

**MAINTAINER CUSTOM BODIES INC.
PROPOSAL FOR
MCB DEMO QUICK-ATTACK**

**SPECIFICATIONS
FOR
NEW ALL-ALUMINUM 12 FOOT RESPONDER QUICK-ATTACK**

******* CHASSIS MODIFICATIONS *******

MUD FLAPS - REAR:

There shall be black rubber mud flaps installed for the rear wheels.

CHASSIS CAB OFFICER & CREW SCBA SEATS

The Ford F-550 Chassis cab will be retrofit with H.O. Bostrom Tanker Series Fire Fighter seating.

The right front officer riding position will have one (1) Tanker 450 Front Passenger SCBA Seat and riser. The SCBA retention components will be the standard SecureAll™ bracket.

The rear crew area will have two (2) Tanker 400CT Rear Crew SCBA Seats on a single combined riser. The SCBA retention components will be the standard SecureAll™ bracket.

RUNNING BOARDS:

Running boards shall be installed on the unit under the cab and crew cab doors. They shall be fabricated from aluminum diamond plate. These running boards shall be structurally reinforced for maximum strength.

STEP LIGHTS

There shall be four (4) Whelen OS Series white LED step lights provided. There shall be one (1) light installed at each cab and crew cab door, one (1) light per doorstep.

The lights shall be activated when a cab door is opened.

KUSSMAUL 120-VOLT SUPER AUTO EJECT:

One (1) Kusssmaul Super Auto Eject, model 091-55-20-120, 20 amp, automatic shoreline disconnect will be provided for the on board, 120-volt battery charging system. This disconnect will be equipped with a NEMA 5-20P male receptacle, which will automatically eject the shoreline when the vehicle starter is energized. The connection will be equipped with a weatherproof cover. A label will be provided indicating voltage and amperage ratings.



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Eject shall be installed on the driver's side cab running board in the rearward position.

**KUSSMAUL AUTO CHARGE LPC20 (#091-207-12)
w/ Auto Charge Deluxe Water Tight Status Center (#: 091-194-IND-WT):**

Low-profile 12v. 20a. Emergency Vehicle Charger System w/ 15a. Battery Saver output.

Includes the Auto Charge Deluxe Water Tight Status Center. A remotely mounted, 3 1/2 digit indicator that displays battery voltage and amperes. Additionally, a 5 segment bar graph display to indicate output current, and 4 LED's to show the condition of the batteries.

The indicator is water tight and rugged. The unit is designed to be mounted on the outside of a vehicle to readily indicate the battery condition. Bezel colors shall be red.

The status center shall be installed on the driver's side of the center console.

PORTABLE WINCH RECEIVER:

One (1) heavy duty receiver type hitch for a portable winch shall be installed to the framework of the chassis under the L3 and R3 compartments. The winch shall be held in place with a locking hardened pin. A heavy gauge wire and electrical plug shall be provided for quick connection to the vehicle electrical system, at each location.

CAB CONTROL CONSOLE:

There shall be one (1) cab control console installed in the chassis between the cab bucket seats.

This console shall be fabricated from .125" aluminum and shall be as large as possible and bolted into place. This console shall have a removable top cover plate, which shall be retained by black oxide coated stainless steel pan type Phillips type screws.

The console shall accommodate all required electrical connections, sirens, light controls, switch banks, multiplex control heads, and any other electrical equipment so specified.

The console shall be coated with Black Onyx Zolatone to aid in abrasion resistance.

LABEL STATING CHASSIS SEATING CAPACITY

There shall be a label located in the cab in view of the driver specifying the maximum number of personnel the vehicle is designed to carry per NFPA standards.



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LABEL STATING

There shall be a label located in the cab in view of the driver stating "Occupants Must Remain Seated While Vehicle is in Motion".

There shall be a label located in the cab in view of the driver stating the overall height of the apparatus in feet and inches.

There shall be a "No Smoking/Fasten Seat Belt" label located in a plain view location in the cab.

There shall be a permanent plate installed in the cab indicating the following vehicle data:

- *Filter part numbers for engine, transmission, air and fuel systems
- *Serial numbers for engine and transmission
- *Delivered weights for the front and rear axles
- *Paint code and brands
- *Body builder project number

There shall be two (2) labels located on the rear of the apparatus, one on each side, stating "Danger: Do Not Ride on Rear Step While Vehicle is in Motion - Death or Serious Injury May Result".

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with a high-idle speed control rocker switch, which shall be pre-set to maintain the engine idle at a pre-determined rate when activated manually. This device shall operate when the master switch is activated and safely interlocked only to function when the transmission is in park or neutral.

ENGINE PROGRAMMING HIGH IDLE SPEED

The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.



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VEHICLE DATA RECORDER (VDR):

There shall be one (1) Class 1 Vehicle Data Recorder (VDR) provided and installed per NFPA 1901-2009 requirements. The VDR shall be interfaced with the ultraview display of the multiplexed electrical system and shall record such data as the vehicle speed, acceleration/deceleration, engine speed, engine throttle position, ABS event, seat occupied status, seat belt status, master optical warning switch, park brake, service brake, time, date and engine hours. The VDR data shall be downloadable by a mini USB cable to a computer.

SEAT BELT WARNING SYSTEM

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall activate an indicator light in the instrument panel, a digital seat position indicator with a seat position legend in the switch panel, and an audible alarm.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds and the corresponding seat belt remains unfastened. The warning system shall also activate when any seat is occupied and the corresponding seat belt was fastened in an incorrect sequence. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened.

TIRE PRESSURE MONITORING DEVICES

Each tire shall be equipped with an LED tire alert pressure management system (Vecsafe equal) that shall monitor tire pressure. A chrome plated brass sensor shall be provided on the valve stem of each tire.

The sensor shall calibrate to the tire pressure when installed on the valve stem for pressures between 20 and 120 psi. The sensor shall activate an integral battery operated LED when the pressure of that tire drops 8 psi.

Removing the cap from the sensor shall indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED shall immediately start blinking.



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******* WALK-AROUND BODY *******

The apparatus body shall be manufactured as per the following specifications:

BODY MATERIALS:

The following shall be the minimum acceptable gauges and thickness and finish used wherever these materials are used and specified:

ALUMINUM SHEETING - All exterior panels shall be 5052-H32 aluminum of .125" thickness to provide maximum safety.

ALUMINUM DIAMOND PLATE - All aluminum diamond plate shall be a minimum of .125" thick and 3003-H14.

BODY MOUNTING BOLTS - All body mounting bolts shall be hardened steel U bolts.

EXTERIOR NUTS, BOLTS, SCREWS - All exterior nuts, bolts, and screws shall be stainless steel.

BODY DESIGN:

The body shall be modular in design, allowing it to be removed and remounted on a new chassis.

BODY MOUNTING:

The body shall be mounted to the chassis frame with not less than six (6) "U" bolt type brackets, three (3) on each side.

Neoprene pads shall be furnished and installed between the body and the "U" bolt mounts to prevent electrolysis and to minimize noise transfer.

The U-bolts shall secure 1" x 3" solid aluminum bar to the frame to which the subframe is welded.

BODY CONSTRUCTION:

The primary body material shall be .125" aluminum for the sides, front, rear and top of the body.

The body framing shall be square tubing not less than 2" x 2" x (.125") on a maximum of 16" centers.

The framing shall be fully welded grid design, completely supporting the floor, sides, and the roof for maximum strength and durability.



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The body skin shall be fully welded and bonded to the interior framing.

BODY CORNERS - EXTRUDED:

The body corners shall be extruded aluminum with a minimum of a 2.87" radius. This extrusion shall also be used for the perimeter of the roof.

BODY ROOF:

The roof support framing shall be constructed of 2" x 2" x .125" 6063-T52 extruded aluminum tubing.

The body roof shall be a minimum of .125" aluminum diamond plate and all roof seams shall be fully welded.

INTERIOR ROOF PANEL & UPPER CORNER COVER

The interior roof shall be completely sheeted with a .125 aluminum panel. In addition the corner space between the front, rear and sidewalls will incorporate a corner cover to protect any wiring in all of the adjacent areas

FRONT BODY SHEET:

The entire front of the apparatus body shall be constructed of .125" smooth aluminum sheeting and shall be painted.

STONE GUARDS:

The front body corners shall have a .125" aluminum diamond plate stone guard added to the lower corners. The stone guards shall be a minimum of 24" high and shall be affixed to the body with stainless steel countersunk screws.

REAR BODY SHEET:

The rear body sheet shall be fabricated of .125" smooth aluminum sheeting.

The area under the rear door and above the rear step shall include an overlay of .125" aluminum diamond plate. This will serve as a kick plate to protect the painted surfaces.

WHEEL WELL LINERS:

The inside of the rear wheel wells shall be covered with an aluminum inner liner.



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WHEEL WELL PANELS PAINTED:

The wheel well body panels shall be painted with no trim overlaid on the body panel.

FENDERETTES:

The wheel well openings shall be trimmed with polished stainless steel fenderettes bolted in place.

RUB RAILS:

A two (2) part impact and rub rail system shall be used for body side protection.

A structural body impact rail shall be welded into the apparatus body structural members. This impact rail shall be composed of 6063-T52 alloy-extruded aluminum. It shall receive the body side sheet by means of a groove, which runs continually fore to aft of the module for maximum strength and impact protection.

Additionally, a .75" thick x 3" wide polished extruded aluminum "sacrificial" rub rail shall be bolted to the body "impact" rail to aid in collision protection. The outside vertical edges shall be chamfered for an aesthetic appearance and to reduce the chance of personnel injury.

Applied to the recessed center of this "sacrificial" rub rail shall be black Scotchlite reflective striping to provide additional body side illumination.

DRIP RAILS:

There shall be polished aluminum rain gutters installed over all side and rear compartments and any entry doors.

The rain gutters shall be fastened to the body and removable in case of damage.

Rain gutters that are an integral part of the roof radius will not be acceptable due to the difficulty in replacing due to damage.

FLOOR CONSTRUCTION:

Mounted on the chassis frame shall be 1" x 3" aluminum flatbar. Transversing the flat bar and forming the actual subframe shall be 2" square x .250" aluminum tubes running continuously from one bodyside to the other.



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The subfloor bellypan shall be fabricated from .125" aluminum sheeting, which will be welded to the subframe.

BODY COMPARTMENT CONSTRUCTION:

The body compartment shall be fully enclosed with all seams being fully sealed.

Each compartment ceiling and wall shall be covered with .125" aluminum sheet. Wiring channels shall be provided where necessary and these shall be bolted into place for ease of access.

Each compartment floor shall be covered with .188" aluminum sheet.

Each body compartment shall be coated with White Marble Zolatone surfacing material.

All shelves and trays are to be zolatoned to match the interior of the compartments.

ROLL-UP COMPARTMENT DOOR SPECIFICATIONS

The compartments shall be equipped with six (6) custom-built Hansen International Inc. roll-up doors. The doors shall be produced by an ISO-9001 certified company and tested to at least 100,000 cycles. Each door shall have a serial number label and shall carry warranty of ten (10) years. To facilitate a 24 hour replacement part service turn around, the doors must be manufactured in the United States.

Operating Components: The easy opening doors shall be equipped with a pre-tensioned internally lubricated counterbalance spring contained within a 0.060" x 4" diameter aluminum door roller tube and supported with a .625" diameter steel center shaft. The roller assembly and shaft shall be supported with two (2) pre-assembled and adjustable mounting plates of 0.090" zinc plated steel. The mounting plates shall have dual synthetic molded roller wheels that shall support the door above the guide channels as it is fed onto the roller tube counterbalance for storage. The door curtain assembly shall be attached to the roller tube counterbalance with woven nylon straps with quick detach steel mounting clips.

Door Construction-Smooth: The doors shall be constructed of double walled and concave hard anodized aluminum extrusion laths with a smooth exterior surface. Each door slat shall have dimensions of 1.365" in height, 0.310" deep, 0.038" wall thickness. The "interlocking joint knuckle" extrusion design shall have an integral dual durometer extruded synthetic spacer seal to reduce noise and prevent weather or debris intrusion in a closed position. Each door lath shall have inter-locking and nested polymer slide guides. Slide guides shall be punch dimpled to prevent 'metal to metal' contact and shall be replaceable. Sides of the door openings shall be equipped with single piece 0.069" hard anodized aluminum extruded vertical guide channels.



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Door Finish-Painted: The roll-up doors shall be finished painted to meet the high quality standards and procedures of both the apparatus builder and Hansen International Inc.

Compartment Sill Plate: A full width hard anodized extruded aluminum door sill shall be installed protect the lower door opening area and improve appearance along the bottom of the compartment opening. The door sill configuration shall have a raised peak along the rear of the sill to reduce water intrusion under the door when in the closed position.

Door Handle and Latching-Handle Bar: The heavy duty lift and door handle bar assembly shall be constructed with a double walled hard anodized extruded aluminum lath consisting of two (2) 0.060" wall thicknesses. The lift handle bar assembly shall have four (4) roller wheels to reduce friction and ease opening of door. The handle assembly shall be equipped with a 2" horizontal full width shelf with anti-slip ribbing on top to assist door closing. The shelf shall have two (2) riveted heavy duty rubber bumpers to prevent a metal to metal impact with the overhead drip rail. The latch bar shall consist of a full width .750" diameter stainless steel tube handle with centrally located knurled anti-slip sections and 1.25" hand clearance between handle and the door surface.

Drip and Protection Pan: The underside of the roll-up compartment doors shall have an integral bolt-in drip and protection panel. The unit shall be constructed of brushed finish #304 stainless steel, with a 1" bent lip on the front and rear edges of the pan. The pan shall be supported from the steel plates each end of the door cylinder.

Magnetic Door Switch-Right: The compartment lights and door ajar light system shall be activated by an 8 amp rated magnetic switch assembly mounted to the right pennant plate at the top of the door roller area with a permanently installed magnet installed in the top lath. Due to weather resistance and hiding of wiring in the compartment interior, latch mounted mechanical switches in the lower door handle area shall not be acceptable.

Weather Resistance: The top door drip rail shall be a hard anodized aluminum extrusion and shall contain a full width strip of weather seal to minimize water ingress along the top of the door. The top door seal shall be of a two (2) piece 'non-contacting design' to prevent damage to graphics, logos or reflective striping. Guide channel seals shall be replaceable and constructed of UV resistant rubber with automotive style flocking material for smoothness of operation. The bottom of the door curtain shall have an additional full width UV resistant rubber seal.

EXTERIOR COMPARTMENT SPECIFICATIONS:



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DRIVER'S SIDE:

The front driver's side compartment, L1, shall have a clear opening of 53.5" H x 48" W x 21" D with a roll-up door. The compartment shall be transverse.

The compartment over the rear wheels on the driver's side, L2, shall have a clear opening of 30.25" H x 41" W with a roll-up door.

The driver's side compartment behind the rear wheels, L3, shall have a clear opening of 50.5" H x 31" W x 21" D with a roll-up door.

OFFICER'S SIDE:

The front officer's side compartment, R1, shall have a clear opening of 53.5" H x 48" W x 21" D with a roll-up door. The compartment shall be transverse.

The compartment over the rear wheels on the officer's side, R2, shall have a clear opening of 30.25" H x 41" W with a roll-up door.

The officer's side compartment behind the rear wheels, R3, shall have a clear opening of 53 3/4" H x 31" W x 21" D with a roll-up door.

COMPARTMENT L1:

Compartment L1 shall contain:

ADJUSTABLE SHELF:

One (1) adjustable shelf shall be fabricated and installed. The shelf shall be constructed of 3/16" DA finished aluminum, with a 2" lip on all four sides. The shelf shall be vertically adjustable by mounting in four (4) heavy duty C-channel tracks that are bolted to the compartment walls.

ADJUSTABLE SHELF:

Two (2) adjustable shelf shall be fabricated and installed behind the vertical divider. The shelf shall be constructed of 3/16" DA finished aluminum, with a 3" lip on all four sides. The shelf shall be vertically adjustable by mounting in four (4) heavy duty C-channel tracks that are bolted to the compartment walls.



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VERTICAL DIVIDER:

One (1) vertical divider(s) shall be provided and installed. The vertical divider(s) shall be fabricated from 3/16" smooth aluminum and have a 5/8" rod on the front edge for added strength.

COMPARTMENT R1:

Compartment R1 shall contain:

ADJUSTABLE SHELF:

One (1) adjustable shelf shall be fabricated and installed. The shelf shall be constructed of 3/16" DA finished aluminum, with a 2" lip on all four sides. The shelf shall be vertically adjustable by mounting in four (4) heavy duty C-channel tracks that are bolted to the compartment walls.

ADJUSTABLE SHELF:

Two (2) adjustable shelf shall be fabricated and installed behind the vertical divider. The shelf shall be constructed of 3/16" DA finished aluminum, with a 3" lip on all four sides. The shelf shall be vertically adjustable by mounting in four (4) heavy duty C-channel tracks that are bolted to the compartment walls.

COMPARTMENT L1/R1:

The transverse compartment L1/R1 shall contain:

VERTICAL DIVIDER:

One (1) vertical divider(s) shall be provided and installed. The vertical divider(s) shall be fabricated from 3/16" smooth aluminum and have a 5/8" rod on the front edge for added strength.

DUAL DIRECTION SLIDE TRAY:

One (1) ROM D7U series dual direction slide tray shall be mounted in the transverse compartment. The tray shall be fabricated from 3/16" smooth aluminum and have a 2" lip on all four sides. The tray shall be supplied and installed in the compartments designated.



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The cargo tray slides shall be constructed from high strength 6061-T6 aluminum extrusion. Cargo tray shall have a latch release handle that is full width for easy opening and closing of cargo tray. Cargo tray shall securely latch in open or closed positions; one intermediate latch at approximately 35% of extension shall be provided. Each cargo tray slide will feature heavy duty "V" groove sealed ball bearing rollers, zinc plated steel parts, and shall be rated at 1000lbs weight capacity.

The dual direction cargo tray slides will have two heavy duty safety stops per side, and a single direction safety feature preventing accidental deployment of slides in the opposite direction from the user. Cargo tray slides shall incorporate DOT approved RED reflective tape inset into the rail slides.

COMPARTMENT L2:

Compartment L2 shall contain:

ADJUSTABLE SHELF:

One (1) adjustable shelf shall be fabricated and installed. The shelf shall be constructed of 3/16" DA finished aluminum, with a 2" lip on all four sides. The shelf shall be vertically adjustable by mounting in four (4) heavy duty C-channel tracks that are bolted to the compartment walls.

COMPARTMENT R2:

Compartment R2 shall contain:

ADJUSTABLE SHELF:

One (1) adjustable shelf shall be fabricated and installed. The shelf shall be constructed of 3/16" DA finished aluminum, with a 2" lip on all four sides. The shelf shall be vertically adjustable by mounting in four (4) heavy duty C-channel tracks that are bolted to the compartment walls.

COMPARTMENT L3:

Compartment L3 shall contain:

ADJUSTABLE SHELF:

One (1) adjustable shelf shall be fabricated and installed. The shelf shall be constructed of 3/16" DA finished aluminum, with a 2" lip on all four sides. The shelf shall be vertically adjustable by mounting in four (4) heavy duty C-channel tracks that are bolted to the compartment walls.



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SLIDE OUT TRAY:

One (1) ROM S1UI series 100% slide tray shall be mounted on the floor of the compartment. The tray shall be fabricated from 3/16" smooth aluminum and have a 3" lip on all four sides. shall be supplied and installed in the compartments designated.

The cargo tray slides shall be constructed from high strength 6061-T6 aluminum extrusion. Cargo tray shall have a latch release handle that is full width for easy opening and closing of cargo tray. Cargo tray shall securely latch in open or closed positions; one intermediate latch at approximately 35% of extension shall be provided. Each cargo tray slide will feature heavy duty "V" groove sealed ball bearing rollers, zinc plated steel parts, and shall be rated at 600lbs weight capacity.

Cargo tray slides shall incorporate DOT approved RED reflective tape inset into the rail slides.

DUALOCK DRAWER UNIT

Compartment I3 shall have provided and installed one (1) Drawer Sets: Aluminum rollout drawers to have a 300 lb. mobile capacity and 500 lb. static capacity for each drawer. Each drawer shall have permanent one way & removable dividers the opposite way. Each drawer shall have a single action latch assembly with locking mechanisms on both ends. Drawers latch in the open and in the closed position. All drawer edges shall be hemmed and constructed of .090 inch thick, 3003-H14 grade aluminum. Individual drawer heights are available from 3" tall to 12" tall and are to be arranged as described in each individual compartment bid section.

The configuration of drawer set installed is as follows:

2 drawers - 3" H X 31" W X 18" D

1 drawer - 4" H X 31" W X 18" D

COMPARTMENT R3:

Compartment R3 shall contain:

ADJUSTABLE SHELF:

One (1) adjustable shelf shall be fabricated and installed. The shelf shall be constructed of 3/16" DA finished aluminum, with a 2" lip on all four sides. The shelf shall be vertically adjustable by mounting in four (4) heavy duty C-channel tracks that are bolted to the compartment walls.



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SLIDE OUT TRAY:

One (1) ROM S1UI series 100% slide tray shall be mounted on the floor of the compartment. The tray shall be fabricated from 3/16" smooth aluminum and have a 3" lip on all four sides. shall be supplied and installed in the compartments designated.

The cargo tray slides shall be constructed from high strength 6061-T6 aluminum extrusion. Cargo tray shall have a latch release handle that is full width for easy opening and closing of cargo tray. Cargo tray shall securely latch in open or closed positions; one intermediate latch at approximately 35% of extension shall be provided. Each cargo tray slide will feature heavy duty "V" groove sealed ball bearing rollers, zinc plated steel parts, and shall be rated at 600lbs weight capacity.

Cargo tray slides shall incorporate DOT approved RED reflective tape inset into the rail slides.

REAR BODY SKID/TANK AREA:

The body shall be open from the rear body panel to the rear wall of the L1 and R1 compartment(s).

This compartment shall measure approximately 86 1/4" long x 46" wide x 45" high.

This open body area frame will be reinforced to hold the skid/water load intended.

The interior sheet metal for the floor and side walls will be .188" thick for maximum area structural strength.

The entire area, floor, front wall, and body side walls shall be coated with PPG Duraliner bed liner material. This Duraliner material shall be applied by the body builder through the PPG certification process. The Duraliner will be fully warrantied by both the body builder and PPG.

The rear skid/tank area floor to body edge and side wall edges shall be trimmed with brushed stainless steel. Treadplate trim edges shall not be acceptable due to hose abrasion.

REAR STEP AND BUMPER:

The rear bumper and step assembly shall extend full width of the body.

The bumper structure shall be attached to the chassis frame rails using a minimum of 3" structural channel. The bumper and step assembly shall extend beyond the rear of the modular body approximately 11" to protect the body from damage.

The rear step shall be constructed of an open aluminum stair tread material.



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ILLUMINATED REAR BODY STEPS:

There shall be three (3) heavy duty Innovative Controls custom folding steps installed on the right-hand rear body face. Each step shall have an integral LED step light.

A switch to activate the step lights shall be placed near the array of rear steps and accessible to the user from the ground.

The LOGO shall be illuminated whenever the vehicle park/tail lights are illuminated.

BODY HANDRAILS:

Two (2) handrails shall be mounted. Handrails shall be 1 1/4" extruded aluminum tubing with deep longitudinal grooves and raised knurled patterned knobs to allow for a non-slip gripping surface. Each handrail shall have heavily chrome plated end stanchions with stanchion to body gaskets to prevent dissimilar metal corrosion. Each stanchion shall be bolted into place for ease of removal or replacement.

TRAILER HITCH:

One (1) class 3 trailer hitch shall be installed on the rear of the rescue vehicle. The trailer hitch shall include an electrical connection.

There shall be a winch power connection adjacent to rear trailer hitch.

TRAILER PLUG CONNECTOR:

A 7-conductor trailer plug connector wired to the tail lights shall be provided and installed under the rear step. Power shall also be provided for a portable winch. Included shall be a mating trailer plug connector.

******* 12 VOLT ELECTRICAL *******

ELECTRICAL MULTIPLEX SYSTEM:

There shall be a Class-1 fully Programmable Multiplexed Electrical System provided.

The multiplex system shall consist of all solid-state components, nodes. Each node shall consist of input and output. All inputs and outputs shall be configured into a scalable electrical harness utilizing Duetsche connectors. The nodes must be waterproof and not require special mounting requirements.



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Data shall be reported in "Real Time" and shall be displayed through several operator interface modules with connection to data reading and recording devices such as computers, Ipad, tablets, etc.

The placement of nodes throughout the apparatus enables a reduction in wire harness bundles, elimination of redundant harnesses and separate circuit boards, relay and circuit breakers, electrical hardware, separate electrical or interlock subsystems and associated electronics for controlling various electrical loads and inputs.

The complete multiplex system shall eliminate the need for the following separate components or devices but are not limited to: load manager, load sequencer, warning lamp flasher, headlamp flasher, door open notification system, seat belt notification, interlock modules, and any other vehicular systems requiring control or monitoring.

Systems activation shall be controlled by rocker switches specifically designed to interface with the Multiplex system control nodes. These switches shall be located in the cab and easily accessible to the driver.

Electrical System:

The electrical system shall utilize Class1 Inc. **ES-Key™** technology and **UltraView™** displays..

The apparatus shall be equipped with a Class 1 ES-Key Management System for controlling electrical system devices. This management system shall be capable of performing load management functions, system switching, monitoring and reporting, and be fully programmable for a standardized electrical system utilizing the ES-Key Professional software program.

The ES-Key system shall utilize a Controller Area Network (J1939) protocol to provide multiplexed control signals for "real time" operation. The system shall consist of a main control module (Universal System Manager or Supernode II) and the appropriate combination of Power Distribution Module(s) (PDM), Switch Input Module(s) (SIM), and other I/O modules as required for the application.

Optional system enhancements may include the UltraView™ 700 display, the UltraView 450 display and 1Touch switch modules for increased graphic user interface.



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Supernode II™

The apparatus shall be equipped with a Class1 ES-Key™ system with a Supernode II™ high density input output node. The Supernode II™ shall have (24) polarity selectable inputs, (24) outputs, an integrated Universal System Manager (USM), Vehicle Data Recorder (VDR), Seat Belt Warning System (SBW), Climate Control Module (CCM), data logger, programmable special utilities, and select J1939 engine and drive train message reception with ES-Key™ I/O association. It must be sealed to IP-67 and have integrated power connections.

The Supernode™ shall have (18) positive and (6) negative outputs. Each positive output shall be capable of 13 amps continuous duty. The negative outputs shall be capable of 2 amps continuous duty. Supernode II™ outputs shall contain features such as digital circuit breaker, flash capability, PWM capability and open load detection.

The Supernode II™ special utility functions shall include timers (delay on/off and one shot), counters, bi-stable switches, and select J1939 broadcast messages. The Supernode II™ shall have an integrated USB port to allow for direct connection to the ES-Key system without additional interface devices.

The Supernode II™ shall have an integrated Load Manager. The Load Manager sequencer shall assure that loads are applied and removed gradually, thus eliminating the possibility of inducing failures in the vehicle's equipment.

The load manager shall be a precision, solid state controller which sequentially switches "ON" multiple circuits at 1/2 second intervals. Individual switches shall enable the user (Driver) to select output "ON or "OFF" status, at any time. The sequencer shall be initiated by the "Emergency Master" switch. The sequencer priority shall be set at the apparatus pre-build conference.

The aforementioned Load Manager shall monitor the vehicles battery voltage. Loads may be shed at any voltage at one tenth of volt increments. A low voltage warning may be set at any set point (usually 11.5 volts). The load manager can shed any output that is controlled by the system (there is no limit to the number of loads that may be managed by the network). The load shed priority shall be set by the circuit significance, followed closely by circuit draw. The Load Manager shall shed loads until the voltage level begins to rise.

Voltage Monitor: A voltage monitor shall be built into the ES-Key electrical system. It shall activate a warning when the alternator output voltage falls below any desired voltage (usually 11.5 volts).



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UltraView™ 700 Display

The apparatus shall be equipped with one (1) UltraView™ 700 display (UV700) on the driver operator center console. The UV700 is a 7 inch, full color LCD display, with (14) buttons and touch screen capability with (2) J1939 CAN Bus connections and (3) NTSC/PAL video inputs. It shall be bonded for direct sunlight viewing, sealed to IP67 and mounted in either the flush, pedestal or rear-mount position.

The UV700's switches shall be configured to allow for the control of emergency master and non-emergency master functions and are completely configurable via the ES-Key™ Professional software. Switches shall be set to act as momentary, maintained or three-way switches without any physical hardware change. All switches and or indicators may be configured as touch screen inputs into the ES-Key™ system. The (14) buttons are blue LED backlit.

ELECTRICAL SYSTEM - BASE:

All wiring and electrical equipment shall meet N.F.P.A. 1901 and SAE standards. All lighting and reflectors shall meet Federal Motor Vehicle Standards.

A master warning device switch that energizes all of the optical warning devices shall be provided.

The warning system on the apparatus shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right of way. The other mode shall signal that the apparatus is stopped and is blocking the right of way.

Switching shall be provided that senses the position of the park position of an automatic transmission. When the master warning system switch is closed, and the parking brake is released or the automatic transmission is not in park, the warning devices signaling the call for right of way shall be energized. When the master optical warning system switch is closed, and the parking brake is on or the automatic transmission is in park, the warning devices signaling the blockage of right of way shall be energized. The system shall be permitted to have a method of modifying the two signaling modes.

The warning devices shall be constructed or arranged to avoid the projection of light either directly or through mirrors into any driving or crew compartment(s).

Electromagnetic interference suppression shall be in accordance with SAE J551, performance levels and methods of measurement of electromagnetic radiation from vehicles and devices (30-1000 MHZ).



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Wiring grommets shall be provided through all panels for automotive type wiring with coated automotive type loom. Insulation shall be in accordance with SAE J1128, low tension primary cable, type SXL or GXL, and wired to SAE J1292, Automobile, Truck, Truck-Tractor, Trailer and Motor Coach wiring for such loading at the potential employed. All wiring installed by the Apparatus Manufacturer shall be stranded copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for which the circuit is protected. Voltage drops in all wiring from the power source to the using device shall not exceed 10 percent. Wiring shall be color and function coded the entire length with insulated bolted-down type hold-down clamps and mechanically secured connections. Overall covering of conductors shall be 280 degrees F. Minimum flame retardant, moisture resistant loom.

Hydraulic lines, air system tubing, control cables, and electrical lines shall be clipped to the frame or body structure of the apparatus and shall be furnished with metal protective looms or grommets at each point where they pass through body panels or structural members. Where any through-the-frame connector is provided, any such connector and wiring shall also be protected from shear or tear.

Wiring shall be provided with properly rated low voltage over current automatic resetting protective devices. Such devices shall be readily accessible and protected against excessive heat, damage and water spray. Switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. All electrical components shall be protected against corrosion, heat, vibration and moisture.

12-VOLT POWER DISTRIBUTION PANEL:

The 12-volt power distribution panel shall contain all major body/chassis electrical components, including but not limited to fuses, circuit breakers, relays, solenoids, power supplies, multiplex nodes, etc.

The power distribution panel shall be located in the left side forward most body compartment away from water and moisture.

This distribution panel shall have a removable door (with the same finish as the body compartment walls) and a recessed positive type door handle/latch.

BATTERY CONTROL SYSTEM:

Battery control shall be through the chassis ignition control wire.



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PRE-WIRED ANTENNA CABLES:

There shall be two (2) RG58U coax cables pre-wired by the body builder from the chassis cab roof to the center console.

"DOOR OPEN" WARNING LIGHT:

A red warning light shall be installed on the cab console and shall flash when any compartment door or entry door is open.

SPARE WIRES:

There shall be a minimum of two (2) spare wires installed in each loom running to the body of the vehicle.

COMPARTMENT PRESSURIZATION SYSTEM

The apparatus body will employ the PSS (Pressurized Storage system. This application will include dual PSS fans.

The PSS will introduce air into the compartment, pressurizing the unit with up to 95 CFM of clean air. This positive pressure air keeps dust and moisture out of the compartments and off the equipment contained in those compartments.

COMPARTMENT STRIP LIGHTING:

Hansen International "Brilliant White" LED modular compartment lighting systems shall be installed all compartments to provide even, full height lighting for the compartment without interference from shelves or equipment.

There shall be a protected strip installed on both sides of the opening and shall run the full height of the compartment. Lights shall be activated by a magnet switch when opening the compartment door.

This lighting system employs a design that incorporates the following feature set:

- Mounting system allows for indexing of up to three (3) angled positions for Focused illumination.
- Standard 12v. D.C. solid state operation with 24" connective pigtail.
- 120 lumens per foot, rated at 50,000 hours
- Waterproof to IP66 rating and is shock and vibration resistant
- Snap in feature for easy installation and service if necessary.



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- Mfg. in the USA
- Exceeds NFPA 1901, current edition.

Color: Shall be white.

ROOF MOUNTED SPOT LIGHT

One (1) roof mounted Go-Light, model 30064, chrome LED spotlight shall be mounted behind the light bar. The light shall be mounted on a pedestal to allow the light to rotate 360° without interference. The unit will be provided with a handheld wireless remote and a wireless dash mounted remote control, model 30200 located on the cab console.

ELECTRONIC SIREN:

One (1) Whelen, model 295HFS2, electronic siren with noise canceling microphone shall be installed in the cab. Siren shall include functions: wail, yelp, manual, hands-free, piercer tones, PA and radio-rebroadcast.

SPEAKER SYSTEM:

There shall be one (1) siren speakers recessed in the front bumper. Each speaker shall be a Whelen, Model SA 122FMP, cast aluminum, 100 watt, flange mount with polished aluminum finish. The speakers shall be wired to the siren head.

FRONT LIGHT BAR:

One (1) A Whelen Edge® Freedom® IV F4R Rota-Beam™ Series Super-LED® 60" Lightbar model # F4R0RRRR shall be provided. The lightbar shall incorporate the new "Rota-Beam" lamp technology in combination with linear Super LED modules in a anodized extruded heavy duty aluminum base and cover chassis.

The lightbar will contain seven (7) front front facing warning lights. There shall be three (3) front facing Rota-Beam modules, two (2) linear modules and two (2) front Rota-Beam corner modules. The lights will all be red with the exception of the center Rota-Beam which shall be white.

The "Rota-Beam" warning light modules shall incorporate Super-LED® technology in a 180° horizontal light spread. All electronic components shall be conformal coated to provide additional protection.



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FRONT LOWER WARNING LIGHTS:

There shall be two (2) Whelen M2 series Super LED lights with red LEDs, red lens and chrome bezels installed on the front chassis grill area of the cab.

SIDE UPPER WARNING LIGHTS:

There shall be four (4) red Whelen M9VR "V-Series" Super LED upper warning lights with chrome bezels installed. The lighthouse shall be the "Two-In-One" Warning/Scene Light assembly. The warning lamp assemblies shall be red LED's with red clear lens.

Two (2) warning lights shall be mounted on the left upper body panel.
Two (2) warning lights shall be mounted on the right upper body panel.

SIDE LOWER WARNING LIGHTS:

There shall be six (6) red Whelen M2 Super LED upper warning lights with chrome bezels installed. The warning lamp assemblies shall be red LED's with clear lens.

Two (2) warning lights shall be mounted on the lower body in the forward rear wheel well area.

Two (2) warning lights shall be mounted on the left and right front fenders.

Two (2) warning lights shall be mounted on the lower left and right rear bumper tail.

SIDE BODY SURFACE MOUNT SCENE LIGHT:

Whelen Pioneer Plus™ Model # PCPSM2C shall be provided. The 154 watt +12v DC dual Pioneer lighthouse shall incorporate Super-LED® combination flood/spot light installed in ABS Cycloc™ resin surface mount housing. The surface mount housing will be chrome plated. The PCPSM2C configuration shall consist of 24 white Super-LEDs for the spot light with a specialized spot reflector on the bottom, 48 white Super-LEDs in the flood light with a clear optic collimator/metalized reflector assembly on the top, and a clear non-optic polycarbonate lens. The Pioneer flood/spot light shall have 16,000 usable lumens. The PCPSM2C new combination optic design projects light directly down at 5° and producing illumination to the side of the vehicle arching upward to a 90° pattern of light.



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The lens assembly shall utilize a liquid injected molded silicone gasket to be resistant to water, moisture, dust, and other environmental conditions. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The PCPSM2C shall be shall be vibration resistant. The Pioneer™ PC boards shall be conformal coated for additional protection. One breathable membrane patch shall be installed on the rear of the housing to maintain a consistent internal pressure. The PCPSM2C shall have extended LED operation with low current consumption and low operating temperature.

The PCPSM2C shall be furnished with a 2' 2/C 18GA unterminated Heyco® cable. The Pioneer shall have the ability to flash as a secondary warning light in the "Clearing Right of Way" mode when installed with an external flasher, model number PFLASH, purchased separately. The Pioneer shall be SAE 1113-42 compliant and Class 5 testing for EMI. The PCPSM2C is covered by a five year factory warranty. The PCPSM2C shall have built-in nylon screw grommets eliminating galvanic corrosion. The surface mount Pioneer requires no body cut-out. The PCPSM2C shall have a uniquely designed molded two part silicone grommet to seal the 1" wire entry into the body.

Voltage: +12v DC
Size: H=6.37", W=", D=1.72
Amp Draw: 12 Amps
Lens Color: Clear

SIDE SCENE LIGHT LOCATION

The scene lighting located on the left and right sides of the body shall be mounted in the upper center of the body side panel.

SIDE SCENE ACTIVATION

The scene lights shall be activated by two switches located in the ultra-view, one (1) for the left side, and (1) for the right side. These shall be switched and operate separately from the scene light portion of the Whelen "V" series warning lights.

REAR UPPER WARNING LIGHTS:

There shall be two (2) red Whelen M9VR "V-Series" Super LED upper warning lights with chrome bezels installed. The lighthouse shall be the "Two-In-One" Warning/Scene Light assembly. The warning lamp assemblies shall be red LED's with red lens.

One (1) warning lights shall be mounted on the left upper body panel.
One (1) warning lights shall be mounted on the right upper body panel.



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REAR BODY SCENE LIGHTS:

There shall be two (2) Whelen Pioneer Series model PCPSM1C Single panel surface mount upper side body scene lights with chrome housing installed.

The PCPSM1C configuration shall consist of 12 white Super-LEDs for the spot light with a specialized spot reflector on the bottom, 24 white Super-LEDs in the flood light with a clear optic collimator/metalized reflector assembly on the top, and a clear non-optic polycarbonate lens. Each lamp head shall draw 6.0 amps and generate 7,800 lumens.

Each lamp head shall measure 6.37 inches in height X 8.97 inches in width. Each lamp head housing shall be chrome plated.

SCENE LIGHT LOCATION

The body shall include one (1) Whelen Pioneer model PCPSM1C LED surface mount lights installed one (1) on each side.

One (1) warning lights shall be mounted on the left upper body panel.

One (1) warning lights shall be mounted on the right upper body panel.

SCENE LIGHT ACTIVATION

The scene lights shall be controlled for each individual side, in pairs, at the cab console and shall also activate with reverse.

The scene lights shall be activated by two switches located in the ultraview, one (1) for the left side, and (1) for the right side. These shall be switched and operate seperately from the scene light portion of the "Whele "V" series warning lights.

TRAFFIC DIRECTING LIGHT BAR:

A Whelen Traffic Advisor light bar, model TADF8, shall be installed on the rear of the unit. The lightbar shall be 45.12" long.

The module will be mounted above the rear body sides in a diamond plate box.

A control box shall be mounted in the cab.

REAR TURN SIGNAL, BACK-UP AND BRAKE LIGHTS:

The rear turn signal, backup and stop/tail lights shall be a Whelen M6 series LED four (4) light cluster.



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The top brake light shall be a Whelen M6 series LED red combination stop/tail light.
The rear turn signal shall be a Whelen M6 series LED amber turn signal.
The backup light shall be a Whelen M6 series LED white back-up light.
The bottom light shall be a Whelen M6 series LED red flasher.

One (1) 4-light cluster shall be mounted on the right and one (1) cluster on the left rear of the body.

BACK-UP ALARM:

There shall be an electronic back-up alarm with momentary cut off switch installed and shall be activated when the chassis is shifted into reverse.

REAR / SIDE MOUNTED CAMERA:

There shall be a Safety Vision rear mounted rear vision camera installed. System shall include one (1) camera mounted in the rear pump operators panel and one (1) camera mounted ahead of the cab door on the right-hand chassis fender to provide visibility to the driver with the rear and right side vision video image to be displayed on the Class 1 UltraView screen on the cab center consoler cab.

LED CLEARANCE LIGHTS:

Nine (9) clearance lights, seven (7) red and two (2) amber, shall be installed to meet ICC, FMVSS and other applicable regulations.

Akron/Weldon 9186-1500 Series, LED Marker Lamp, 1.1" X 2.59"

These lamps utilize LED technology for unsurpassed life and reliability. Two lead wires exit for isolated ground or chassis connection. Use the 0J10-1200 brush guard for added durability.

- Low amp draw
- Sonic-welded base and lens
- Offered in a variety of colors
- Stainless brush guard

9186-1500-10 LED clearance/marker, red 0.05

9186-1500-20 LED clearance/marker, amber 0.05

9186-1501-30 LED utility, clear 0.05

9186-1501-40 LED utility, blue 0.05

9186-1501-50 LED utility, green 0.05

0J10-1200-00 Brush guard, stainless steel

0D10-1530-00 Repl. mounting pad



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Four (4) reflectors shall be installed, one (1) pair each side of the vehicle

REAR STEP LIGHTS:

Two (2) Whelen PELCC LED step lights will be installed on the rear body bulkhead immediately above the rear step bumper. The light(s) shall be activated when the ground lights are illuminated.

LED UNDERBODY LIGHTS:

There shall be Eight (8) TecNiq Series E10-WS00-1 LED under body lights installed under the cab doors and on the center left and right sides and rear of the body.

Lights shall be mounted with a Stainless Steel bracket and activated by a switch on the cab console or if the emergency brake is set and the vehicle park lights are active.

LICENSE PLATE BRACKET:

A Cast Products aluminum rear license plate holder will be provided with the rescue vehicle. Holder will have two (2) top lights for illumination. The lights will automatically activate when the head light switch is energized. The holder shall be mounted on the rear of the body.

SKID UNIT AND RELATED SYSTEMS:

WATERAX PUMP, TRIDENT FOAM-MATE & PRO POLY SKID UNIT

PUMP

WATERAX B2X-18 Vehicle Mount Horizontal Drive Pump Specification

Pump Performance and Rating:

The pump/engine shall perform to the standards of ISO 9 and NFPA 1906 medium pressure rating of 50 GPM. Typical pump performance from 5 foot draft under standard NFPA conditions shall be 65 GPM @ 150 PSI, 155 GPM @ 100 PSI, 223 GPM @ 75 PSI, and 255 GPM @ 50 PSI. The pump shall provide a maximum pressure of 190 PSI and a maximum flow of 300 GPM. It shall be capable of operating to a maximum pressure of 400 PSI and be capable of passing a hydrostatic test of 300 PSI for 10 minutes per NFPA 1906 specifications.

Pump Suction/Discharge Ports: The pump intake shall be a 3" Female NPT/4" Victaulic combination and be an integral part of the pump intake cover. The pump discharge shall be a 2-1/2" Female NPT/3" Victaulic combination and be an integral part of the pump body. The pump intake and discharge shall be in locations where applicable hose thread adapters can be installed without



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interference.

The pump shall be a 2-stage centrifugal pump with the pump body, diffusers, and impellers made of an anodized corrosive resistance aluminum. The impeller must be aluminum to match the pump body and diffusers in order to prevent galvanic corrosion from taking place between pump components. The impellers shall be 4.00 inches in diameter.

The pump shaft shall be stainless steel supported by two maintenance free bearings and shall not be co-linear to the engine's drive shaft. A sealed roller bearing shall be located externally from the pump and a sintered bronze bushing shall be located within the pump cover. In addition, the pump seal shall be a mechanical rotary seal, shall be externally pressurized and shall incorporate a blister-resistant carbon seal face, silicon carbide seat, and fully integrated drive bushing.

The pump shall be coupled to a horizontal belt driven speed increaser with a quick release clamp capable of being removed by hand and without any additional tools.

The quick release clamp system shall allow for the entire pump assembly, pump body with all its internal and external components, to be removable and capable of being service at a location away from the gasoline engine and fire apparatus upon which it was part of. It shall also allow for the swapping out of the same or different performance pump assemblies within a minute's time.

The horizontal belt driven speed increaser shall be a low maintenance timing belt and pulley system. The belt shall be a high quality timing belt and the drive pulley shall mount directly on the engine drive shaft through a means of a keyed tapered locking device. The increaser shall be a 1 to 1.88 ratio. In addition, a dampening device shall be provided between the pump shaft and pump shaft pulley. Both the pump and horizontal speed increaser shall be painted red.

Engine

The engine shall be a Briggs and Stratton, model 350400 Vanguard V-Twin air cooled, overhead valve (OHV) design which delivers a maximum output of 18 HP @ 4,000 RPM. The engine shall have a displacement of 34.75 cubic inches. The engine shall be four-cycle, gasoline fueled with a horizontal drive shaft.

Lubrication

The lubrication shall be the full pressure system type with an automotive style oil filter. The engine shall be fitted with an oil fill tube with a dipstick.



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Starter

The engine shall be equipped with a 12 volt electrical starter and a manual recoil for emergency usage.

Fuel Tank

A fuel tank shall be provided and connected to the skid unit engine. This fuel tank shall be as large as possible and shall be connected to the pump and labeled "GASOLINE ONLY".

Pump

The pump shall be the transfer - supply type with a 3" female NPT intake and a 2.5" discharge connection.

Volute Body and Head

High strength aluminum alloy, anodized for superior corrosion resistance.

Impeller

High strength corrosion resistant silicone bronze and mechanically balanced to eliminate vibrations.

Primer

The pump shall be equipped with a manual exhaust primer.

Throttle Control

The engine shall be controlled with a throttle for precise engine RPM control.

Console

A custom manufactured black vinyl operator's panel shall be provided and shall include:

- One (1) 2.5" liquid filled suction pressure gauge
- One (1) 2.5" liquid filled discharge pressure gauge
- Engine Throttle Control
- Engine Choke Control
- Electric Primer Control



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Low Oil Pressure Warning Light
Start and Stop Controls
Led Horizontal Panel Light with Stainless Shield
12 Volt Water Level Gauge
12 Volt Foam Level Gauge

All functions requiring labels shall have named labels with chrome plated label bezels.

Base

The pump/engine unit shall have rubber isolators on the right and left sides for mounting the engine/pump assembly to the skid base plate.

Piping

All piping shall be stainless steel welded and threaded pipe or high pressure flexible type hose. All suction and discharge valves shall be controlled with handles attached directly to the valve and shall be easily accessible from the rear of the unit.

Valves

All valves shall be heavy-duty fire service style Stainless Steel ball type valves with rod and ball type control handles. All valves shall be the drop out style for ease of repair and/or replacement without disturbing existing plumbing systems.

SUCTIONS

There shall be a 2.5" gated suction inlet at the rear of the unit. This suction shall be controlled with a quarter turn, in-line, ball valve with a female NST chrome swivel, plug, and chain.

There shall be a 2.5" tank to pump suction line with a 2.5" quarter turn, in-line, ball valve.

DISCHARGES

There shall be a 2.5" NST male discharge at the rear of the unit with a 2.5" quarter turn, in-line, ball valve controlled directly at the valve with a control handle. This discharge shall have a 2 1/2" X 1 1/2" chrome reducing adapter with an 1.5" chrome plated cap and chain.

There shall be a 1.5" NST male discharge at the rear of the unit with a 1.5" quarter turn, in-line, ball valve controlled directly at the valve with a control handle. This discharge shall have a 1.5" chrome plated cap and chain.



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There shall be a 1" pump-to-tank fill line with a 1" quarter turn, in-line, ball valve controlled directly at the valve with a control handle.

WATER/FOAM LEVEL GAUGE

The apparatus shall be equipped with a Class1 "ITL-40" Tank Level Gauge for indicating both water and foam level. The Tank Level Gauge shall indicate the liquid level or volume on an easy to read LED display and show increments of 1/8 of a tank.

Each tank level gauge system shall include:

- 1) A pressure transducer that is mounted on the outside of the tank in an easily accessible area. Sealed foam tanks will require zero pressure vacuum vents.
- 2) A super bright LED display viewable from 180 degrees with a visual indication at nine accurate levels.
- 3) A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power. Additional (slave) displays (if requested) are to be easily integrated and will receive data from the same source as the Master Display. No additional transducers shall be required.
- 4) The system shall include the ability to display "text messages"
- 5) The system shall include built-in diagnostic capabilities.

IN-CAB TANK LEVEL GAUGE

An additional in-cab slave display for both water & foam will be integrated and will receive data from the same source as the master display, and included on the console control panel. No additional transducers shall be required.

BOOSTER REEL

One (1) Hannay 1" polished aluminum electric re-wind hose reel shall be installed on a platform fabricated to the rear of the poly tank and above the pump assembly. It will be designed in a manner to allow the hose to exit either to the rear of the apparatus with spool and rollers to accommodate deployment from that point to either side of the apparatus.



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This reel shall be provided with a three sided stainless steel roll and spool roller system at the reel assembly on both sides of the reel. The reel shall incorporate the manual crank rewind feature to allow the capability to rewind the hose in event the electrical system should encounter difficulty in operation.

One electric re-wind switch provided at the rear pump operators control panel for ease of hose re-winding.

BOOSTER HOSE

Two (2) 1" x 100' lengths, 800 PSI, light weight, "Reel-Tex" booster hose with couplings, shall be provided on each booster reel.

FOAM SYSTEM

A Trident FOAMATE 1.0 "Around-the-Pump" Class A foam proportioner system shall be installed into the pump plumbing. The foam system controls will be mounted in the pump operators control panel.

The unit is calibrated for various education ratios with settings **OFF - thru - 1%**

The unit is variable for flow rates of up to 400 gallons per minute.

WATER TANK

A 300 gallon tank shall be provided and constructed of 1/2" thick PT2 polypropylene sheet stock which is a non-corrosive stress relieved thermo-plastic.

The Booster Tank Shall Have The Following Features:

- A) Mounted in the open body cavity.
- B) Tank construction shall be of 1/2" polypropylene sheet stock. All joints and seams shall be nitrogen-welded and tested inside and out for maximum strength.

The top of the booster tank shall be fitted with lifting eyes designed with a 3 to 1 safety factor to facilitate easy removal.



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The transverse swash partitions shall be manufactured of 3/8" PT2 polypropylene and extended from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" PT2 polypropylene and extended from the floor of the tank through the cover to allow for positive welding. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions shall interlock with one another and shall be welded to each other as well as to the walls.

C) Tank shall be properly baffled, longitudinal and transverse, and meet all NFPA-1901 requirements.

D) A tank fill tower shall be provided and located on right corner. The tower shall be 10" x 10" with a cover, a screen type strainer and a label stating "**WATER FILL**".

E) An air escape vent shall be installed inside the tank to allow maximum fill capacity should the vehicle be parked on unlevelled ground. The pipe shall be vented to the fill tower area above the overflow level.

F) All tank fittings and plumbing shall be PVC mechanically locked and totally sealed from the inside.

G) The tank sump shall be located at the front with no more than two ells to the pump.

H) A 2 1/2" recessed threaded insert shall be welded to the tank for connection to the pump for the tank suction line.

I) A 1.5" recessed threaded insert shall be welded to the tank for connection to the pump for the tank fill.

J) Two (2) threaded inserts shall be welded to the tank for connection of the water and foam level tank gauge sensors.

Water Tank Warranty:

A "Lifetime" maintenance free warranty to the original purchaser shall be provided, barring accidents or abuse.

FOAM TANK

A special 15 gallon integrated foam cell shall be provided integral with the water tank and piped to the foam system with shut-off valve on the pump panel. The tank shall have a pressure-vacuum vent



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valve and a fill tower with cover for filling tank from 5 gallon foam pails.

The tank shall be equipped with a 3/4" gate valve drain with hose extended under chassis frame rails. The foam fill cover shall be labeled "FOAM FILL ONLY".

MOUNTING

The tank shall be welded to a 1" x 6" beam skid assembly fabricated of 1" thick polypropylene, UV stabilized. This skid is to be approximately 96" long, 48" wide and include a .5" thick polypropylene pump platform.

SKID UNIT MOUNTING AND CONNECTION

The skid unit shall be mounted into the vehicle body cavity and shall be securely bolted into place using minimum 3/8" stainless steel bolts.

The skid unit shall be connected into the chassis 12 volt electrical system and a full systems check will be performed.

SKID UNIT RISERS

Four (4) minimum 1/2" thick 6" high Poly skid risers shall be installed to provide for storage under the skid unit.

BUMPER TURRET

A Task Force "Tornado" CE remote control front bumper turret shall be mounted on the center of the front bumper. The turret shall be remote controlled from the interior of the cab. The turret shall be supplied with a 2" supply line and a 2" electrically controlled valve with the control switch also located in the cab to be incorporated in the complete console package.

The turret shall have a range of 185 degrees to the left and 185 degrees to the right, with an upper range of 90 degrees of motion and 45 degrees of downward motion. The turret shall mounted on a removable extension riser and be visible from the driver's seat. Match reference photos.

This turret monitor shall have a 1.5" HMD-TO-ERP full range remote controlled nozzle with a capacity of 10 to 125 GPM.

Both the monitor sweep and elevation controls and the nozzle flow controls shall be located in the cab. The monitor controls shall be a Joy Stick type control and the nozzle controlled by a control switch all provided by TFT.



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WHELEN PIONEER TELESCOPING LED SCENE LIGHTS:

Two (2) 12-volt Whelen MPKWS LED lights shall be provided and mounted on Whelen Micro Pioneer telescopic poles, model 86930QB3, on the rear of the apparatus body. The light shall be wired to the chassis 12-volt system. The light heads shall be adjustable with a hand screw to loose and adjust to difference angles.

Two (2) switches to be provided inside the cab at the electrical console for the 12 volt telescoping floodlights, one to control each light.

One (1) light shall be mounted on the Driver's side front corner of the apparatus body. One (1) light shall be mounted on the Passenger's side front corner of the apparatus body.

Each light assembly will be assembled on a Whelen 86930QB3 Side Mount Push-up Pole, 57 inches in length. The (DC) wiring shall exit the bottom of the pole assemble, 12 in. Outer Body, Bottom Collar Placement, Silver, 3 in. Side Mount Bracket, Include Pole Cradle, Include Light Position Sensor to be wired to the "Do Not Move Apparatus" indicator in the chassis cab.

The light(s) will be activated when either they are raised from the pole cradle, or by individual switches on the cab console.

******* UNDERCOATING *******

UNDERCOATING:

The underside of the vehicle including all under-structure metal work shall be sprayed with black automotive undercoating.

This undercoating shall aid in preventing corrosion and will provide sound and vapor barriers to the aluminum body structure work.

Undercoating will not be applied within 12" of the exhaust system.

******* CORROSION PROTECTION *******

CORROSION PROTECTION:



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Electrolysis Corrosion Kontrol (ECK) shall be used to prevent dissimilar metal corrosion. ECK shall be used for door latches, door hinges, trim plates, fenderettes, etc. ECK shall be applied to every external fastener hole prior to component mounting.

******* PAINT *******

APPARATUS BODY PAINT FINISH:

The final finish of the apparatus shall conform to fire apparatus standards, exhibiting excellent gloss and color retention properties.

Preparation:

Since the removal of all contaminants and oxidation is essential to the final effect of a finish system, the apparatus shall be pre-cleaned with wax and grease remover and towel dried to evaporation.

A 10-step standard body preparation shall be completed.

When the substrate is prepared, the entire body shall be cleaned by washing again with wax and grease remover and towel dried.

Pretreat ANF Primers:

The pretreat and primer applications shall be made in two (2) independent steps. An application of a combined pretreat/primer product shall not be allowed as a substrate. The prepared substrate shall be pretreated with Acid Curing 2 component primer. This pretreat shall be designed to provide corrosion protection and create an adhesive bond between the substrate and the surface applications.

To enhance adhesion and topcoat gloss, a 2-component urethane primer shall be applied. All the primed surfaces shall be sanded smooth, thus removing all texture and surface imperfections and creating a finish base that will meet the rigid requirements of the fire and emergency services.

Top Coats:

Paint shall be PPG

Two (2) coats urethane base coat shall be applied in a professional manner. After the base coats have cured properly, two (2) coats of a high solids urethane clear shall be applied. All surface imperfections shall be removed by buffing and polishing.



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PAINTED ROLL-UP DOORS:

The roll up doors shall be painted to match the body color.

******* LETTERING *******

LETTERING:

No lettering shall be supplied.

******* STRIPING *******

4" SCOTCHLITE STRIPE:

A four inch (4") high white "Scotchlite" stripe will be provided. Details to be determined after award of the bid.

REAR BODY CHEVRONS

Chevron striping shall be applied to at Least 50% the entire rear body wall.

The chevrons shall consist of 6" wide "diamond grade" reflective striping at 45 degree angles from the tailboard in an inverted "V" pattern. The chevron style striping shall be applied at a 45-degree upward angle pointing towards the center upper portion of the rear panel.

The stripes shall alternate in a manner as red reflective, yellow reflective, red reflective, etc....

******* MISCELLANEOUS EQUIPMENT *******

******* REQUIREMENTS PRIOR TO DELIVERY *******

