of Lightbar - **Red**

54-30-4075

Zone A (Lower Front) – Four (4) Federal Signal IMPAXX, LED, approximately 1" high x 3" long, shall be mounted, two each side, on the front face of the protective grille guard.

54-32-1000

The lens color shall be as follows:

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

54-40-3120

Zone B (Right Side-Lower) - Two (2) Federal Signal IMPAXX, LED, lower level, approximately 1" high x 3" long, shall be mounted at the lower front side corner, and rear side corners of the apparatus.

Zone B (Right Side-Upper) - Three (3) Federal Signal IMPAXX, LED, upper level, approximately 1" high x 3" long, shall be mounted at the upper front side corner, center of the body, and rear side corners of the apparatus.

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Zone D (Left Side-Lower) - Two (2) Federal Signal IMPAXX, LED, lower level, approximately 1" high x 3" long, shall be mounted at the lower front side corner, and rear side corners of the apparatus.

Zone D (Left Side-Upper) - Three (3) Federal Signal IMPAXX, LED, upper level, approximately 1" high x 3" long, shall be mounted at the upper front side corner, center of the body, and rear side corners of the apparatus.

54-42-1000

The lens colors shall be as follows:

Driver's Side - **Red**

Officer's Side - **Red**

54-60-0400

Zone C (Rear-Upper) - Two (2) Federal Signal Micro ESCAPE ME4QL-R warning beacons shall be mounted, one each side, at the upper rear corners of the apparatus.

54-62-1050

The lens colors shall be as follows:

Driver's Side - **Red.**

Officer's Side - **Red.**

54-70-0425

Zone C (Rear-Lower) - Two (2) Federal Signal LED warning lights, approximately 4" high x 6" long, shall be mounted, one each side, in the triple light bezel on the rear of the apparatus.

54-72-1000

The lens 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 Federal Signal when installed in conformance with Federal Signal mounting parameters to meet the requirements as noted in Chapter 9 of the 1999 revision of NFPA 1901 Fire Apparatus Standard.

58-00-0610

SmartSiren

- Combination electronic siren and emergency light control
- 100/200-watt remote amplifier and control head featuring a four-position slide switch
- Each slide switch position can be configured to operate any combination of eight replays, PA, horn ring transfer, and siren enable
- Siren functions include wail, yelp, hi/lo, manual, horn ring transfer, radio rebroadcast, TAP II, and PA
- Seven SignalMaster patterns available on SS2000SM Series models

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- All functions fully programmable at the point of installation

58-09-1400

The electronic siren control shall be mounted on the center console between the driver and officer seats.

58-10-1600

SIREN SPEAKER

One (1) DYNAMAXX siren speaker, with a 100 watt driver shall be provided and installed at the front bumper and protected by the front bumper guard.

58-10-9000

The siren speaker(s) shall be mounted at the front bumper/grille area.

A pair of Federal Signal FIRE RAY GHSCENE - scene lights shall be mounted on the rear of the body one (1) each side. They are equipped with dual 20 Watt halogen lights.

59-10-0006

12 VOLT TELESCOPING LIGHTING

59-10-3550

TELESCOPIC 150 WATT HID FLOODLIGHT(S)

One (1) Fire Research Optimum model OPA530-HD15 side mount push up telescopic light(s) shall be installed. The light pole(s) shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole(s) 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 2-3/4" offset. Wiring shall extend from the pole bottom with a 4 ft retractile cord.

The lamphead(s) shall have one (1) high intensity discharge (HID) 150 watt 12 volt bulb. The bulb will draw 12.5 amps and generate 11,250 lumens. The bulb shall be accessible through the front. The lamphead(s) shall incorporate a vacuum deposit polished reflector and two optimizing mirrors to produce a uniform beam that lights up an area 100 degrees vertically by 150 degrees horizontally. The lamphead(s) shall have a heat dissipating curved front lens. The curve of the lens shall have a radius of 5.16 inches to optimize light emission. The lamphead(s) shall be no more than 5-3/4" deep by 5-1/8" high by 8-3/4" wide. The lamphead(s) and brackets shall be powder coated white.

65-90-0500

LIGHT LOCATION

The light shall be mounted on the driver side pump area.

65-92-2600

LIGHT SWITCHING

The light shall be automatically switched as the light is lifted from the cradle.

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.

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99-99-1000

Four (4) 2-1/2" hard flexible suction hoses approximately 7 feet long.

PURCHASER RESPONSIBILITY

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