



FOUTS 4

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SCOPE AND GENERAL REQUIREMENTS

It is the intent of the manufacturer to provide a new fire apparatus that will withstand the continuous use encountered in the emergency firefighting service. The apparatus shall be of the latest type, symmetrically proportioned and constructed with due consideration of the load to be sustained.

All parts not specifically mentioned herein, but which are necessary in order to furnish a complete fire apparatus, shall be furnished and shall conform to the best practices known to the fire apparatus industry.

The unit is to be of current year manufacture and is to be new and unused. The bid price shall not include any local, State, or Federal taxes. The Bidder shall not be liable for any State or Federally mandated tax or program after the sale of this apparatus.

These specifications shall be construed as minimum. Should the manufacturer's current published data or specifications exceed these, they shall be considered minimum and be furnished.

PRIME BIDDER, MANUFACTURER

The manufacturer shall be prime bidder and shall identify the location of their facility.

BIDDERS BACKGROUND

Bids are requested from responsible manufacturers who are engaged in the manufacture of fire apparatus. To insure reliable and complete acceptance of the apparatus, bidder shall have been in operation for a minimum of twenty (20) years in the manufacturing of fire apparatus.

The manufacturer of the apparatus must be fully owned and managed by a Parent Company, Corporation, or Individual(s) that is 100% held by United States of America based Company, Corporation, or United States citizen(s).

Proposals from any manufacturer that is fully or partially owned and/or operated by a foreign company, Corporation or Individual(s) under any type of ownership, partnership, or any similar type of agreement will be immediately rejected.

If the manufacturer of the apparatus, or if any owner, shareholder, or immediate relative of an owner or shareholder that has previously been involved in or held ownership in any company that has filed bankruptcy or any other type of reorganization plan, it must be clearly stated in the bid proposal. The statement must include details and dates of all occurrences.

FAMA COMPLIANCE

The apparatus manufacturer must be a current member of the Fire Apparatus Manufacturer's Association (FAMA) and must provide certificate of membership.

FAIR, ETHICAL AND LEGAL COMPETITION

In order to ensure fair, ethical, and legal competition the apparatus manufacturer shall have ever been fined or convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market.

PROPRIETARY PARTS

It is the intention of the purchaser for all bidders to furnish the apparatus with major parts commonly used by the heavy-duty truck manufacturers and open market vendors where as replacement parts are more readily available and at reduced cost. The use of proprietary parts may not be acceptable to the purchaser.

MANUFACTURER'S DISCRETION

Materials, parts, or procedures used are subject to change at manufacturer's discretion at any time to provide equal or better products.

COOPERATIVE PURCHASING

The manufacturer shall be pleased to allow other public agencies to use the purchase agreement resulting from this invitation to bid unless the bidder expressly notes on the proposal form that prices are not available for tag-on. The condition of such use by other agencies shall be that any such agency must make and pursue contact, purchase order/contract, and all contractual remedies with the successful bidder. Such tag-ons shall be done so that the purchaser has no responsibility for performance by either the manufacturer or the agency using the contract.

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.

INSURANCE REQUIREMENTS

Each bidder must submit with their bid proposal a Certificate of Insurance listing the proposed manufacturer's product liability insurance coverage. Liability insurance shall be a minimum amount of ten (10) million dollars. Submitted certificate shall name the apparatus manufacturer, insurance company, policy number, and effective dates of the insurance policy. Bids submitted without the required certificate will be considered non responsive and automatically rejected. No exceptions are allowed to the minimum insurance coverage requirement.

The manufacturer shall maintain full insurance coverage on the purchaser's cab and chassis from time of first possession by the manufacturer until the apparatus is delivered and accepted by the purchaser (No Exceptions). Purchaser reserves the right to require proof of insurance from the manufacturer's insurance carrier prior to entering into a contract for the apparatus.

PAYMENT TERMS

Full payment for the apparatus shall be made at time of delivery of the completed vehicle. Due to insurance liability, the apparatus will not be left at the purchaser's location without full acceptance and payment or prior agreement between the Purchaser and Bidder.

Final delivery price shall not include any Local, State or Federal taxes. The manufacturer shall not be liable for any State or Federal mandated tax or program after sale or delivery of the apparatus.

VEHICLE ACCEPTANCE AND DELIVERY

The customer shall pickup the vehicle at the manufacturing facility and shall supply evidence of sufficient insurance coverage to transport the vehicle.

FUEL TANK FILLED AT DELIVERY

The fuel tank and DEF tank (if applicable) shall be filled upon final delivery at the factory.

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, as detailed in the respective warranty documents. Any unauthorized alterations or modifications to the apparatus shall void this warranty.

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

APPARATUS BODY WARRANTY, TEN YEAR

The apparatus body as detailed herein shall have a structural warranty against defects in materials and workmanship for a period of ten (10) years, effective upon final payment in full by the Purchaser, and pick up or delivery of the completed apparatus to the Purchaser. Any unauthorized alterations or modifications to the body shall void this warranty.

PLUMBING WARRANTY, TEN YEAR

A Stainless-Steel Plumbing/Piping warranty shall be provided by the apparatus manufacturer for products of its manufacture to be free from defects in material and workmanship, under normal use and service, for a period of ten (10) years effective upon final payment in full by the Purchaser, and pick up or delivery of the completed apparatus to the Purchaser. Any unauthorized alterations or modifications to the plumbing shall void this warranty.

PAINT WARRANTY, FIVE YEAR

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 final payment in full by the Purchaser, and pick up or delivery of the completed apparatus to the Purchaser. Any unauthorized alterations or modifications to the apparatus shall void this warranty.

APPARATUS ELECTRICAL WARRANTY, TWO YEAR

The apparatus electrical system as detailed herein shall have a electrical warranty against defects in materials and workmanship for a period of two (2) years, effective upon final payment in full by the Purchaser, and pick up or delivery of the completed apparatus to the Purchaser. Any unauthorized alterations or modifications to the electrical system shall void this warranty.

APPARATUS DIMENSIONS

These are standard truck dimensions. Changes in configuration or additional options may affect these dimensions. The contract specification shall contain the exact dimensions.

OVERALL HEIGHT

The overall height shall be less than 96.00".

OVERALL LENGTH

The overall length shall be no longer than 26.00'.

OVERALL WIDTH

The overall width of the body shall be 96.00" wide; chassis mirrors will extend out past this width.

PUMP HOUSE DIMENSIONS

The pump house shall be 24.00" wide.

ANGLE OF APPROACH

The angle of approach for the apparatus shall not be less than eight (8) degrees as specified by the current edition of NFPA 1901/ 1906.

ANGLE OF DEPARTURE

The angle of departure for the apparatus shall not be less than eight (8) degrees as specified by the current edition of NFPA 1901/ 1906.

NFPA COMPLIANCE

The National Fire Protection Association standard #1901 (most recent edition) is hereby adopted and made a part of these specifications, the same as if they were written out in full detail, insofar as they apply with the exception of any sections dealing with "Equipment Recommended for Various Types of Apparatus". Bidders are to provide only the equipment requested herein and the Department will supply the rest before the apparatus is put into service. The unit shall comply with all federal, state, ICC, and DOT motor vehicle regulations, standards, and laws relating to commercial vehicles as well as to fire apparatus on the date of the bid.

ROAD TEST CERTIFICATION

A road test shall be conducted with the finished apparatus fully loaded. During this time, the apparatus shall not show loss of power and/or overheating. The transmission driveshaft or shafts and rear axle shall run free from abnormal vibration or noise throughout the operating range of the apparatus. The apparatus, when loaded, shall have not less than 25% or more than 45% of the weight on the front axle and not less than 55% or more than 75% on the rear axle.

- A). The apparatus must be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed RPM of the engine.
- B). The apparatus must be capable of accelerating from a steady speed of 15 mph to a true speed of 35 mph within 30 seconds. This shall be accomplished without moving the gear selector.
- C). The fully loaded apparatus shall be capable of obtaining a speed of 50 to 55 mph on a level concrete highway.
- D). The manufacturer shall furnish copies of the engine installation approvals signed by the appropriate engine company upon delivery of the chassis to the Fire Department.
- E). The manufacturer shall furnish copies of the transmission approval signed by the transmission manufacturer upon delivery of the chassis to the Fire Department.
- F). The manufacturer shall furnish copies of the front and rear axle approvals upon delivery of the apparatus to the Fire Department.

ROAD TEST FAILURE

In the event the apparatus fails to meet the test requirements of these specifications on the first trials, second trials may be made at the option of the manufacturer within thirty (30) days of the first trials. Such trials shall be final and conclusive and failure to comply

with changes, as the purchaser may consider necessary to conform to any clause of the specifications within thirty (30) days after notice is given to the manufacturer of such changes, shall be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser, or its use by the purchaser during the above-specified period with permission of the manufacturer, shall not constitute acceptance.

CAB SAFETY SIGNS

The following safety signs shall be provided in the cab:

- One (1) FAMA 10 sign shall be visible to the driver. "Flying Object Crash Hazard. All equipment required to be used in emergency response must be securely fastened. Loose items may injure or kill during a crash."
- One (1) FAMA 07 sign shall be visible from each seat. "Crash Hazard. Occupants must be seated and belted when vehicle is in motion. Use only OEM approved belts. Unbelted occupants
- One (1) FAMA 15 sign shall be visible from each seat. "Crash Hazard. Do not wear helmet while seated. Serious head or neck injury may result from helmet use in cab. Failure to comply may injure or kill."
- One (1) FAMA 17 sign shall be visible to the driver. "Backing Hazard. Ensure that personnel are clear before driving in reverse. Always use a spotter when backing. Failure to comply may injure or kill.
- One (1) FAMA 42 sign shall be inside of the driver door. "Sirens produce loud sounds that may damage hearing. Roll up windows. Wear hearing protection. Use only for emergency response. Avoid exposure to siren sound outside of vehicle."
- "Do Not Move Apparatus When Light Is On" sign adjacent to the warning light indicating a hazard if the apparatus is moved (as described in subsequent section).

CHASSIS DATA LABELS

The following information shall be on labels affixed to the vehicle:

Fluid Data:

- Engine oil
- Engine coolant
- Chassis transmission fluid

- Pump transmission lubrication fluid
- Pump primer fluid (if applicable)
- Drive axle(s) lubrication fluid
- Air conditioning refrigerant
- Air conditioning lubrication
- Power steering fluid
- Cab tilt mechanism fluid (if applicable)
- Transfer case fluid
- Equipment rack fluid (if applicable)
- Air compressor system lubricant
- Generator system lubricant (if applicable)

Chassis Data:

- Chassis Manufacturer
- Production Number
- Year Built
- Month Manufactured
- Vehicle Identification Number

Location shall be in the driver's compartment of the chassis cab.

OVERALL HEIGHT, LENGTH, GVW DATA PLAQUE

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, the overall length of the completed apparatus in feet and inches.

The plate shall also show the gross vehicle weight rating (GVWR) in tons.

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.

"NO RIDE" LABEL

A label shall be located on the vehicle at the rear step areas, and at any cross walkways, if they exist. The label(s) shall warn personnel that riding in or on these areas while the vehicle is in motion is prohibited.

COMMERCIAL CHASSIS SPECIFICATION

CHASSIS PROVIDER

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

CHASSIS

One (1) new FORD F-550 rear axle drive 4x4, dual rear wheels (DRW), four (4) door crew cab and chassis with XL trim.

Wheelbase: 203.70"

Cab to Axle: 84.00"

PAYLOAD PLUS UPGRADE PACKAGE (68M)

- Increases GVWR from 18,000 lbs. to 19,500 lbs.
- Increases max RGAWR to 14,706
- Low Deflection/High Capacity Rear Springs
- Upgraded frame
- Upgraded rear-axle

Electronic Shift-On-the-Fly (ESOF)

SKID PLATE

Transfer Case Skid Plate Shield

POWERTRAIN

Powerstroke 6.7L V-8 OHV direct diesel injection 32 valve intercooled turbo diesel engine.

Rated Brake Horsepower: 300 HP @ 2800 RPM

Rated Torque: 660 lb.-ft. @ 1,600 rpm

Stationary Elevated Idle Control, SEIC

Exhaust System: horizontally mounted, discharge on right side aft of wheels

Transmission: Six speed automatic with overdrive.

FIRE/ RESCUE PREP PKG w/EPA SPECIAL EMISSIONS (LPO)

Includes 7,000 lbs. max front springs/GAWR rating for configuration selected. Incomplete vehicle package - requires further manufacture and certification by a final stage manufacturer. Ford urges Fire/Rescue Vehicle manufacturers to follow the recommendations of the Ford Incomplete Vehicle Manual and the Ford Truck Body Builders Layout Book (and pertinent supplements). NOTE 1: Stationary Elevated Idle Control (SEIC) has been integrated into the engine control module. NOTE 2: Engine calibration significantly reduces the possibility of depower mode when in stationary PTO operation. NOTE 3: Operator commanded regen allowed down to 30% of DPF filter full, instead of 100%. NOTE 4: Must meet the definition of an Emergency Vehicle, an Ambulance or Fire Truck per 40 CFR 86.1803.01 in the Federal Register. NOTE 5: California Code of Regulations allows for the sale of Federally certified emergency vehicles in California.

Includes:

- Dual Extra Heavy-Duty Alternators (Total 377-Amps)
- Operator Commanded Regeneration (OCR) Includes active regeneration inhibit.

MANUAL REGENERATION

A push button switch on the dash to initiate manual DPF regeneration.

Fuel Tank: 40 gallon aft-axle with auxiliary fuel tap, to provide fuel to an auxiliary truck body mounted diesel engine (if applicable).

REAR AXLE RATIO

The ratio of the rear axle shall be 4.88 limited slip.

Engine Block Heater

PTO PROVISION

Transmission Power Take-Off Provision

CAB TYPE

Conventional, engine forward, four (4) door crew cab

Construction: Welded steel

Accessories:

- Solar Tinted glass in all windows
- Dual sun visors
- Electric windshield washer
- Dome light
- Fresh air heater and defroster
- Dual electric horns

- Driver and passenger air bags
- Gray Vinyl Upholstery
- Roof Clearance Lights
- Black vinyl full floor covering
- 12V Auxiliary Power Point

Headlamps: dual beam jewel effect

Climate Controls: controls for heat, defroster, and air conditioning

Mirrors: black manually telescope fold-away in/out for view adjustment.

Instrumentation:

- Tachometer
- Speedometer
- Turbo boost (diesel only)
- Oil pressure
- Coolant temperature
- Fuel gauge
- Transmission temperature gauge
- Indicator lights & Message Center/odometer, trip odometer, engine hour meter & warning messages.

POWER EQUIPMENT GROUP

- Accessory delay
- Manual-folding and manual telescoping power trailer-tow mirrors with heated glass.
- Heated convex spotter mirror
- Integrated clearance lamps/ turn signals
- Perimeter alarm
- Power first-row windows with one-touch up/ down
- Power second-row windows
- Power locks
- Remote keyless entry
- Upgraded door-trim panel
- Advanced Security Pack (includes SecuriLock Passive Anti-Theft System (PATs) and Inclination/ Intrusion Sensors)

CAB SEATING

The front seating shall consist of a heavy duty vinyl 40/20/40 split front bench seat w/center armrest, cup holder, storage and manual driver-side lumbar support

REAR CAB SEATING

The rear seating shall consist of a heavy duty vinyl 60/40 bench flip-up/fold-down rear seat.

XL VALUE PACKAGE

4.2" center stack screen
AM/FM stereo MP3 player w/ six speakers
Chrome front bumper
Cruise control
Ford SYNC

WHEELS

Six (6), 10-hole Disc, 19.50" x 6.00" RW Steel

TIRES

Six (6) 225/70Rx19.5G black side wall traction tires shall come supplied from ford with the chassis.

FORD SUPERDUTY WARRANTY

Description	Months/Distance
Basic.....	36 month/36,000 miles
Powertrain.....	60 month/60,000 miles
Corrosion Perforation.....	60 month/unlimited mileage
Roadside Assistance	60 month/60,000 miles
Diesel Engine	60 month/100,000 miles

CHASSIS PAINT COLOR

The cab shall be painted a single color by the chassis manufacturer.

Color: Ford Race Red

Paint Number: PQ

CHASSIS MODIFICATIONS

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

RUNNING BOARDS

One (1) set of R.O.M. Roughneck ,model # R04248, running boards shall be mounted to each side of the chassis. The running boards shall exceed the NFPA requirements for stepping surface and slip resistance

FRONT MOUNTED WINCH

A WARN model M12000 electric winch with 12,000 pound (5,440 kg) rated line pull shall be installed in the brush guard. The winch shall be equipped with 125.00' of 3/8" diameter wire rope, clevis hook and a 4-way roller fairlead. The winch shall be operated through a 12.00' pendant with a hand held control. The winch shall include an automatic mechanical cone brake. It shall feature an easy to use free-spooling rotating ring gear clutch.

The installation shall maintain access to the winch controls.

GRILLE GUARD - STAINLESS STEEL

A Warn model 98205 Trans4mer Gen II grille guard shall be provided. The grille guard kit shall be provided with a stainless-steel finish.

HEADLAMP GUARD - STAINLESS STEEL

A Warn model 98210 Trans4mer Gen II headlamp guard kit shall be provided and installed. The headlamp guard kit shall attach to the grille guard. The headlamp guard kit shall be provided with a stainless-steel finish.

WINCH CARRIER - LARGE FRAME - BLACK FINISH

A Warn model 90110 large frame winch carrier shall be installed in grille guard. It shall be capable of carrying Warn winch models 16.5ti, M15, M12, and M8274-50.

The winch carrier shall have a powder coated black finish.

TOWING HITCH RECEIVER

A trailer towing hitch receiver with safety chain anchors shall be installed at the rear of the apparatus.

The hitch receiver shall be constructed of heavy steel tubing and reinforced to the apparatus framework. The hitch receiver shall have a Class V rating of 16,000 pounds

towing and 1,600 pounds tongue weight when used with a weight distributing hitch assembly.

The receiver shall accept a 2.00" hitch.

One (1) 7-prong connector with a weatherproof cover shall be supplied and mounted near the rear receiver tube.

SEATING MODIFICATION

The center portion of the 40/20/40 split bench seat shall be removed to accommodate the installation of the specified console.

REAR CREW AREA SEATS

The Ford factory seats shall be removed in the rear crew area. Two (2) VALOR SCBA style seats with ZICO EZ Lock brackets and seat riser shall be provided and installed in rear outboard positions.

SEAT BELT WEB LENGTH

NFPA 1901, 2016 edition, Section 14.1.3.1 and 14.1.3.2 requires effective seat belt web length for a Type 1 lap belt for pelvic restraint to be a minimum of 60.00", and a Type 2 pelvic and upper torso restraint-style seat belt assembly to be a minimum of 110.00". Per Fire Department specification of a commercial chassis, this apparatus may not have seat belts of the required length. These belts may not provide sufficient length for large firefighters in bunker gear. This apparatus will be non-compliant to NFPA 1901 standards effective at time of contract execution.

SEAT BELTS

NFPA 1901, 2016 edition, section 14.1.3.3 requires the seat belt webbing to be bright red or bright orange in color, and the buckle portion of the seat belt will be mounted on a rigid or semi-rigid stalk such that the buckle remains positioned in an accessible location.

The seat belt color is not available in red or orange from the commercial chassis manufacturer. Per Fire Department specification of a commercial chassis, the seat belt color will be non-compliant. This apparatus will be non-compliant to NFPA 1901 standards effective at time of contract execution.

TIRE PRESSURE MANAGEMENT

There will be a RealWheels LED AirSecure™ tire alert pressure management system provided, that will monitor each tire's pressure. A sensor will be provided on the valve stem of each tire for a total of six (6) tires.

The sensor will calibrate to the tire pressure when installed on the valve stem for pressures between 10 and 200 psi. The sensor will activate an integral battery operated LED when the pressure of that tire drops 5 to 8 psi.

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

WHEEL COVERS

Each wheel shall have one (1) stainless steel wheel cover installed.

EXHAUST SYSTEM

The chassis exhaust system shall be provided as detailed in the chassis specifications. NO modifications shall be made by the apparatus manufacturer.

CHASSIS PREPARATION

Prior to installation of the fire pump, apparatus body, or cab steps, all components which extend out beyond the chassis frame rails shall be removed and relocated to the area within the frame rails

CHASSIS TOW HOOKS

The front tow hooks shall be provided as detailed in the chassis specifications.

TOW HOOKS – REAR

Two (2) heavy-duty cast-iron tow hooks, shall be installed at the rear of the body below the rear step.

FRONT MUD FLAPS

A pair of black rubber mud flaps shall be provided as detailed in the chassis specifications.

REAR MUD FLAPS

A pair of black rubber mud flaps, with the Manufacturer's logo, shall be provided and installed behind the rear wheels.

VEHICLE DATA RECORDER

NFPA 1901, 2016 edition, section 4.11.1 requires all apparatus be equipped with an on-board vehicle data recorder. The VDR is intended to be used by the fire department to

monitor seat belt use as a tool for enforcing a seat belt policy that enhances the safety of apparatus occupants.

The vehicle data recorder is not available as required from the commercial chassis manufacturer. Per Fire Department specification of a commercial chassis, there will be no vehicle data recorder on the apparatus. This apparatus will be non-compliant to NFPA 1901 standards effective at time of contract execution.

SEAT BELT MONITORING SYSTEM

NFPA 1901, 2016 edition, section 14.1.3.9 requires a seat belt warning system be provided. The seat belt warning device is intended to assist the driver or officer in determining whether all occupants are seated and belted before the vehicle is driven. Without this device, the driver must manually determine that all occupants are seated and belted before the apparatus is placed in motion.

The seat belt warning system is not available as required from the commercial chassis manufacturer, or not requested by the customer. Per Fire Department specification of a commercial chassis, there will be no seat belt warning system on the apparatus. The purchasing authority is consciously choosing to accept an apparatus without a tool that the NFPA Technical Committee on Fire Department Apparatus believes all fire departments should use to promote and enforce seat belt compliance. This apparatus will be non-compliant to NFPA 1901 standards effective at time of contract execution.

CENTER CONSOLE

A center console fabricated from 0.125" aluminum shall be furnished and shall be located between the driver and officer's seats.

The forward area of the console shall have a mounting surface for emergency lighting switch panels and/or electronic siren control boxes within reach of the driver or officer.

SIREN MOUNTING BRACKET

A bracket shall be supplied with the console to mount the specified Whelen 295SLSA1 siren head.

CUP HOLDERS

Two (2) cup holders shall be provided and installed in the console.

BATTERY SYSTEM

The battery system shall be supplied with the chassis.

MASTER BODY DISCONNECT SWITCH

A master body disconnect on/off switch shall be provided in the cab, near the driver's door. The switch shall disconnect the power to the apparatus body when the ignition switch is in the off position.

One (1) reset breaker shall be installed between the solenoid output and any electrical load.

One (1) indicator light shall be provided to indicate the apparatus 12-volt system is on. The light shall be located in the chassis cab and be visible from the driver's positions. The light shall be green in color and labeled "Master Battery".

KUSSMAUL "PUMP PLUS" BATTERY CHARGER

One (1) Kussmaul 1000 Pump Plus 15 amp battery conditioner shall be supplied and mounted in the cab.

The battery saver component shall eliminate drain on vehicle's battery system when in vehicle is not in use. The system shall automatically disconnect auxiliary vehicle loads from battery when the charger is energized.

The system shall have a built-in sense circuit to check battery voltage 120 times a second; the system shall compensate for voltage drop in charging wires and provide quick recharging with no over-charging.

AUXILIARY AIR COMPRESSOR

One (1) Kussmaul Pump 12V air compressor shall be supplied. The compressor system shall be designed to maintain the air pressure in the chassis brake system while not in use. A pressure switch shall sense air pressure drop and engage the compressor which shall run until the pressure is restored.

120 VOLT SHORELINE CONNECTION - "SUPER" AUTO EJECT

One (1) Kussmaul "Super" Auto Eject model 091-55-20-120, automatic, 120 volt, 20 amp shoreline disconnect shall be provided for the on board, 110 volt battery charging systems.

The disconnect shall be equipped with a NEMA 5-20P female receptacle, which shall automatically eject the shoreline when the vehicle starter is energized. The mating connector shall be included with the auto eject and shall be provided as loose equipment.

BATTERY CHARGER DISPLAY/ COVER

One (1) Kussmaul model 091-55-234-YW universal single battery bank voltage display/ auto eject cover shall be supplied with the charger.

The cover shall be Yellow in color.

ELECTRICAL INLET LOCATION

An electrical inlet shall be installed near the wheel well, on the left hand side of the body.

BACK-UP ALARM

One (1) 97 DB back up alarm shall be provided and installed at the rear of the unit. It shall be wired to activate when the transmission is placed in reverse.

DUAL USB PORT

One (1) Kussmaul model # 091-219-5 shall be installed in the console. It shall contain two (2) 2.4 amp USB charging ports.

PUMP, MODULE, AND RELATED ITEMS

NFPA 1901 COMPLIANT PUMP

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

HALE DSD SIDE MOUNT PUMP

The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis.

The entire pump shall be assembled and tested at the pump manufacturer's factory.

The pump shall be driven by a the truck transmission mounted PTO. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance within the torque rating of the PTO, truck transmission and drive line components.

The entire pump shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by the latest NFPA Pamphlet No.1901. Pump shall be free from objectionable pulsation and vibration.

The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (2069 bar). All metal moving parts in contact with water shall be of high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.

Pump body shall be vertically split, on a single plane for easy removal of entire impeller assembly including clearance rings.

Pump shaft to be rigidly supported by two bearings for minimum deflection. The bearings shall be heavy duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.

The pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machines, hand ground and individually balanced. The vanes of the impeller intake eye shall be hand ground and polished to a sharp edge, and be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined hand ground and individually balanced. The vanes of the impeller intake eyes shall be hand ground and polished to a sharp edge and be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body.

The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

GEARBOX

Pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. ft. of drive through torque of the engine system. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

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

All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust. (No exceptions.)

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

If the gearbox is equipped with a power shift, the shifting mechanism shall be a heat treated, hard anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.

MECHANICAL SEAL

The pump shall have a mechanical seal. One (1) only required on the suction (inboard) side of the pump. The mechanical seal shall be two (2) inches in diameter and shall be spring loaded, maintenance free and self-adjusting. Mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton rubber cup, and a tungsten carbide seat with Teflon backup seal.

FIVE YEAR FIRE PUMP WARRANTY

A five (5) year warranty for the Hale fire pump shall be provided.

1500 GPM FIRE PUMP SPECIFICATIONS

The centrifugal type fire pump shall be a Hale model DSD midship mounted with a rated capacity of 1500 GPM. The pump shall meet NFPA 1901 requirements.

The pump shall be certified to meet the following deliveries:

1500 gpm (5678 L/M) @ 150 psi (10.3 bar)
1050 gpm (3974 L/M) @ 200 psi (13.8 bar)
750 gpm (2839 L/M) @ 250 psi (17.2 bar)

ALTITUDE REQUIREMENTS

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

LEFT SIDE INTAKE

One (1) 6.00" steamer intake with male NST threads shall be provided on the left side of the pump module. The intake shall have a removable screen.

INLET CAP

One (1) 6.00" chrome plated cap shall be provided on the intake. The threads shall be NST and the cap shall be equipped long handles..

RIGHT SIDE MASTER INTAKE

One (1) 6.00" steamer intake with male NST threads shall be provided on the right side of the pump module. The intake shall have a removable screen.

INLET CAP

One (1) 6.00" chrome plated cap shall be provided on the intake. The threads shall be NST and the cap shall be equipped long handles..

DRIVELINE MODIFICATION

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

AIR COMPRESSOR - PUMP SHIFT

Since the Ford chassis does not have a chassis air system, an alternate air system will be provided. This system will include a 12-volt Kussmaul, model 091-9, air compressor and small capacity tank. The compressor and tank will be installed in a location that does not interfere with other equipment.

The compressor will maintain air system pressure. A pressure switch will sense when the system pressure drops and automatically start the compressor, (providing the battery switch is "on") which then will run until pressure is restored.

PUMP SHIFT

A Hale air operated pump shift shall be pneumatically controlled using a power shifting cylinder. The power shift control valve shall be mounted in the cab.

Provisions shall be made for placing the pump drive system in operation using controls and switches that are clearly identified and within convenient reach of the operator. Indicator and interlock systems shall be provided as required by this pump control section.

Since the apparatus is equipped with an automatic chassis transmission and the fire pump is driven through the automatic transmission, an interlock system shall be provided to ensure that the pump drive system components are properly engaged in the pumping mode of operation so that the pumping system can be safely operated from the pump operator's position.

The pump shifting device used between the engine and the pump shall be equipped with a means to prevent unintentional movement of the control device from its set position.

A nameplate indicating the chassis transmission shift selector position to be used for pumping shall be provided in the driving compartment and located so that it can be easily read from the driver's position.

A GREEN indicator light shall be located in the driving compartment. This indicator light shall be energized when the pump shift has been completely and shall be marked "PUMP ENGAGED".

A second GREEN indicator light in the driving compartment and a GREEN indicator light located at the pump operator's position shall be provided and energized when both the pump shift has been completed and the chassis transmission is engaged in pump gear.

PIPING AND MANIFOLDS

All the plumbing and/or piping in the pump module shall be of 304 stainless steel or flexible piping for long life. All stainless steel castings shall be a minimum of schedule 40.

The flexible piping shall be black SBR synthetic rubber hose with 300 working pounds and 1200 pounds burst pressure for sizes 1.50" through 4.00". Sizes 0.75", 1.00" and 5.00" are rated at 250 pound working and 1,000 pound burst pressure. All sizes are rated at 30 HG vacuum. Reinforcement consists of two (2) plies of high tensile strength tire cord for all sizes and helix wire installed in sizes 1.00" through 5.00" for maximum performance in tight bend applications. The material has a temperature rating of -40 degrees F to 210 degrees F. Full flow couplings are precision machined from high tensile strength stainless steel. All female couplings are brass. 0.75" and 1.00" male and Victaulic couplings are brass.

INDIVIDUAL DRAINS

One (1) individual Class1 lift up drain valve shall be furnished for each 1.50" or larger discharge port and each 2.50" gated auxiliary suction.

SYNFLEX SUCTION, DISCHARGE, PRESSURE AND CONTROL LINES

Small lines within the pump enclosure shall be constructed from Synflex hose. Uses include, but are not limited to such lines as priming control, gauge lines, drain lines, air control valves, pump shift, supplemental cooling, foam flush and air bleeder valves.

PLUMBING SYSTEM

The plumbing system shall be left unpainted by the apparatus manufacturer.

HOSE THREADS- NST

All hose threads shall be National Standard Thread (NST) on all base threads on the apparatus intake and discharges, unless otherwise specified.

CAPS AND ADAPTERS SAFETY TETHER

All applicable discharge and suction caps, plugs, and adapters shall be equipped with chrome plated ball chain and secured to the vehicle.

PUMP CERTIFICATION

The fire pump shall be tested to meet the flow requirements of the pump. A written certification shall be provided with the completed vehicle.

PRESSURE RELIEF VALVE-NONE

Pressure controlled by electronic governor.

U.L. TEST POINTS

Two (2) U.L. test plugs shall be mounted on the pump panel for testing of the vacuum and pressures.

MASTER PUMP DRAIN

The pump shall be equipped with a Class 1 Master Pump drain to allow draining of the lower pump cavities, volute and selected water carrying lines and accessories. The drain shall have an all brass body with a stainless steel return spring.

CLASS ONE STAINLESS INTAKE RELIEF VALVE

The apparatus shall be equipped with a Class1 inlet relief valve that is of all stainless-steel construction. It shall have an adjustable pressure relief setting from 75 psi to 350 psi and is factory preset at 125 psi. The valve shall have a 2.50" male NST threaded discharge outlet. The valve shall meet NFPA 1901 requirements for pump inlet relief valve.

PRIMING SYSTEM

A Hale ESP priming pump shall be a positive displacement, oil-less rotary vane electric motor driven pump. The pump body shall be manufactured of heat treated anodized aluminum for wear and corrosion resistance.

The pump shall be capable of producing a minimum 24 Hg vacuum at 2,000 feet above sea level.

The electric motor shall be a 12 VDC totally enclosed unit.

The priming pump shall not require lubrication.

The primer shall be capable of priming the pump through a 20' section of suction hose with a 10' lift within 30 seconds for pumps less than 1,500 gpm, and 45 seconds for pumps 1,500 gpm and larger. '

PRIMER CONTROL

The priming pump shall operate by a single pull control valve mounted on the pump operator's panel. The control valve shall be manufactured of bronze construction.

PRIMER FUSE

The primer shall be protected with a 250 amp fusible link that is designed to protect the apparatus 12 volt electrical system if the primer motor malfunctions.

THERMAL PROTECTION

The pump shall be equipped with a TRV-L, thermal protection device, which monitors the water temperature of the pump and relieves water when the temperature inside the pump exceeds the preset value of the relief valve (120 degrees F / 49 degrees C).

The TRV shall automatically dump a controlled amount of water to the atmosphere or back to the tank when the pump water temperature exceeds the preset value. The valve shall automatically close when the water temperature cools to below the preset value.

An aluminum composite panel placard with a visual warning lamp and test button shall be provided on the operator's panel. The warning light shall illuminate when the Thermal Relief Valve is open and discharging water.

PUMP COOLING/BYPASS LINE

A 0.375" pump cooling/bypass line shall be provided from the pump discharge manifold directly into the tank. This discharge shall implement a Class 1 model 38BV all brass ball type 1/4 turn valve with chrome plated handle control located on the pump panel.

ANODES

The fire pump shall be equipped with replaceable alloy anodes. The pump shall have one (1) anode on each intake section and one (1) anode on the discharge section of the fire pump, for a total of three (3).

SENTRY GOVERNOR PRESSURE SYSTEM

The apparatus shall be equipped with the Class1 Sentry Pressure Governor System. The Sentry Pressure Governor System (SPGS) is a J1939 CAN based pressure governing system that consists of a Sentry display, Twister throttle, pressure transducers and associated wiring.

The Sentry display utilizes Class1's UltraView technology. It is a custom tooled and programmed, 4.30", full color LCD display with (8) buttons. The Sentry display provides the interface to the Engine Control Module (ECM) mounted on the engine.

The following parameters visible at all times:

- Pump Intake Pressure
- Pump Discharge Pressure
- Engine RPM
- Engine Oil Pressure
- Engine Coolant Temperature
- Transmission Temperature
- System Voltage
- Throttle Ready Interlock Status

- Pump Engaged Interlock Status
- OKAY to Pump Interlock Status
- Operating Mode Status (RPM or Pressure)
- Target Pressure Indication (when in pressure mode)

TWISTER THROTTLE

The Twister throttle is a J1939 CAN based throttle device that communicates directly with the Sentry display. It features a robust knob operator that can be configured to operate the engine throttle in either the clock wise or counter clockwise directions. It features a large stationary idle button in the center of the knob. It also provides the operator with “Throttle Ready” and “Throttle Active” LED indicators.

LEFT SIDE AUXILIARY INTAKE

An auxiliary intake shall be provided on the left side of the pump compartment. The intake valve and piping shall be 2.50". The valve shall be manually operated with a swing handle from the left hand side pump operator's panel.

The intake shall have a 2.50" chrome plated female NST swivel connection with screen.

One (1) 2.50" chrome plated plug shall be provided. The plug shall be equipped with MNST threads, rocker lugs, and a 12.00" chain.

TANK TO PUMP LINE

One (1) 3.00" tank to pump line shall be provided for connection between the water tank and the fire pump. The valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel.

TANK FILL/ RECIRCULATION LINE

One (1) 2.00" fire pump to water tank refill and pump bypass cooler line shall be provided. The valve shall be a full flow quarter turn ball valve with 2.00" piping and flex hose to tank. The valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel.

LEFT SIDE PANEL DISCHARGE

One (1) 2.50" discharge with valve shall be located on the left side panel. The valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel.

The discharge shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2.50" MNST threads.

One (1) Class1 2.50" chrome plated cap with self-venting lungs shall be provided. The cap shall be equipped with FNST threads, rocker lugs, and a 12.00" chain.

RIGHT SIDE PANEL DISCHARGE

One (1) 3.00" discharge with valve shall be located on the right side panel. The valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel.

The 3.00" outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 3.00" MNST threads.

One (1) Class1 3.00" chrome plated cap with self-venting lungs shall be provided. The cap shall be equipped with FNST threads, rocker lugs, and a 12.00" chain.

RIGHT SIDE PANEL DISCHARGE

One (1) 3.00" discharge with a 4.00" outlet and 3.00" valve shall be located on the right side panel. The 4.00" outlet shall be equipped with an integral, stainless steel, straight flange terminating with 4.00" MNST threads.

The valve shall be controlled electronically with an Akron Brass Style 9335 Navigator Pro 2.0. The controller shall display valve position as well as discharge pressure.

One (1) Task Force Tips model #AH3ST-NP 30 degree elbow shall be provided. The elbow shall be configured with a 5.00" swivel Storz coupling and a 4.00" female NH swivel rocker lug coupling.

STORZ CAP

One (1) TFT model #A01ST 5.00" (12.70cm) Storz cap with lanyard shall be provided.

CROSSLAY PRE-CONNECTS - TWO (2)

Two (2) 1.75" crosslay pre-connects shall be installed in the pump module above the pump. Each crosslay shall be plumbed using 2.00" stainless steel pipe, and/or flexible piping.

Both crosslay discharges shall terminate below the hose bed floor with a 1.50" NSTM chicksan swivel adapter. The crosslay hose bed floor shall be slotted to allow the swivels to extend up through the floor, allowing the pre-connected hoses to be pulled off either side of the apparatus without kinking the hose at the coupling connection. Each valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel.

Each crosslay shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1.75" fire hose.

BOOSTER REEL

One (1) HANNAY painted steel booster reel with electric rewind shall be supplied and mounted in the rear compartment. The reel shall be capable of carrying 100' of 1.00" booster hose.

The reel shall have an auxiliary gear-driven crank rewind that shall be easily accessible.

Color shall be graphite.

There shall be one (1) hose reel rewind switch installed and properly labeled. It shall be a weather-resistant momentary push button switch and shall be located near the booster reel.

One (1) polished stainless steel roller guide assembly shall be installed on the booster reel, allowing the booster hose to be deployed to the rear of the apparatus.

BOOSTER REEL HOSE

The booster reel shall be supplied with 100' of 1" NST red rayon braided reinforced neoprene booster reel hose. The hose shall have a minimum proof test pressure of 800 PSIG.

2.50" INDIVIDUAL PRESSURE GAUGES

Class 1, 2.50" liquid filled gauges, one (1) for each discharge, unless specified otherwise. Gauges shall read from -30" Hg. to 400 psi and shall be accurate to within 1%. Each gauge shall have a white face and black markings. The gauges shall be located on the pump operator's panel near the respective discharge control.

MASTER PUMP GAUGES

The master pump intake pressure and vacuum, and the main pump discharge pressure shall be indicated on the pressure governor display.

LED WATER LEVEL GAUGE (PUMP PANEL)

One (1) Hale model # "ITL-40B" Tank Level Gauge for indicating water level shall be installed on the pump operator's panel. The tank level gauge shall indicate the liquid level or volume on an easy to read LED display with a visual indicator at nine (9) precise levels, using one (1) color. The system shall include the ability to display "text messages" and have built-in diagnostic capabilities. Additional secondary displays (if requested) are to be easily integrated and will receive data from the same source as the Master Display.

The LED display shall be blue in color.

PUMP, MODULE, AND RELATED ITEMS

ALUMINUM PUMP MODULE CONSTRUCTION

The pump module shall be constructed entirely of extrusions and aluminum plate. The framework shall be formed from beveled aluminum alloy extrusions. The pump module design must allow normal frame deflection through isolation mounts without imposing stress on the pump module structure or side running boards. The pump module shall consist of a welded framework, properly braced to withstand chassis frame flexing. The pump module support shall be bolted to the frame rails of the chassis.

INDEPENDENT PUMP MODULE

The pump module shall be fabricated as individual unit independent from the body.

FRONT PUMP HOUSE ENCLOSURE

The front of the pump enclosure shall be enclosed with 0.125" aluminum tread plate.

PUMP MODULE WIDTH

Pump Module to be 24.00" side (side to side).

PUMP PANEL - SIDE MOUNT

The pump operator's control panel shall be located on the driver side of the apparatus. The pump enclosure side panels shall be completely removable and designed for easy access and servicing.

PUMP PANEL MATERIAL

The pump module panels shall be fabricated from 14 gauge 304L stainless steel with a brushed finish.

HINGED GAUGE PANEL

A full width, horizontally hinged gauge access panel shall be located on the left hand side of the pump module above the main control panel. Two (2) black powder coated SouthCo. push type locks shall be provided along with chain holders to prevent the front of the gauge panel from coming in contact with other panels when open.

VERTICALLY HINGED, SPLIT PUMP RIGHT HAND SIDE

The right hand side pump panel shall be split, vertically hinged, to provide complete access to the pump and plumbing on the right hand side of the pump enclosure. The

panels shall be equipped with stainless steel hinges and secured with black powder coated Southco push type locks to hold the panels closed.

The drains located on the right hand panel shall be fastened to a lower drain panel, which shall be stationary.

PANEL FASTENERS

Stainless steel machine screws and lock washers shall be used to hold these panels in position. The panels shall be easily removable to provide complete access to the pump for major service.

PUMP SERVICE ACCESS - CROSSLAYS

The top third of the pump module (crosslay area) shall be crosslays shall be removable for access to the top of the pump module.

CROSSLAY HOSEBED

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

They shall be arranged in a single stack design with a divider in the center. Each hose storage area shall be provided with dimensions of 7.41" wide x 64.00" deep x 16.00" tall [4.39 cu. ft. each].

There shall be one (1) divider in the crosslay area. The divider shall be constructed from 0.188" thick abraded aluminum plate. There shall be a hand hole on each side of the divider to assist the firefighter.

VINYL CROSSLAY COVER

The crosslays shall be equipped with a heavy duty 18 oz. vinyl cover with side flaps. The top portion will be fastened to the pump house with Velcro and the side flaps will be held in place with a hook and bungee system.

The vinyl cover shall be red in color.
PUMP PANEL/ ENCLOSURE LIGHTS

PUMP PANEL LIGHT SHIELD, LH SIDE PANEL

One (1) LED strip light shall be installed under an instrument panel light hood on the left side pump panel.

PUMP PANEL LIGHT SHIELD, RH SIDE PANEL

One (1) LED strip light shall be installed under an instrument panel light hood on the right side pump panel.

A weather resistant switch, located on the pump operator's panel shall be provided to activate the lights.

PUMP COMPARTMENT LIGHTS

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

LEFT SIDE RUNNING BOARD - TAPPERED

The left pump panel shall be equipped with a side running board. The running board shall be constructed of 0.125" embossed fire apparatus bright aluminum treadplate. It shall be the full width of the module and taper from front to rear to blend with the width of the cab and body. It shall be approximately 6.75" deep at the front of the module and 11.00" deep at the rear. The running board shall have an upward bend on the inside edge to act as a kick plate. The running board shall be attached to a frame mounted outrigger support structure.

RIGHT SIDE RUNNING BOARD - TAPPERED

The right pump panel shall be equipped with a side running board. The running board shall be constructed of 0.125" embossed fire apparatus bright aluminum treadplate. It shall be the full width of the module and taper from front to rear to blend with the width of the cab and body. It shall be approximately 6.75" deep at the front of the module and 11.00" deep at the rear. The running board shall have an upward bend on the inside edge to act as a kick plate. The running board shall be attached to a frame mounted outrigger support structure.

WARNING LABEL, FAMA 22, HOSE RESTRAINT REQUIRED

Safety sign FAMA22, which warns of the need to secure hose, shall be visible to personnel at each side of hose storage area.

WARNING LABEL, FAMA 18, INTAKE AND DISCHARGE CAP PRESSURE

FAMA 18 warning labels shall be installed, one on each side and back of apparatus where caps are present. They shall read "WARNING: Pressure Hazard. ALWAYS OPEN Drain or Bleeder Valve to release pressure BEFORE removing Intake or Discharge Cap. Caps can trap pressure. Cap under pressure can fly off with great force. Flying Cap will injure or kill."

SAFETY SIGN

A safety sign FAMA25, which warns of the need for training prior to operating the apparatus, shall be located on the pump operators panel.

PUMP PANEL ID PLATE

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

COLOR CODED PUMP PANEL LABELING AND NAMEPLATES

Discharge and intake valve controls shall be color coded in compliance to guidelines of applicable sections of NFPA standards. Innovative Controls permanent type nameplates and instruction panels shall be installed on the pump panel for safe operation of the pumping equipment and controls.

FOAM SYSTEM

The apparatus shall be equipped with a Hale 2.1A SmartFOAM system. The foam system shall be equipped with a Class1 UltraView SmartFOAM Controller and a foam induction pump. The foam induction pump will be a Class1 2.1A piston style foam induction pump (12VDC) for use with Class A concentrates at a rated output of up to 2.1 gpm and a maximum operating pressure of 250 psi.

The SmartFOAM Controller will show the water flow per minute, foam percentage, total water flowed, and total foam flowed on the main screen without having to press any buttons. The SmartFOAM Controller will maintain a running total of the amount of water and foam used during the current power cycle.

The SmartFOAM Controller will allow push-button modification of the foam proportioning rate from 0.1% to 10.0% in 0.1% increments. The SmartFOAM Controller will always begin operation at the preset foam proportioning rate which is configured with a password protected set-up screen.

The foam concentrate pump discharge line shall be equipped with a bubble tight check valve, rated at 500 psi to prevent water flow into the concentrate pump from the apparatus fire pump. This valve shall be made from brass or 300 series stainless steel. This valve shall have a cracking pressure of 4-6 psi to prevent flowing concentrate through the pump due to head pressure from the concentrate reservoir.

Single tank foam system shall include flushing capabilities via a three-way flush valve. A switch provided integral to the three-way valve will indicate when the valve is in the "FLUSH" position. The "FLUSH" position will provide fresh water-flushing capabilities to prevent foam concentrate deterioration of the foam pump.

The SmartFOAM Controller will protect the foam pump from being run "dry" by showing a "low foam" warning when the low-level tank switch is activated and only allowing the

foam pump to run for another sixty (60) seconds before turning off the foam pump and showing a “no foam” warning.

In-line, field serviceable foam concentrate strainer(s) shall be installed in the foam concentrate suction line(s).

Foam concentrate proportioning systems that use a venturi (either directly or indirectly) to measure water flow, and therefore cause a restriction to that flow, will not be accepted.

TANK SENSOR

A Hale part# 200-2110-02-0 side mount low level foam tank sensor shall be installed.

LED FOAM LEVEL GAUGE, CLASS A (PUMP PANEL)

One (1) Hale model # “ITLF-40R” Tank Level Gauge for indicating foam level shall be installed on the pump operator's panel. The tank level gauge shall indicate the liquid level or volume on an easy to read LED display with a visual indicator at nine (9) precise levels, using one (1) color. The system shall include the ability to display “text messages” and have built-in diagnostic capabilities. Additional secondary displays (if requested) are to be easily integrated and will receive data from the same source as the Master Display.

The LED display shall be red in color.

WATER TANK - POLYPROPYLENE

Tank capacity shall be 285 US gallons.

The Booster tank shall be constructed of Polypropylene, and properly baffled.

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.

The tank shall be constructed of Polypropylene sheet stock. This material shall be non-corrosive, stress relieved thermoplastic, black in color and U.V. stabilized for maximum protection.

There shall be one (1) sump standard per tank. The sump shall be located at the front of the tank. The sump shall have a 4.00" FNPT threaded outlet on the bottom for a drain plug. This shall be used as a combination cleanout and drain.

FILL TOWER

Fill tower shall be installed on front corner of the tank in tank top, not to interfere with removability of the lid. It shall be of adequate size, minimum 8.00" X 8.00", to accommodate overflow and vents, to have a hinged cover and screen installed.

TANK OVERFLOW

The tank shall have shall have a 6.00" overflow and air vent designed to prevent damage to the tank under high flow conditions and enclosed in front tank filler. Tank filler to extend upward from hose bed the same height as body sides. 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.

FOAM CELL

One (1) internal foam cell shall be manufactured as part of the water tank.

The foam cell capacity shall be 15 US gallons.

The foam tank shall be integral with the water tank and shall have a rectangular fill tower with a hinged cover, pressure relief vent and a removable screen.

DO NOT MIX FOAM LABEL

A FAMA19 warning label shall be placed near the foam tank fill that reads "Foam Failure Hazard. Do NOT mix brands and types of foam concentrate. Mixed concentrate may fail to form proper foam. Poor foam may fail to suppress fire leading to death".

FIRE BODY & RELATED COMPONENTS

OVERALL DIMENSIONS

The body shall be 108.00" Long x 95.00" wide x 64.00" high with fender well positioned for a 84.00" Cab-to-Axle Dual Rear Wheel Chassis. The cargo bed floor width shall be 50.00" wide. Body is designed to accommodate a 24.00" wide Pump Module.

FLOOR AND UNDERSTRUCTURE

The compartment floor shall be a single piece design made of .1875" Aluminum Tread Bright. The floor shall be supported by front and rear extruded 6061 aluminum alloy 2.00" x 4.00" x .250" wall structural tube crossmembers and incorporating flange style direct body mounting plates. The center section of the floor shall be supported by two (2) additional crossmembers of 2.00" x 2.00" x .250" structural aluminum tube, interlocked with three (3) longitudinal 2.00" x 2.00" x .250" sections of structural aluminum tube, connecting the front most and rearmost crossmembers. The front of the body shall be closed in with a .125" aluminum bulkhead panels the same height as the body, creating a 47.0" high cargo bed between the side compartments.

TREADPLATE AND TRIM

All Tread Brite overlays shall be 3003-H14 bright aluminum laser cut to fit. 3M Double Sided Tape shall be applied to the NON-TREAD BRITE Side.

BODY FRONT WALL OVERLAY

There shall be .125" polished aluminum Tread Brite provided for the entire front of the body to protect the paint from road debris and paint chipping.

TOP PROTECTION

There shall be .125" embossed aluminum Tread Brite overlay provided for entire top of the body.

BODY SIDE RUB RAILS

Replaceable extruded aluminum channel rub rails, 2.0" high x 1.0" deep x .125" wall, shall be provided below the lower side compartments. Each rub rail shall have a black rubber bumper strip and mounting stand-off spacers. All rub rail ends shall be angle cut, back toward the body to eliminate the possibility of snagging crew clothing or equipment.

FENDER PANELS

A single piece wheel well panel made of .125" aluminum shall be installed with no sharp edges to cut or damage cleaning equipment used in the wheel well area. The wheel well design shall provide for maximum wheel jounce and for use of tire chains without contacting the fender panel.

REAR WHEEL WELL LINERS

The rear wheel wells shall be equipped with replaceable circular liners to prevent road debris damage to adjacent side compartments. The liners shall be made from a single circular panel of .090" smooth aluminum and shall be the full depth of the side compartments. They shall be bolted in place and shall feature end flange bottom drains.

REAR BODY FENDERETTES

A roll-formed, polished stainless steel fenderette shall be installed around the outboard edge of the rear wheel well openings to protect the body sides from road debris. They shall be bolted to the body and shall be replaceable. Holes shall be drilled into the fenderettes, transfer drilled into the wheel well panels.

REAR FENDERETTES

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REAR PLATFORM STEP

A modular bolt-on rear platform step made of .188" embossed aluminum Tread Brite shall be installed on the rear of the apparatus to provide a full width step area with sufficient support to prevent deflection when in use by several crew members. The outside edges of the rear platform shall be flush with the side body rub rails to maintain a uniform appearance. The step shall protrude 10.00" back from the rear of the body and shall be spaced away from the body to allow water run-off.

COMPARTMENT CONFIGURATION

There shall be a total of six (6) flush floor body side compartments; three (3) on each side comprised of a Front Vertical and Rear Vertical compartment, separated by a Horizontal Center compartment, over the wheel well. A rear access closed top Cargo compartment shall run the length of the body, between the side compartments. The body side panels shall have a header panel 8.00" high and incorporating a formed full-

length drip rail. The header panels shall incorporate wiring raceways along the full body length.

The compartments shall be completely formed of .125" 5052-H32 aluminum alloy and shall have a tested floor area load of 300 pounds combined with a shelf load of 250 pounds. Removable access panels, light guards, shall be provided on each side of the body at front and rear bulkheads for body lighting and wiring service.

COMPARTMENT VENTS

Each body side compartment shall be properly vented in a manner that will minimize the possibility of moisture and road dirt entering the compartment. Venting shall be to atmosphere for front and rear side compartments. The center wheel well compartments shall be vented to the front and rear compartments. Removable, punched vent plates shall be provided as shown on build drawings.

ADJUSTABLE SHELVING TRACKS

All side body compartments be furnished with Adjustable shelving track installed. The shelving track shall include a minimum of four (4) aluminum Uni-strut style channel tracks, mounted vertically on compartment side walls or vertical partitions. There shall be one (1) formed aluminum shelf angle bracket per shelving track to mount each shelf, tray, or adjustable storage module. Shelving hardware shall be heavy-duty commercial quality, providing unlimited vertical position adjustments.

ADJUSTABLE TRAYS

Adjustable trays shall be installed as directed by the Purchaser. Trays shall be made of .125" smooth aluminum with a 2.00" high perimeter retaining lip with welded corners. Trays shall have a rated capacity of 300-lbs. and shall be supported by a minimum of two (2) heavy-duty shelf brackets. Trays shall have a maintenance free mill finish.

ROLL-UP DOORS

All compartment doors shall be R.O.M. Series IV Roll-Up doors of appropriate size.

Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum. '

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

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

Shutter bottom rails shall be a one (1) piece double wall extrusion with integrated finger pull. Finger pulls shall be curved upward with a linear striated surface to improve operator grip while operating the shutter door. Bottom rails shall have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seals shall be made from Santoprene; it will be a double "V" seal to prevent water and debris from entering compartment. Bottom rail lift bars shall be a one (1) piece "D" shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bars shall have a wall thickness of 0.125". Lift bars shall be supported by no less than two (2) pivot blocks; pivot blocks shall be constructed from Type 66 Glass filled reinforced nylon for superior strength. Bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Each shutter door shall have an enclosed counter balance system. Counter balance system shall be 4.00" in diameter and held in place by 2 heavy duty 18 gauge zinc plated plates. Counter balance system shall have 2 over-molded rubber guide wheels to provide a smooth transition from vertical track to counter balance system; no foam material of any kind shall be permitted or used in this area.

Shutter door assembly shall be manufactured and assembled in the United States, no exceptions.

DOOR LOCK- KEYED, MANUAL

Each door shall have a cylindrical lock installed by the roll-up door manufacturer. The manual key locks shall be installed inside bottom rail. Lock rods shall be contained inside the bottom rail extrusion providing protection from any loose equipment that may come in contact and prevent the lock from functioning. Lock rods will engage the shutter side track and door frame. The key locks shall be recessed into the lift bar pivot block for a clean finished appearance.

LEFT SIDE COMPARTMENT IN FRONT OF REAR WHEELS, L1

There shall be a full height compartment located ahead of the rear wheels on the left side of the apparatus body.

- Dimensions: 32.00" wide x 59.00" high x 22.0" deep.
- Door Opening: 26.50" wide x 53.00" high

The compartment shall have a R.O.M. roll up door. The door shall have a satin finish.

COMPARTMENT LIGHT(S)

One (1) R.O.M. DuroStrip LED strip light shall be installed inside the compartment. The light(s) shall be IPX7 water resistant, Mil 810 rev A vibration tested, and provide 250 lumens of light per foot.

The compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

ADJUSTABLE SHELVING TRACKS

There shall be vertically mounted uni-strut shelf trac for shelving installation.

ADJUSTABLE SHELF

There shall be One (1) adjustable shelf located in the compartment.

LEFT SIDE ABOVE WHEEL COMPARTMENT, L2

There shall be a standard height compartment located above the rear wheels on the left side of the apparatus body.

- Dimensions: 47.00" wide x 38.00" high x 22.00" deep.
- Door Opening: 46.75" wide x 32.00" high.

The compartment shall have a R.O.M. roll up door. The door shall have a satin finish.

COMPARTMENT LIGHT(S)

One (1) R.O.M. DuroStrip LED strip light shall be installed inside the compartment. The light(s) shall be IPX7 water resistant, Mil 810 rev A vibration tested, and provide 250 lumens of light per foot.

The compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

ADJUSTABLE SHELVING TRACKS

There shall be vertically mounted uni-strut shelf trac for shelving installation.

ADJUSTABLE SHELF

There shall be One (1) adjustable shelf located in the compartment.

LEFT SIDE COMPARTMENT BEHIND REAR WHEELS, L3

There shall be a standard height compartment located above the rear wheels on the left side of the apparatus body.

- Dimensions: 29.00" wide x 59.00" high x 22.00" deep.
- Door Opening: 23.50" wide x 53.00" high

The compartment shall have a R.O.M. roll up door. The door shall have a satin finish.

COMPARTMENT LIGHT(S)

One (1) R.O.M. DuroStrip LED strip light shall be installed inside the compartment. The light(s) shall be IPX7 water resistant, Mil 810 rev A vibration tested, and provide 250 lumens of light per foot.

The compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

ADJUSTABLE SHELVING TRACKS

There shall be vertically mounted uni-strut shelf trac for shelving installation.

ADJUSTABLE SHELF

There shall be One (1) adjustable shelf located in the compartment.

RIGHT SIDE COMPARTMENT IN FRONT OF REAR WHEELS, R1

There shall be a full height compartment located ahead of the rear wheels on the right side of the apparatus body.

- Dimensions: 32.00" wide x 59.00" high x 22.0" deep.
- Door Opening: 26.50" wide x 53.00" high.

The compartment shall have a R.O.M. roll up door. The door shall have a satin finish.

COMPARTMENT LIGHT(S)

One (1) R.O.M. DuroStrip LED strip light shall be installed inside the compartment. The light(s) shall be IPX7 water resistant, Mil 810 rev A vibration tested, and provide 250 lumens of light per foot.

The compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

ADJUSTABLE SHELVING TRACKS

There shall be vertically mounted uni-strut shelf trac for shelving installation.

ADJUSTABLE SHELF

There shall be One (1) adjustable shelf located in the compartment.

RIGHT SIDE ABOVE WHEEL COMPARTMENT, R2

There shall be a standard height compartment located above the rear wheels on the right side of the apparatus body.

- Dimensions: 47.00" wide x 38.00" high x 22.00" deep.
- Door Opening: 46.75" wide x 32.00" high.

The compartment shall have a R.O.M. roll up door. The door shall have a satin finish.

COMPARTMENT LIGHT(S)

One (1) R.O.M. DuroStrip LED strip light shall be installed inside the compartment. The light(s) shall be IPX7 water resistant, Mil 810 rev A vibration tested, and provide 250 lumens of light per foot.

The compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

ADJUSTABLE SHELVING TRACKS

There shall be vertically mounted uni-strut shelf trac for shelving installation.

ADJUSTABLE SHELF

There shall be One (1) adjustable shelf located in the compartment.

RIGHT SIDE COMPARTMENT BEHIND REAR WHEELS, R3

There shall be a standard height compartment located above the rear wheels on the right side of the apparatus body.

- Dimensions: 29.00" wide x 59.00" high x 22.00" deep.
- Door Opening: 23.50" wide x 53.00" high

The compartment shall have a R.O.M. roll up door. The door shall have a satin finish.

COMPARTMENT LIGHT(S)

One (1) R.O.M. DuroStrip LED strip light shall be installed inside the compartment. The light(s) shall be IPX7 water resistant, Mil 810 rev A vibration tested, and provide 250 lumens of light per foot.

The compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

ADJUSTABLE SHELVING TRACKS

There shall be vertically mounted uni-strut shelf trac for shelving installation.

ADJUSTABLE SHELF

There shall be One (1) adjustable shelf located in the compartment.

REAR BODY CONFIGURATION

The rear of the apparatus body shall have a flat back design, with one compartment.

REAR CENTER COMPARTMENT, CR1

There shall be a compartment located at the rear of the apparatus body.

- Dimensions: 50.00" wide x 28.00" high x 28.00" deep.
- Door Opening: 49.75" wide x 23.50" high

The compartment shall have a R.O.M. roll up door. The door shall have a satin finish.

COMPARTMENT LIGHT(S)

One (1) R.O.M. DuroStrip LED strip light shall be installed inside the compartment. The light(s) shall be IPX7 water resistant, Mil 810 rev A vibration tested, and provide 250 lumens of light per foot.

The compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

HOSEBED

The body shall have a bolt together removable hose bed in the upper center section of the body. The hose bed shall be 50.00" wide x 108.00" long x 17.00" deep. The floor of the hose bed shall be constructed using 6.00" wide aluminum hose bed slats. Two (2) cross car Unistrut style channels shall be incorporated in the design for divider mounting.

The forward 22.00" section of the hose bed shall have a bolt in cross car divider creating a dunnage are for the water tank fill tower(s). The floor of the dunnage area shall be formed aluminum sheet.

HOSE BED STORAGE CAPACITY

The hose bed shall be designed to have a storage capacity for the specified fire department supplied fire hose.

HOSEBED COVER WITH VELCRO FASTENERS

A heavy duty vinyl coated nylon hosebed cover shall be provided to protect the hose load from the weather. The cover shall extend from the front of the hosebed to the rear and then extend downward to cover the exposed rear of the bed and from the left side to the right side of the hosebed.

The cover shall have a double reinforced area where the cover comes into contact with the upper rear corners of the hosebed dividers. The cover shall be secured to the apparatus using velcro on the sides and lift dots on front.

The rear of the cover shall be secured to the apparatus using positive mechanical latches.

The vinyl cover shall be red in color.

SCBA BOTTLE COMPARTMENTS

Three (3) SCBA bottle compartments shall be installed in the wheel well area of the body. One (1) shall be installed on the left hand side, and two (2) on the right hand side. Each shall have a Cast Products door assembly. Each compartment shall allow the storage of an SCBA cylinder up to 7.50" in diameter x 22" deep.

FOLDING STEPS - LH SIDE REAR OF BODY

Three (3) Innovative Controls model 3004234 folding steps shall be provided on the left hand side rear of the body. Each step shall have two (2) cast-in handles, that are large enough for use while wearing gloves. The step(s) shall exceed the NFPA requirements for stepping surface and slip resistance. There shall be a barrier material installed between the body surface and the steps.

STEP LIGHTS

There shall be (2) LED lights incorporated into the folding step assembly. One (1) above the stepping surface, and one (1) below the step assembly.

The light(s) shall be wired to activate with the parking brake.

EXTERIOR GRAB RAILS

Each grab rail shall be non-slip, 1.25" diameter extruded polished aluminum grab rails with rubber inserts designed to provide maximum gripping ability, strength, and durability. The rails shall comply with NFPA 1901-2009.

GRAB RAILS, REAR STEP, VERTICAL

Two (2) extruded aluminum non-slip grab rails, approximately 24.00" in length, shall be provided and vertically mounted on the rear of the apparatus, one (1) on each side of the body.

12 VOLT ELECTRICAL SYSTEM

The truck shall have a 12-Volt electrical system.

All wiring will be run in convoluted high temperature plastic loom. Wiring shall be color and function coded and will be of adequate size to handle the assigned load. All solenoids, relays, and terminal blocks will be located in an easily accessible area.

All circuits provided shall have properly rated low voltage over current protective devices.

All wiring shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for the protected circuit. Voltage drops in all wiring from the power source to the using device shall not exceed 10 percent. The wiring and wiring harness and insulation shall be in conformance to applicable SAE and NFPA standards. The wiring harness shall conform to SAE J-1128 with GXL temperature properties. All exposed wiring shall be protected in a loom with a minimum 289 degree Fahrenheit rating. All wiring looms shall be properly supported and attached to body members. The electrical conductors shall be constructed in accordance with applicable SAE standards, except when good engineering practice requires special construction.

All under side terminal junctions shall be fully enclosed in sealed plastic weather proof boxes.

Electromagnetic interference suppression shall be provided as required to satisfy the radiation limits specified in SAE J551/1.

NFPA 1901 CERTIFIED 12 VOLT ELECTRICAL SYSTEM

The 12-volt apparatus body electrical system shall be provided and shall be in compliance with NFPA 1901 testing and certification procedures as follows:

NFPA MINIMUM ELECTRICAL LOAD DEFINITION

The NFPA 1901 defined minimum electrical load shall consist of the total amperage required to simultaneously operate the following in a stationary mode:

1. Propulsion engine and transmission.
2. The clearance and marker lights.
3. Communication equipment. 5 amp default.
4. Illumination of all walking surfaces, the ground at all egress points, control and instrumentation panels and 50% of total compartment lighting.

5. Minimum warning lights required for "blocking right of way" mode.
6. The current to simultaneously operate and fire pump and all specified electrical devices.
7. Anything defined by the purchaser, in the advertised specifications, to be critical to the mission of the apparatus.

RESERVE CAPACITY TEST

The first electrical test to be performed will be the Reserve Capacity Test. All items listed in NFPA Minimum Load Definition shall be activated with the engine shut off. After 10 minutes of operation, the items 1-7 shall be deactivated. After deactivation, the battery system shall have ample reserve to start the engine.

ALTERNATOR PERFORMANCE TEST AT IDLE

The second electrical test to be performed shall be Alternator Performance Test at Full Load. All electrical loads shall be activated with the engine running up to the governed rpm for two hours. During the test, the system voltage shall not drop below 11.7 volts or have excessive battery discharge for more than 120 seconds. Any loads not defined in the NFPA Minimum Electrical Load may be load managed to pass test.

TEST CONDITIONS

All electrical testing shall be performed with the engine compartment at approximately 200 degrees.

CLASS1 ES-KEY SYSTEM

The electrical system shall utilize Class1 Inc. **ES-Key** technology where applicable.

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.

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) inputs, (24) outputs, a Universal System Manager, a data logger, and programmable special utilities.

The Supernode II shall have an integrated USB port to allow for direct connection to the ES-Key system without additional interface devices.

LOAD MANAGER

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.

LOW 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).

1TOUCH SWITCH PANEL, 8 POSITION

An eight (8) position 1Touch switch panel module shall be installed in the cab.

MASTER WARNING SWITCH

A master switch shall be included in the main 1Touch switch panel. The switch shall have a red light indicator and be labeled "Master Warning" for identification. The switch shall feature control over all devices wired through it. Any warning device switch left in the "ON" position shall automatically power up when the master switch is activated.

SWITCH PANEL LOCATION

The switch panel shall be located on the center console.

UNDERBODY/CAB GROUND LIGHTS

LED ground illumination lights, with outward facing angle brackets shall be provided and installed in the following locations:

CHASSIS GROUND LIGHTS

Four (4) LED ground lights with outward facing angle brackets shall be installed, one (1) under each chassis door.

FRONT OF BODY GROUND LIGHTS

Two (2) LED ground lights with outward facing angle brackets shall be installed under the front of the body. One (1) light shall be located on the left hand side and one (1) light located on the right hand side of the apparatus.

REAR STEP GROUND LIGHTS

Two (2) LED ground lights with outward facing angle brackets shall be installed under the rear step of the apparatus, one (1) each side.

GROUND LIGHT SWITCHING

The cab and body ground lights shall activate by engaging the parking brake.

HAZARD LIGHT

One (1) Whelen model 0SR00FCR flashing red LED light, located in the driving compartment, the light shall be illuminated automatically whenever any compartment door is ajar.

The hazard light shall be marked with a sign that reads “Do Not Move Apparatus When Light is On”.

The warning light shall be interlocked to the parking brake and shall only alert the driver when the parking brake is released. The light shall also be used to signal that other ancillary equipment such as racks light towers etc. are not in their “ready for transport” position.

REAR DIRECTIONALS

Rear directional lighting shall be supplied as follows:

Two (2) Whelen model M6BTT LED brake/tail lights shall be installed on the rear of the body. Each light shall have a red lens.

Two (2) Whelen model M6T Amber LED turn signal lights with a populated arrow shall be installed on the rear of the body. Each light shall have a color lens.

Two (2) Whelen model M6BUW LED reverse lights shall be installed on the rear of the body.

HOUSINGS FOR DIRECTIONALS

The two (2) sets of Whelen rear signal lights shall each be housed in a vertical chrome plated housing, designed to hold four (4) lights each. The lower section of each casting shall contain the rear lower warning lights as described in the emergency lighting specifications.

DOT MARKER LIGHTS AND REFLECTORS

LED marker lights shall be installed on the vehicle in conformance to the Department of Transportation requirements. All marker lights shall be incorporated into the headlight circuit of the cab/chassis.

The side body panels shall be furnished with marker lights installed as follows:

- Four (4) 0.75" amber LED marker lights, one (1) on each side at front top corner of body.
- Four (4) 0.75" red LED marker lights, one (1) on each side at rear top corner of body.

The rear body panel, centered above the bumper, shall be furnished with marker lights installed as follows:

- Three (3) 0.75" red LED marker lights, as close as practical to the vertical centerline. Centers spaced not less than 6.00" or more than 12.00" apart.

Two (2) amber reflectors shall be provided on the apparatus body lower side, as far forward and low as practical, one (1) each side if the apparatus is 30 feet long or longer.

Four (4) red reflectors shall be provided on the apparatus rear, one (1) each side and two (2) on the rear.

LICENSE PLATE LIGHT

A license plate bracket with LED light shall be provided and installed on the rear of the body. It shall be wired to come on with the headlights.

UPPER LEFT SCENE LIGHTS

One (1) pair of Whelen model M6ZC LED scene lights shall be installed, one (1) each side on the upper left hand side of the apparatus body.

The light(s) shall be supplied and installed with a chrome bezel.

UPPER RIGHT SCENE LIGHTS

One (1) pair of Whelen model M6ZC LED scene lights shall be installed, one (1) each side on the upper right hand side of the apparatus body.

The light(s) shall be supplied and installed with a chrome bezel.

UPPER REAR SCENE LIGHTS

One (1) pair of Whelen model M6ZC LED scene lights shall be installed, one (1) each side on the upper rear of the apparatus body.

The light(s) shall be supplied and installed with a chrome bezel.

SCENE LIGHT SWITCHING

One (1) scene light switch with indicator shall be installed on 1Touch switch panel to control the left side scene light(s). The switch shall be labeled "LEFT SCENE".

SCENE LIGHT SWITCHING

One (1) scene light switch with indicator shall be installed on 1Touch switch panel to control the right side scene light(s). The switch shall be labeled "RIGHT SCENE".

SCENE LIGHT SWITCHING

One (1) scene light switch with indicator shall be installed on the 1Touch switch panel to control the rear scene light(s). The switch shall be labeled "REAR SCENE".

REAR SCENE LIGHTS - ADDITIONAL ACTIVATION

In addition to the cab mounted switch for the rear scene lights, the rear scene lights shall illuminate when the transmission is placed in reverse gear.

NFPA AUDIBLE AND LIGHTING WARNING PACKAGE

The following warning light package shall include all of the minimum warning light and actuation requirements for the current revision of the NFPA 1901/ 1906. The lighting as specified shall meet the requirements for both "Clearing Right of Way" and "Blocking Right of Way" which includes disabling all white warning lights when the apparatus is in "Blocking Right of Way" mode.

LIGHTBAR

One (1) WHELEN model JE2NFPA 56.00" LED lightbar shall be supplied and mounted. The lightbar shall have clear lenses and contain the following modules:

- Four (4) RED LIN6 LED modules, two (2) on each corner.
- Four (4) RED CON3 LED modules, across the front
- Two (2) WHITE CON3 LED modules, on the front

The forward facing white lights shall be automatically disabled for the "Blocking Right of Way" mode.

LIGHTBAR SWITCHING

One (1) rocker switch with indicator shall be installed on the switch panel in the cab to control the light bar. The switch shall be labeled "LIGHT BAR". The switch shall only be active when the master warning switch is engaged.

LIGHTBAR MOUNTING BRACKET

The lightbar shall be mounted with the Whelen model MKEZ7 1.50" permanent mount.

UPPER LEFTSIDE WARNING LIGHTS

One (1) pair of Whelen model M6RC LED warning lights shall be installed, one (1) each side on the upper left side of the apparatus body.

The lights shall be red in color with clear lens.

The light(s) shall be supplied and installed with a chrome bezel.

UPPER RIGHTSIDE WARNING LIGHTS

One (1) pair of Whelen model M6RC LED warning lights shall be installed, one (1) each side on the upper right side of the apparatus body.

The lights shall be red in color with clear lens.

The light(s) shall be supplied and installed with a chrome bezel.

UPPER REAR WARNING LIGHTS

One (1) pair of Whelen model M6RC Super LED warning lights shall be installed, one (1) each side on the upper rear of the apparatus body.

The lights shall be red in color with clear lens.

The light(s) shall be supplied and installed with a chrome bezel.

UPPER WARNING LIGHT SWITCHING

One (1) switch with indicator shall be installed on 1Touch switch panel to control the upper warning lights. The switch shall be labeled "UPPER WARN". The switch shall only be active when the master warning switch is engaged.

LOWER FRONT WARNING LIGHTS

One (1) pair of Whelen model M4RC LED warning lights shall be installed, one (1) each side on the front of the chassis cab.

The lights shall be red in color with clear lens.

The light(s) shall be supplied and installed with a chrome bezel.

INTERSECTION WARNING LIGHTS

One (1) pair of Whelen model M4RC Super LED warning lights shall be installed, one (1) each side of the chassis cab.

The lights shall be red in color with clear lens.

The light(s) shall be supplied and installed with a chrome bezel.

LOWER MID-BODY WARNING LIGHTS

One (1) pair of Whelen model M7RC LED warning lights shall be installed, one (1) each side of the apparatus, mid-body.

The lights shall be red in color with clear lens.

The light(s) shall be supplied and installed with a chrome bezel.

LOWER REAR WARNING LIGHTS

One (1) pair of Whelen model M6RC LED warning lights shall be installed, one (1) each side on the lower rear of the apparatus body.

The lights shall be red in color with clear lens.

The light(s) shall be supplied and installed with a chrome bezel.

LOWER WARNING LIGHT SWITCHING

One (1) switch with indicator shall be installed on 1Touch switch panel to control the lower level warning lights. The switch shall be labeled "LOWER WARN". The switch shall only be active when the master warning switch is engaged.

ELECTRIC SIREN AND CONTROL

One (1) Whelen model #295SLSA1 electronic siren shall be mounted in the cab. This unit shall feature an electronic air horn, wail, yelp, hi-lo and shall have a hard wired PA microphone.

SIREN LOCATION

The electronic siren control shall be located in the center console.

ELECTRONIC SIREN SPEAKER

One (1) Whelen model SA315P 100 watt speaker shall be provided. The speaker shall have a nylon composite black housing with front loaded, powder coated speaker driver. The speaker shall produce a minimum sound output of 120 dB at 10 feet to meet current NFPA 1901/1906 requirements. The speaker shall be wired to the electric siren located in the cab.

The speaker shall be located on the left hand side of the bumper.

The speaker shall be mounted using a Whelen model # SAK1 bracket.

PAINT PROCESS

The body shall be totally removed from the chassis during the painting process to insure the entire unit is covered.

The body and all parts shall be thoroughly washed with a grease cutting solvent PPG436 prior to any sanding. After the body has been sanded, it shall be washed again with PPG436 to remove any contaminants on the surface.

CHASSIS PAINT

The chassis shall be painted by the OEM Chassis Manufacturer.

PAINT FINISH

The body shall be painted with a PPG Delfleet Evolution Paint System.

As part of the curing process the painted body shall go through a baking process. The painted components shall be baked at 185 degrees for 3 hours to achieve a complete coating cure on the finished product.

After bake and ample cool down time, the coated surface shall be sanded using 3M 1000, 1200, and or 1500 grit sandpaper to remove surface defects. In the final step, the surface shall be buffed with 3M Super-duty compound to add extra shine to coated surface. No more than .5 mil shall be removed in this process.

All products and technicians shall be certified by PPG every two (2) years.

ANTI-CORROSION PROTECTION

Where dissimilar metals must be joined, overlaid, share perforations or otherwise come in contact with each other to achieve construction, performance or aesthetic requirements, such items shall be separated by a continuous contact, nonconductive coating or film to prevent or otherwise mitigate the effects of electrolysis. Only stainless-steel hardware and fasteners shall be used in the construction of the apparatus. Where stainless steel fasteners pass through an aluminum component, the fastener contact surfaces, including the head, washer and nut shall be coated with ECK anti-corrosion material.

BODY UNDERCOATING

The body underside, including the sub-frame and the inside of the wheel wells, NOT THE WHEEL WELL LINERS, shall be thoroughly coated with SWT commercial automotive undercoat and sound deadening material to protect the body module against corrosion. The coating shall be black and shall be tested to ASTM B117 Salt Spray test for 1,000 hours at 10-mils.

COMPARTMENT INTERIORS

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

PAINT COLOR

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

WHEEL RIMS

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

REFLECTIVE STRIPING

Reflective striping shall be applied to the perimeter of the truck. Size and design shall be determined by the department.

REAR CHEVRON STRIPING

At least 50% of the rear facing vertical surface shall be covered with alternating strips of reflective striping. Each stripe shall be a minimum of 6.00" in width and shall be applied to the apparatus at 45° angle.

The chevron striping colors shall consist of 3M diamond grade red and fluorescent yellow.

The chevron striping shall consist of 3M part numbers 983-72NL, red and 983-23ES, fluorescent yellow.

Chevron seam sealing tape will be applied to all seams and edges

LETTERING

Reflective lettering shall be applied to the cab doors at the direction of the purchaser.

Photos or drawings of the lettering and striping layout shall be provided by the purchaser prior to construction.