Boise Mobile Equipment

HGAC BB02

Castle Rock Fire & Rescue
FREIGHTLINER CHASSIS
TYPE 3 WILDLAND VEHICLE
SPECIFICATIONS

DETERMINATION OF APPARATUS WEIGHT

Boise Mobile Equipment, Inc shall submit estimated "in-service" weight analysis required by applicable NFPA standards. This Excel computer weight analysis shall break down all major components of the apparatus and shall show the impact on percentage-of-load on the front and rear axles, total weight, and weight on each tire set.

The analysis shall evenly distribute the NFPA required minimum payload allowance or estimated equipment payload as provided by the purchaser into the specified compartments. The allowance for personnel, hose loads, water and foam fluids, and required NFPA equipment shall be outlined individually in the analysis and placed on the apparatus in its specific intended position.

CENTER-OF-GRAVITY ANALYSIS

Boise Mobile Equipment, Inc shall perform an estimated center of gravity calculation as required by the applicable section of NFPA standards. This calculation shall include tilt angles, the estimated right to left load distribution, and load on each axle, including all specified major components.

12 VOLT ELECTRICAL TESTING

The completed fire apparatus shall undergo a complete 12 volt electrical load and performance testing per applicable sections of NFPA standards with inspection and test sheets included in delivery documentation.

TEST RESULTS

Boise Mobile Equipment Inc. shall provide results of the apparatus testing and shall certify the following:

The weight of the completed apparatus, when loaded to it’s estimated in service weight, does not exceed the GVWR and GAWR of the chassis.

The complete unit, when loaded to its estimated in service weight, meets the weight distribution and vehicle stability requirements, as defined in the current NFPA guidelines.

The unit meets all required federal standards pertaining to the manufacturer and completion of the apparatus and a label tag has been affixed to the apparatus by the manufacturer stating same.

Boise Mobile Equipment Inc. shall provide all testing results, including engine, speed, acceleration, road ability, braking, and auxiliary braking to the Purchaser at the time of delivery.

GENERAL WARRANTY PROVISIONS

All materials and workmanship herein specified, including all equipment furnished, shall be guaranteed for a period of one (1) year after the acceptance date of the apparatus, unless otherwise noted, with the exception of any normal maintenance services or adjustments which shall be required. Under this warranty, Boise Mobile Equipment shall be responsible for the costs of repairs to the apparatus that have been caused by defective workmanship or materials during this period.

This warranty shall not apply to the following:

- Any component parts or trade accessories such as chassis, engines, tires, pumps, valves, signaling devices, batteries, electric lights, bulbs, alternators, and all other installed equipment and accessories, in as much as they are usually warranted separately by their respective manufacturers, or are subject to normal wear and tear.
- Failures resulting from the apparatus being operated in a manner or for a purpose not recommended by the apparatus manufacturer.
- Loss of time or use of the apparatus, inconvenience or other incidental expenses.
- Any apparatus which has been repaired or altered outside of the apparatus manufacturer's factory in any way that affects its stability, or which has been subject to misuse, negligence, or accident.
- Delivery of the apparatus to repair site.

DISCLAIMER

NO WARRANTIES ARE GIVEN BEYOND THOSE DESCRIBED HEREIN. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. THE COMPANY SPECIFICALLY DISCLAIMS WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OTHER REPRESENTATIONS TO THE USER/PURCHASER AND ALL OTHER OBLIGATIONS OR LIABILITIES. FURTHER, THE COMPANY EXCLUDES LIABILITY FOR CONSEQUENTIAL AND INCIDENTAL DAMAGES, ON THE PART OF THE COMPANY OR SELLER. No person is authorized to give any other warranties or to assume any liabilities on the Company’s behalf unless made or assumed in writing by the seller; and no other person is authorized to give any warranties or to assume any liabilities on the seller’s behalf unless made or assumed in writing by the seller.

OBTAINING SERVICE

Return the vehicle to any Boise Mobile Equipment, Inc dealer/authorized service center; Return the vehicle to Boise Mobile Equipment Inc. or contact Boise Mobile Equipment Inc. Boise Mobile Equipment Inc. shall be solely responsible for determining the extent of repair under the terms of the warranty. Transportation costs shall be the responsibility of the purchaser.

MATERIAL AND WORKMANSHIP

All equipment provided shall be guaranteed to be new and of current manufacture, and unless specified otherwise, shall meet all requirements of these specifications and prevailing NFPA documents and be in condition at time of delivery for use as specified for this type of apparatus.

All workmanship shall be of the highest quality and accomplished in a professional manner so as to insure a functional apparatus with a high quality aesthetic appearance.

The construction shall be rugged and ample safety factors shall be provided to carry the loads specified to meet both on and off road requirements.

The apparatus shall be designed and the equipment mounted with due consideration to the distribution of load between the front and rear axles, so all specified equipment, with a full complement of personnel, can be carried without damage to the apparatus.

BODY AND STRUCTURAL WARRANTY

Boise Mobile Equipment shall warrant each new apparatus body, if used in a normal and reasonable manner, against structural defects caused by defects in material, design or workmanship for a period of ten (10) years, covering parts & labor to the original purchaser which shall start on day of acceptance.

This warranty shall not apply to:

- Normal maintenance services or adjustments
- To any vehicle which will have been repaired or altered outside of our factory in any way so as, in the judgment of BME, to affect it's stability, nor which has been subject to misuse, negligence, or accident, nor to any vehicle made by us which will have been operated to a speed exceeding the factory rated speed, or loaded beyond the factory rated load capacity.
- Commercial chassis and associated equipment furnished with chassis, signaling devices, generators, batteries, or other trade accessories as they are usually warranted separately by their respective manufacturers.

- Shipping costs of parts or apparatus for purposes of repair or replacement of parts. This warranty is in lieu of all other warranties, expressed or implied. All other representations as to the original purchaser and all other obligations or liabilities, including for incidental or consequential damage on the company's behalf unless made in writing by the company.

FIRE PUMP WARRANTY

A two (2) year warranty on the Hale fire pump shall be provided. The provisions of this warranty shall be described in the completed apparatus documentation.

PLUMBING WARRANTY

The stainless steel fire pump plumbing shall carry a ten (10) year parts and labor warranty against defects in workmanship and perforation corrosion.

AKRON VALVE WARRANTY

The Akron valves shall carry a ten (10) year parts and labor manufacturer’s warranty. Provisions of this warranty shall be provided with the completed apparatus documentation.

WATER TANK WARRANTY

The polypropylene water tank that is specified to be supplied with this apparatus shall be warranted by the water tank manufacturer for a "lifetime" period from the date that the apparatus is put into service. The tank manufacturer shall repair, at no cost to the purchaser, any problems caused by defective materials and/or workmanship. The warranty shall cover the reasonable costs of removing the water tank from the apparatus and reinstalling it after the completion of the covered warranty repairs, but shall not cover any liability for the loss of service or downtime costs of the apparatus.

FOAM TANK WARRANTY

The foam tank shall carry a “lifetime” warranty against defects in workmanship and perforation corrosion. The provisions of this warranty shall be provided in the delivery documentation.

PAINT WARRANTY

Boise Mobile Equipment, Inc shall provide a seven (7) year paint warranty which shall cover peeling and/or de-lamination of the top coat and other layers of paint, cracking or checking, loss of gloss caused by cracking,

checking or chalking, and any paint failure caused by defective paint materials covered by the paint manufacturer's material warranty.

CHASSIS WARRANTY

The specified chassis shall be provided with the chassis manufacturer's warranty. The exact provisions of this warranty shall be supplied with the completed apparatus documentation.

APPARATUS OPERATION MANUAL(S)

Boise Mobile Equipment shall provide one (1) printed apparatus operational manual(s).

ELECTRICAL LOAD ANALYSIS

A 12 volt electrical load analysis shall be completed as required by the purchaser.

DELIVERY REQUIERMENTS

The bidder shall not be responsible for delays in delivery due to strikes, acts of God, failure of suppliers to deliver, chassis shortage and other reasons beyond the reasonable control of the builder. Should Boise Mobile Equipment be unable to comply with the proposed delivery date, we shall immediately contact the purchaser regarding delay information and actions to be taken by the company.

This vehicle shall be F.O.B. the Boise Mobile Equipment facility in Boise Idaho.

AUXILLIARY FIRE PUMP WARRANTY

A one (1) year warranty on the Waterax fire pump shall be provided. The provisions of the Waterax warranty shall be included in the apparatus documentation.

APPARATUS DIMENSIONS

Wheelbase of chassis: 193”

Cab to axle dimension: 74”

Overall apparatus length: 305"

Overall body length: 136”

Overall body width: 96"

Overall apparatus height: 121”

CHASSIS SPECIFICATIONS

One (1) Freightliner M2 106 Series four (4) door, 4x4 cab and chassis

GVWR: 38,000 lbs

Frame: steel channel type, reinforced

Wheelbase: 188” Cab to Axle: 74”

Front Bumper: Swept back

Tow Hooks: front

Front Axle: 14,000 lbs, oil filled front wheel seals, front shocks

Front Suspension: 14,600 lbs

Front Tires: Two (2) Goodyear Armor Max Pro Grade MSD, 12R22.5 16 Ply Radial Front

Front Wheels: Two (2) steel disc wheels, painted job color (red)

Mud Flaps: black mud flaps

Rear Axle: 24,000 lbs

Rear Suspension: 24,000 lbs

Rear Tires: Four (4) Goodyear Armor Max Pro Grade MSD, 12R22.5 16 Ply Radial Rear

Rear Wheels: Four (4) steel disc wheels, painted job color (red)

Air Brake System: equipped with air-operated brakes and an anti-lock braking system (ABS), air dryer, heated moisture ejectors

Engine: Cummins ISL, 350 HP @ 2000 RPM , 1000 LB/FT @ 1400 RPM

Engine Block Heater: 120-volt coolant heater rated at 1,000 watts, with an exterior mounted straight blade receptacle

Engine Exhaust Brake: exhaust brake

Cooling System**:** -30 degrees Fahrenheit

Exhaust System: horizontally mounted right side

Fuel Tank: Left side step tank 70-gallon

DEF Tank: 12 Gallon

Fuel Filter: heated fuel/water with dash mounted alarm, indicator light

Transmission: Allison EVS3000P, electronic 6-speed automatic

Steering: power

Batteries: three (3) 31 heavy-duty 12-volt batteries installed with a 950 cold cranking amp rating

Alternator: 275-amp

Cab: Four door, with tilting fiberglass front hood assembly

Cab accessories and features shall include:

1) Tinted glass in all windows
2) Amber DOT edge of roof clearance/marker lights
3) Gray interior trim with cloth upholstery
4) Grey vinyl floor mat
5) Dual sun visors
6) Electric windshield washer
7) Electric windshield wipers with two speed switch with wash and intermittent feature.
8) Exterior handrails at each cab door
9) High output heater and defroster system with electronic controls
10) Dual electric horns
11) Halogen headlights
12) Front turn signal lamps
13) Power windows and locks

Cab Paint: single color, Candy Apple Red

Climate Control: heat and air conditioning

Cab Mirrors: two (2) West Coast style heated mirrors

Cab Instruments: standard

Drivers Seat: individual bucket style seat with mechanical suspension and three (3) point safety harness

Passenger Seat**:** individual bucket style with mechanical suspension seat and three (3) point safety harness

Rear Seats: Two (2) individual bucket style with mechanical suspension seat and three (3) point safety harness

Printed Manuals: one (1) printed chassis operation manual

Cab Accessories**:** AM/FM stereo radio, CD player, two radio speakers, antenna

CAB SEATING AND WEIGHT ALLOWANCE

A warning label shall be installed in the cab to indicate seating positions for four (4) people. A weight allowance of 250 pounds shall be calculated for each person.

DATA PLAQUE

A data plaque shall be provided and installed on the inside of driver's door. The data plaque shall contain the required information based on the applicable components for the apparatus:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Drive axle lubricant
- Power steering fluid
- Pump, generator, or other component lubrications
- Other NFPA applicable fluid levels or data as required
- Paint manufacturer, type, and color number
- Tire Speed Ratings

Location shall be in the driver's compartment or on driver's door.

DIMENSION DATA LABEL

The cab dash area shall have an apparatus dimension label installed. The label shall be highly visible, indicating the overall height, length, width and weight of the vehicle.

WARNING LABEL -- NO RIDING ON REAR

A warning label stating: "NO RIDING ON REAR OF APPARATUS" shall be installed on rear of the apparatus. The label shall be applied to the vehicle at the rear step area. The label shall warn personnel that riding in or on these areas, while the vehicle is in motion, are prohibited.

WARNING LABEL -- SEAT BELT USEAGE

A warning label, stating: "DANGER- Personnel Must Be Seated And Seat Belts Must Be Fastened While Vehicle Is In Motion Or DEATH OR SERIOUS INJURY MAY RESULT" shall be provided in the apparatus cab interior. This label shall be located so that it is visible from all seating positions.

VEHICLE FINAL STAGE MANUFACTURER LABEL

A final stage manufacturer label shall be installed by the fire apparatus body manufacturer in compliance with applicable motor vehicle standards.

LOUD NOISE WARNING LABEL

A final stage manufacturer shall install "hearing loss" potential warning labels on the vehicle in any areas or fixed equipment that produces excessive noise levels. (Exhaust outlet, sirens and air horns shall not be required for such equipment.)

MANUFACTURER LOGO

The apparatus shall include a Boise Mobile Equipment logo plaque which shall be affixed at the rear of the apparatus.

REAR FRAME RAIL LENGTH

The rear frame rails shall be shortened by the final stage manufacturer to accommodate the length of the apparatus body.

FRONT TOWING PROVISIONS

Two (2) front towing provisions shall be installed by the chassis manufacturer.

REAR TOW PLATES

Two (2) heavy-duty tow eyes shall be provided at the rear of the apparatus, below the rear step. The tow eyes shall be mounted to the chassis frame.

AIR HORN

One (1) Buell brand, Model #1063 15" air horn shall be provided and mounted on the frame rail of the passenger's side frame, behind the bumper.

ELECTRIC SIREN AND AIR HORN SELECTOR SWITCH

One (1) toggle switch shall be provided and installed in the cab. The switch shall be located on the cab's dash and shall allow the driver to select either the electronic siren or the air horns from the steering wheel horn button.

AIR HORN PUSH BUTTON SWITCH

One (1) push button switch shall be provided in the console. The switch shall activate the air horn system.

EXHAUST SYSTEM MODIFICATION

The chassis exhaust system shall be modified to exit on the right hand side of the apparatus ahead of the rear wheel.

NEDERMAN EXHAUST EXTRACTION

The exhaust outlet shall be configured to allow connection of the in station Nederman exhaust extraction system.

REAR MUD FLAPS

One (1) pair of flexible rubber mud flaps shall be provided on both sides of the apparatus body behind the rear wheels. The mud flaps shall not bear company logo. The mud flaps shall extend down far enough to be effective but shall not allow the flaps to become entangled with the rear tires when the apparatus is backing up.

AIR TANK DRAIN EXTENSION

A cable from the spring loaded air tank drain shall be provided and installed. The cable shall be routed and attached to the outer edge of the apparatus for ease of access. The braided steel cable shall allow accumulated moisture in the air brake system to be easily drained. The cable shall be installed so that maximum ground clearance is maintained.

AIR, FUEL, ELECTRICAL LINE PROTECTION

All air lines, fuel lines and electrical harnesses below the chassis frame rails shall be protected with fire resistive sleeves.

ECM PROGRAMMING

The cab and chassis ECM shall be programmed as required to allow the use of the OEM cruise control feature as a manually-controlled fast idle and as a backup to the pump operator's panel throttle.

FIRE PUMP SPECIFICATIONS

The mid-ship fire pump shall be a Hale Model CBP, 250 GPM single-stage P.T.O. driven, mounted behind the chassis cab between the frame rail area. The pump shall be of a centrifugal design, with a cast iron pump body, bronze fitted, with a 3" suction inlet and a 2" discharge outlet. The pump shall be capable of delivering 200 GPM at 300 PSI output pressure from a 5 ft. lift through 24 ft. of 3" suction hose with strainer and also from apparatus water tank when installed on the apparatus.

The pump manufacturer shall certify that the pump can deliver the following capacities at net pump pressure from draft under the conditions listed after capacities:

1. 300 GPM @ 150 PSI net pump pressure
2. 200 GPM @ 300 PSI net pump pressure
3. 100 GPM @ 400 PSI net pump pressure

The fire pump shall perform the above test points under the following conditions:

1. An altitude of not more than 2000 ft. above sea level
2. Atmospheric pressure of 29.9 in Hg (corrected to sea level)
3. Water temperature of 60°F
4. Through a single intake with 20 ft. of 3" suction hose equipped with a suction hose strainer
5. When dry, the pump shall be capable of taking suction and discharging water with a lift of 10 feet or more in not more than 30 seconds.
6. The pump ratio shall be selected by the apparatus manufacturer to provide maximum performance within the limits of the engine, transmission and PTO selected. The pump shall provide 400 PSI static at between 1900 and 2100 RPM.

Pump Construction

The volute shall be fabricated from a fine grain alloy cast iron, with a minimum tensile strength of 30,000 pounds per square inch. The entire pump shall be hydro dynamically tested to 400 PSI.

The pump impeller shall be fabricated from a hard, fine grain bronze, and shall be of a mixed flow design; accurately machined, hand ground, and individually balanced. The vanes of the impeller intake eye shall be hand ground. The impeller shall be of sufficient size and design to provide ample reserve capacity, utilizing minimum horsepower. The impeller shall be keyed to the pump shaft and locked in place with a stainless steel lock nut.

Water sealing shall be accomplished by a spring loaded, carbon ring on a ceramic faced, brass seat mechanical seal, which shall automatically adjust for wear.

The pump shaft shall be rigidly supported by two deep groove ball bearings for minimum deflection. The pump shaft shall be fabricated from heat-treated, electric furnace, corrosion resistant, stainless steel. The pump shaft and drive shaft shall be sealed with double lip oil seals to retain lubricants and to keep road dirt and water out of the drive unit. The pump shaft shall be supported by a high lead bronze sleeve bearing on the impeller end to minimize shaft deflection.

The drive unit, as well as the entire pump, shall be completely manufactured at the pump manufacturer's factory. The drive unit bearings shall be of a heavy duty design and shall be precision ground to size. The drive unit shall be of sufficient size to withstand full torque during pumping operations. The drive unit shall have ample capacity for lubricant reserve and the maintenance of proper operating temperatures.

All gears shall be fabricated from the highest quality steel alloy. They shall have case hardened teeth, to provide long life, smooth, quiet running and higher load carrying capability. An accurately cut spur design shall be utilized to eliminate all possible end thrust.

PRIMING PUMP

One (1) positive displacement, oil less, rotary vane, electric motor-driven priming pump, conforming to the NFPA requirements, shall be provided. The primer pump body shall be fabricated from heat-treated anodized aluminum for wear and corrosion resistance. The priming pump shall be capable of producing a minimum of 20 Hg of vacuum at 2000 feet above sea level.

The primer pump electric motor shall be of a 12 VDC totally enclosed design. The priming pump shall not require lubrication from an external source. The priming pump shall be operated by a single push-pull control valve mounted on the pump operator’s panel. The control valve shall be of all bronze construction.

PRESSURE RELIEF VALVE

The Hale fire pump shall be equipped with a Model P-30 integral automatic pressure control device. The bronze device shall be a variable pressure setting valve with ample capacity to prevent undue pressure rise per applicable NFPA standards.

The relief valve shall be normally closed and shall open against pump pressure with a control light to signal the opening. In the event of relief valve control failure, the pump is to remain operational for the complete range of the pump's rated capacity without requiring the closing of any emergency or "IN CASE OF FAILURE" control valves. The relief valve control wheel and indicator light shall be mounted on the pump panel.

MECHANICAL WATER SEAL

The PTO fire pump shaft shall have a high quality, self-adjusting, maintenance free mechanical seal.

FIRE PUMP ANODE SYSTEM

The fire pump plumbing system shall be provided with two (2) zinc anode to reduce corrosion within the suction side piping. The unit shall be a bolt-in or screw-in type and shall be easily replaceable.

FIRE PUMP PTO AND DRIVELINES

A "Hot Shift" power-take-off shall be installed on the transmission PTO opening with the controls located in the chassis cab, with a GREEN warning light to note engagement. The drive shaft and universals shall be sized for intended usage and pump rating.

HALE ELECTRIC PUMP PRIMER - ADDITIONAL CONTROL

One additional control valve for the Hale electric primer shall be provided to use priming the Waterax pump. The valve shall be mounted on the rear operator's panel with the other Waterax pump controls.

WATERAX BB-4-D902V PUMP

The pump/engine shall perform to the standards of ISO 9 and NFPA 1906 medium pressure rating of 50 GPM. Typical pump performance from 5 foot draft under standard NFPA conditions shall be 65 GPM @ 350 PSI, 95 GPM @ 250 PSI, 105 GPM @ 150 PSI, and 105 GPM
@ 100 PSI.

The pump shall provide a maximum pressure of 440 PSI and a maximum flow of 106 GPM. It shall be capable of operating to a maximum pressure of 600 PSI and be capable of passing a hydrostatic test of 550 PSI for 10 minutes per NFPA 1906 specifications.

The pump intake shall be a 2” Male NPSH hose thread and be an integral part of the pump intake cover. The pump discharge shall be a 1-1/2” Male NPSH hose thread and be an integral part of the pump body. The pump intake and discharge shall be in locations where applicable hose thread adapters can be installed without interference.

The pump shall be a 4-stage centrifugal pump with the pump body, diffusers, and impellers made of an anodized corrosive resistance aluminum. The impeller must be aluminum to match the pump body and diffusers in order to prevent galvanic corrosion from taking
place between pump components.

The impellers shall be 3.67 inches in diameter.

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

A 1-1/2 NPSH priming port shall be located on the top side of the pump near the intake cover. The pump shall be coupled to a horizontal belt driven speed increaser with a quick release clamp capable of being removed by hand and without any additional tools. The quick release clamp system shall allow for the entire pump assembly, pump body with all its internal and external components, to be removable and capable of being service at a location away from the gasoline engine and fire apparatus upon which it was part of. It shall also allow for the swapping out of the same or different performance pump assemblies within a minute's time.

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

Both the pump and speed increaser shall be painted red.

The engine shall be a 4 cycle Kubota horizontal drive water cooled diesel engine. The engine rating shall be 24.8 HP and shall meet current EPA and CARB emission standards.

The electrical system of the engine shall be 12 VDC. It shall have an electric starting system. It shall also have a 25 amp regulating alternator and be pre-wired with a 3 feet engine harness to allow it to connect to a mating control harness via an 8-pin industrial sealed quick-connect connector

The engine muffler system shall be a single vertical side mounted muffler. The muffler system shall be equipped with a forestry approved spark arrestor.

PUMP PERFORMANCE TEST AND CERTIFICATION

Upon completion, the apparatus shall undergo a complete pumping test that conforms to the requirements of NFPA Standard 1906 (latest edition) for the size and type of pump provided. The test shall consist of a continuous one-half hour test pumping at rated capacity and rated net pump pressure, a vacuum test of the primer system and plumbing, a tank discharge flow test and a pressure test of the apparatus piping.

The chassis engine and transmission, the pump and other components of the apparatus shall show no undue heating, leaks, or other defect. The results of the test shall be documented to establish the performance of the apparatus and to further insure that the unit shall perform satisfactorily when placed into service. The test results shall be certified in writing, with the certification provided to the purchaser for their records at the time of delivery of the completed apparatus.

MASTER PUMP DRAIN

One (1) Trident, multiple-port drain valve, fabricated from bronze, shall be provided and controlled at the pump operator's control panel. The valve shall be opened by turning a rotary hand wheel. The valve shall be plumbed to drain both the discharge and intake sides of the pump, the relief valve and other plumbing components as required.

The valve shall be placed as low as possible to provide proper drainage of the components plumbed to it. The valve shall be rated to 600 PSI minimum and suitable for daily valve actuation.

SKID PUMP PLUMBING- GENERAL

The plumbing system shall utilize stainless steel piping incorporating hosing to allow for flex. The piping shall utilize TIG welding to provide a complete seal. Hard angles shall be avoided when possible to improve water flow characteristics. The piping shall utilize Victaulic couplers whenever possible to allow flex as the body module flexes.

Threaded sections of piping shall be avoided to reduce the leak potential of the system. Victaulic couplers shall be used in place of threading to reduce leak potential. Schedule 10 stainless steel piping shall be used for transport type piping. Schedule 40 stainless steel shall be used for areas requiring threading to provide a stable threading base. Brackets shall be installed to support threading locations thereby reducing the potential for leaks.

All hoses shall be connected directly to the tank due to the different flex ratios of the tank to body. Any front discharges, any rear discharges, and all cross lays shall use hose to reach the actual discharge. The use of hose shall be utilized due to the difference in flex or movement between the discharge location and the pump connection. Drain lines shall be provided at the lowest points in the plumbing system to allow for complete drainage. Bleeders shall be provided for all gauges to relieve pressure after use.

All piping shall be hydrostatically tested to assure structural integrity in accordance with NFPA standards, with the test results submitted to purchaser upon delivery.

The plumbing shall be unpainted.

AUXILIARY FUEL SYSTEM

The fuel system for the auxiliary fire pump shall be plumbed to the chassis fuel system. There shall be a separate fuel pickup tube mounted in the chassis fuel tank specifically for a separate engine driven pump assembly. There shall be an electric fuel pump with regulator and fuel hose furnished between the chassis fuel tank and the auxiliary pump.

AUXILIARY FIRE PUMP ELECTRIC START WIRING TO CHASSIS

Properly sized 12 volt positive and negative cables shall be provided from the chassis battery to the auxiliary fire pump.

AUXILIARY FIRE PUMP TEST

The auxiliaryfire pump shall undergo factory fire pump run-in tests for a minimum of 30 minutes prior to delivery of the completed apparatus. The factory pump testing results shall be furnished on delivery.

TRUCK IDENTIFICATION PLATE

A durable truck identification plate, fabricated from corrosion resistant metal, shall be provided and installed on the pump operator's panel. The plate shall state the name and address of the apparatus manufacturer, the serial number of the unit and the pump performance test results.

BYPASS FIRE PUMP COOLER

The fire pump shall be equipped with 3/8" cooling line from the pump to the water tank. This re-circulation line shall be controlled by a pump panel control valve with nameplate label noting it as the "fire pump bypass cooler".

MASTER PUMP DRAIN

One (1) Trident, multiple-port drain valve, fabricated from bronze, shall be provided and controlled at the pump operator’s control panel. The valve shall be opened by turning a rotary hand wheel. The valve shall be plumbed to drain both the discharge and intake sides of the pump, the relief valve and other plumbing components as required.

The valve shall be placed as low as possible to provide proper drainage of the components plumbed to it. The valve shall be rated to 600 PSI minimum and suitable for daily valve actuation.

AUXILIARY ENGINE THROTTLE

A manually operated vernier engine control throttle shall be installed for the mechanical type engine. The throttle shall be furnished on the pump operator's control panel. There shall be an engraved identification label provided to read "THROTTLE".

AUXILIARY PUMP RUNNING INDICATOR

The auxiliary fire pump installation shall have "run light" and on-off switch on the cab console.

3” GATED INTAKE -- REAR

One (1) 3" intake, labeled #8, shall be provided on the pump operator's panel at the rear of the apparatus body, plumbed with 3" piping to the intake side of the pump. The inlet shall have a 3" NST male thread and a removable screen shall be installed in the intake to prevent debris from entering the pump.

One (1) Akron 8830 series swing-out style valve(s) shall be supplied and installed. All valves shall be designed to operate under normal conditions up to 500 PSI and shall have dual seats to work in both pressure and vacuum environments. All valves and controls shall be easily accessible for service, repair or replacement.

The specified valve shall have a direct actuated 'local' control Akron Model TSC valve handle.

One (1) chrome brass 3" NHF X 2-1/2" NHM rocker log reducing adapter with a 2-1/2" cap on a securing chain or cable shall be installed on the intake.

One (1) chrome brass 2.5" NH rocker lug cap with a securing chain or cable shall be installed on the intake.

WATER TANK SUPPLY LINE TO FIRE PUMP

A 3" water tank to pump line, shall be installed with a 3" full flow quarter turn ball valve, and 3" piping. The line shall be equipped with a hump hose with stainless steel hose clamps.

The 3" valve shall be equipped with an air operated cylinder and control actuator installed on pump panel.

WATER TANK SUPPLY LINE TO FIRE PUMP

A 2" water tank to pump line shall be installed with a 2" full flow quarter turn ball valve and 2" piping. The line shall be equipped with a hump hose with stainless steel hose clamps and check valve to tank.

PUMP TO TANK

One (1) 1.5" pump to tank line shall be installed with a 1.5" full flow quarter turn controlled ball valve and 1.5" piping.

One (1) Akron 8815 series swing-out style valve(s) shall be supplied and installed. All valves shall be designed to operate under normal conditions up to 500 PSI and shall have dual seats to work in both pressure and vacuum environments. All valves and controls shall be easily accessible for service, repair or replacement.

The specified valve shall have a direct actuated 'local' control Akron Model TSC valve handle.

1-1/2" DISCHARGE LEFT SIDE FRONT OF BODY

One (1) 1-1/2" discharge, labeled #3, plumbed to provide water only, shall be provided at the driver's side of the

apparatus, between the chassis cab and the body, near the hose compartment. The discharge shall be plumbed with stainless steel pipe or 1-1/ 2" flexible high pressure hose, and shall terminate with 1-1/2" NST male threads.

One (1) Akron 8815 series swing-out style valve(s) shall be supplied and installed. All valves shall be designed to operate under normal conditions up to 500 PSI and shall have dual seats to work in both pressure and vacuum environments. All valves and controls shall be easily accessible for service, repair or replacement.

The specified valve shall have a direct actuated ‘local’ control Akron Model TSC valve handle.

One (1) chrome plated brass 1.5" NH rocker lug cap with a securing chain or cable shall be installed on the discharge.

1-1/2" DISCHARGE RIGHT SIDE FRONT OF BODY

One (1) 1-1/2" discharge, labeled #3, plumbed to the on-board foam system, shall be provided at the passenger’s side of the apparatus, between the chassis cab and the body, near the hose compartment. The discharge shall be plumbed with stainless steel pipe or 1-1/ 2" flexible high pressure hose, and shall terminate with 1-1/2" NST male threads.

One (1) Akron 8815 series swing-out style valve(s) shall be supplied and installed. All valves shall be designed to operate under normal conditions up to 500 PSI and shall have dual seats to work in both pressure and vacuum environments. All valves and controls shall be easily accessible for service, repair or replacement.

The specified valve shall have a direct actuated ‘local’ control Akron Model TSC valve handle.

One (1) chrome plated brass 1.5" NH rocker lug cap with a securing chain or cable shall be installed on the discharge.

The Class A foam system shall be piped to the specified 1-1/2” discharge.

2” DISCHARGE -- REAR RIGHT

two (2) 2" discharge(s) shall be installed on the rear upper right panel, controlled by Akron quarter turn ball valves on the exterior of the panel panel. The discharge shall have 1-1/2" NH male hose threads and nameplate labels adjacent to the valve control handle.

Two (2) Akron 8815 series swing-out style valve(s) shall be supplied and installed. All valves shall be designed to operate under normal conditions up to 500 PSI and shall have dual seats to work in both pressure and vacuum environments. All valves and controls shall be easily accessible for service, repair or replacement.

The specified valve shall have a direct actuated ‘local’ control Akron Model TSC valve handle.

One (1) chrome plated brass 1.5" NH rocker lug cap with a securing chain or cable shall be installed on the discharge.

The Class A foam system shall be piped to the specified 1-1/2” discharge.

2.5" DISCHARGE -- REAR

One (1) 2-1/2" discharge, foam capable, labeled #3, shall be provided at the rear pump operator’s panel. The discharge shall be plumbed with stainless steel pipe and/or 2-1/2" flexible high pressure hose, and shall terminate with 2-1/2" NST male threads.

Two (2) Akron 8825 series swing-out style valve(s) shall be supplied and installed. All valves shall be designed to operate under normal conditions up to 500 PSI and shall have dual seats to work in both pressure and vacuum environments. All valves and controls shall be easily accessible for service, repair or replacement.

The specified valve shall have a direct actuated ‘local’ control Akron Model TSC valve handle.

One (1) chrome brass 2.5" NH rocker lug cap with a securing chain or cable shall be installed on the discharge.

HOSE REELS

Two (2) Hannay aluminum hose reels shall be installed. The reels shall have leak proof ball bearing swing joint, adjustable friction brake, electric 12 volt rewind and manual crank rewind provisions. The reels shall be plumbed with wire reinforced, high-pressure hose coupled with brass fittings. The reels shall be designed to hold 125% of the specified hose capacity.

The reel shall be provided with a #227 2/3 HP 12 volt electric motor for rewinding the hose back on to the reel. This motor shall be controlled with two (2) Cole Hersee brand, Model #M-612 momentary push button switches, located directly adjacent to the hose reel, one (1) on each side of the apparatus body. The hose reel shall have provisions for being rewound manually. The pinion shaft for the manual rewind gear shall be equipped with an adjustable tension brake, controlled at the hose reel.

HOSE REEL DISCHARGE

One (1) 1" discharge shall be piped from the fire pump to the hose reel with flexible high pressure hose. The quarter turn ball valve shall be controlled on pump panel. A nameplate label shall be provided near the valve control handle.

Two (2) Akron 8810 series swing-out style valve(s) shall be supplied and installed. All valves shall be designed to operate under normal conditions up to 500 PSI and shall have dual seats to work in both pressure and vacuum environments. All valves and controls shall be easily accessible for service, repair or replacement.

The specified valve shall have a direct actuated ‘local’ control Akron Model TSC valve handle.

Two (2) push button hose reel rewind controls {will/shall} be installed adjacent the reel area.

The hose reel and hose shall be equipped with 1" NPSH hose threads.

REEL MOUNTED HOSE

One (1) 100 foot length of 1" water hose shall be installed on each hose reel. The hose shall be equipped with chrome plated pin lug couplings and have an 800 PSI working pressure.

FOAM SYSTEM

A FoamPro electronic foam system shall be provided. The system shall be designed for use with Class A foam concentrate. The foam proportioning operation shall be designed for direct measurement of water flows and shall remain consistent within the specified flows and pressures. The system shall be capable of accurately delivering foam solution as required by applicable sections of the NFPA standards.

The system shall be equipped with a control module suitable for installation on the pump panel. There shall be a microprocessor incorporated within the motor driver that shall receive input from the system's flowmeter, while also monitoring the foam concentrate pump output. The microprocessor shall compare the values to ensure that the desired amount of foam concentrate is injected onto the discharge side of the fire pump. A "foam capable" paddlewheel-type flowmeter shallbe installed in the discharge side of the piping system.

The control module shall enable the pump operator to:

- Activate the foam proportioning system
- Select the proportioning rates from 0.1% to 1.0%
- See a "low concentrate" warning light flash when the foam tank level becomes low and in two (2) minutes, if the foam concentrate has not been added to the tank, the foam concentrate pump shall be capable of shutting down.

A 12-volt electric motor driven positive displacement plunger pump shall be provided. The pump capacity range shall be 0.1 to 1.7 GPM (6.4L/min) at 200 PSI (13.8 BAR) with a maximum operating pressure up to 400 PSI (27.6 BAR). The system shall draw a maximum of 30 amps at 12 volts. The motor shall be controlled by the microprocessor which shall be mounted to the base of the pump. It receives signals from the control module and power the 1/3 horsepower (.25 Kw) electric motor in a variable speed duty cycle to ensure that the correct proportion of concentrate is injected into the water stream.

A full flow check valve shall be provided in the discharge piping to prevent foam contamination of the fire pump and water tank. A 5 PSI (.35 BAR) opening pressure check valve shall be provided in concentrate line.

Components of the complete proportioning system as described above shall include:

- Operator control module
- Paddlewheel flowmeter
- Pump and electric motor/motor driver
- Wiring harnesses
- Low level tank switch
- Foam tank
- Foam injection check valve
- Main waterway check valve
- Flowmeter and tee with 2" male NPT threads.

The foam system shall be installed and calibrated to manufacturer's requirements. In addition the system shall be tested and certified by the apparatus manufacturer to applicable NFPA standards.

The foam system design shall be tested and pass environmental testing in accordance to SAE standards.

An installation and operation manual shall be provided for the unit. The system shall have a one (1) year limited warranty by the foam system manufacturer.

The FoamPro 1600 Series foam system shall be provided with a control cable from the controller to the foam pump assembly.

The FoamPro 1600 Series foam system shall be provided with a standard pump panel mounted FoamPro control head.

A FoamPro brass flowmeter shall be provided. The flowmeter shall be installed in the "foam capable" discharge line. The flowmeter shall have maximum accuracy between the flow range of 15 GPM and 520 GPM and be capable of operation between 5 GPM to 625 GPM. The tee shall have NPT and Victaulic inlet and outlets connections.

A FoamPro instruction and system rating label shall be provided. The label shall display information for a FoamPro 1600 Series foam system and shall meet applicable sections of the NFPA standards.

A FoamPro foam system schematic label shall be installed on the pump panel near foam controls. The label shall be a diagram of the FoamPro 1600 series foam system layout and shall meet applicable sections of the NFPA standards.

REAR PUMP PANELS

The rear mount pump panels shall be constructed of .125" anodized aluminum, bolted to the pump enclosure with stainless steel fasteners or Southco latches.

MASTER PUMP DISCHARGE AND INTAKE GAUGES

A set of 4.5" diameter SPAN (discharge pressure and intake gauge) with labels shall be provided on the pump instrument panel. The drafting water pressure/vacuum gauge shall be a SPAN #MC-LFP-80-BOW. The gauge shall have a 4-1/2" diameter case with a graduated output scale of 30-0-150 PSI with black print on a white background. The dial shall be designed so that the vacuum portion of the gauge (30" to 0) utilizes the side to the left of the 12 o'clock position. The pressure portion of the gauge (0 to 150 PSI) shall appear to the right of the 12 o'clock position. The 4-1/2" diameter master pressure gauge shall have a range of 0 to 600 PSI.

The gauge housing shall be constructed of type 304 stainless steel with a 1/4" NPT brass male fitting centrally located on the rear of the housing. A U-Clamp device secures the gauge to the pump panel. The gauge shall be filled with low temperature glycerin for an operating range of -40 to +150 degrees Fahrenheit, which prevents bouncing of the readout needle and provides for an accuracy rating of 3% or 1" hg on the vacuum side and 5% or 15 PSI on the pressure side of the gauge.

Gauge drains shall be provided for the intake and discharge pressure gauges and shall be located behind the pump panel.

TEST TAPS

Test taps for pump intake and pump pressure with name plate labels shall be provided on the pump instrument panel.

ENGINE THROTTLE

One (1) FRC brand, Model Infinity S vernier style remote throttle control shall be provided on the pump operator’s panel to control the chassis engine speed during pumping operations. The design of the remote throttle shall?? allow the throttle to start at idle when it is enabled, regardless of the vernier dial position.

The remote throttle shall feature solid state optical technology, which shall eliminate potentiometers or electro-mechanical switches. The throttle shall sense the speed of the vernier dial for fast and fine RPM setting, and the central red idle button shall immediately return the chassis engine speed to idle.

Regardless of chassis engine emissions status, the throttle control shall remain operational.

ENGINE MONITOR

One (1) Class 1 brand, Model ESC engine status center shall be provided on the pump operator’s panel to provide chassis engine monitoring and critical warnings. The ESC shall be a weatherproof display with

super-bright digits.

The ESC shall continuously display chassis engine RPM, oil pressure, engine coolant temperature, and electrical system voltage, along with providing critical warnings. The warning levels for low oil pressure, high engine coolant temperature, low voltage (programmed for 11.8 VDC- default setting), and high voltage shall be independently programmable. The ESC shall provide visual warnings and an output for controlling an audible warning when alarm levels are reached.

The ESC shall also provide a message center that displays total PTO hours.

WATER TANK GAUGE

One (1) Fire Research TankVision model WLA2000 tank gauge shall be installed on the pump panel. The water tank indicator kit shall include an electronic indicator module, a pressure sensor, and a 10' sensor cable. The indicator shall show the volume of water in the tank on nine (9) easy to see super bright LEDs.

CAB MOUNTED -- WATER TANK GAUGE

One (1) Fire Research brand, Model WL2500 tank level gauge, shall be provided on the cab center console, within view of the driver's seating position, to monitor the water tank liquid level. The gauge shall indicate the water tank liquid level on an LED bar graph display, and shall be wired in common with the sensor circuit for the pump operator's panel-mounted gauge.

CLASS A FOAM TANK GAUGE

One (1) Fire Research brand, Model WL 2600 tank level gauge shall be provided on the pump operator’s panel to monitor the foam concentrate storage tank level. The gauge shall indicate the foam concentrate storage tank liquid level on an LED bar graph display.

PUMP OPERATION LABEL

There shall be labeling on the pump operator’s panel which shall describe specified operations of the pump in accordance to USFS requirements.

PUMP PANEL LABELS

All controls, discharges, intakes, and other pump panel components that are not provided with a pre-printed legend or trim plate shall be labeled as required for ease of operation. This labeling shall be accomplished through the use of color-coded identification tags. The tags shall be self adhesive, and shall be installed on the pump control panel with chrome plated bezels. The tags shall be placed adjacent to the components in such a way as to clearly distinguish the item that they are identifying.

REAR MOUNT PUMP PANEL LIGHTING

Weldon incandescent lights shall be installed under a rear mount pump panel light hood. The lights shall have clear lenses and shall be controlled by a switch located on the operator's instrument panel.

PUMP PANEL LIGHT BEZELS

There shall be two (2) CPI bezels installed on the pump panel, as a mount for the pump panel lights.

REAR PUMP PANEL – CONTROL SWITCHES

Five (5) pump panel rocker switches shall be installed.

DESIGN AND SCOPE OF WILDLAND BODY

The body shall be designed and constructed of commonly available structural components for ease of repair and maintenance. The body shall be of a modular design with the body structure independent of the chassis frame rails. The body module shall be mounted to the chassis frame rails utilizing a unique double spring mounting system for flexibility and durability over the lifetime of the apparatus. The fabrication of the body shall be of welded construction to withstand the rigors of fire service use.

The body shall be designed to incorporate and support the tank, hose bed, compartments, and all other equipment intended to be stored in or mounted to the body module. The body skeleton and compartment framework shall be designed of tubular members for increased strength and stress resistance. There shall be no sheet metal or extrusions utilized in the foundation or structural components of the body module due to their critical role in assuring lifetime durability, functionality and usability.

BODY FRAMEWORK

The entire body framework shall be fabricated from steel tubing. The body framework shall be a completely welded unit, forming a connected, stable frame for strength, longevity and providing the skeleton of the body module. The internal upright members of the framework shall act as support for the top layer of the body module. The external upright members shall act as an exoskeleton providing form and support for compartments while acting as the external surfaces of the module. The framework shall define the compartment openings and provide a rigid mounting location for all compartments and doors.

The foundation cross-members shall be placed perpendicular to the chassis frame rails in the wheel well area extending the full width of the body and shall be constructed of 3 inch high x 2 inch wide x .25 inch tubing. The foundation members parallel to the chassis frame rails shall be constructed of 3 inch square x .25 inch tubing and shall connect the foundation cross members and extend the full length of the body.

All tank support cross members shall be placed to support the water tank as per the tank manufacture's recommendation. These supports shall be constructed of 3 inch high x 2 inch wide x .25inch steel tubing. The tank support angles shall be constructed of 4 inch x 4 inch x .25 inch thick angles and shall be placed at the tank sides parallel to the chassis frame rails to provide lateral support for the tank and protection from debris from the wheels.

The internal upright supports for top layer components shall be placed to provide support for all components located on the top layer of the body module and shall be constructed of steel tubing measuring 2 inch square x .25 inch wall thickness. All front to rear connecting members shall be 3 inches high x 2 inches wide x .125 inch wall thickness and shall be placed in between the interior upright support members to provide rigidity, stability and support to all top layer components. All gussets shall be constructed of 2 inches high x 3 inches wide x .25 inch thick plate which shall be placed on the top and bottom of the foundation cross members where they intersect with the exterior members.

BODY MOUNTING SYSTEM

The mounting assembly shall be designed to isolate and protect the body module from vibration and twisting stresses imparted by the flexing of the chassis frame rails. The body module shall employ spring loaded body mounting assemblies. Each two piece mounting assembly shall be designed to positively position the body on the frame rails while allowing lateral and forward or aft movement. Mounting assemblies shall be placed forward and rearward of the rear axle as necessary to provide a strong and stable mounting of the body module

Each mounting assembly shall consist of a "male" upper mounting bracket and a "female" lower mounting bracket. The upper mounting brackets shall be fabricated from .25 inch thickness steel plate, with .250 inch painted steel lower mounting brackets. The upper mounting brackets shall be welded directly to the foundation connecting members. The lower mounting brackets shall be bolted to the exterior side facing surface of the chassis frame rails.

The mounting brackets shall be aligned and connected by two (2) 5/8 inch diameter grade 8 bolts equipped with compression springs. The springs shall be of the appropriate tension rating for the weight requirements of the body module. The mounting assembly shall be designed to completely eliminate sheering forces on the mounting bolts.

The foundation connecting members shall be placed on top of the chassis frame rails for added strength and stability. The foundation members shall be isolated from the steel chassis frame rails by .25 inch thickness steel plates which have .5 inch thick 80 durometer rubber pads vulcanized to the bottom surface of each plate. The steel plates shall be welded to the bottom of the foundation, doubling as additional gussets at foundation cross member joints.

COMPARTMENT FLOOR, SWEEP OUT STYLE

Each compartment shall feature a raised floor sufficient enough so the lip of the compartment shall clear the frame rail of the body module to allow debris to be removed easily from the compartment.

BODY MATERIAL

All materials utilized shallbe of the correct type, alloy, and thickness to withstand the intended usage and provide protection against cracking, corrosion or metal fatigue. The body compartments shallbe fabricated using .125 inch 5052-H32 steel for most compartments unless otherwise stated. Any use of proprietary parts or materials in the construction of the body shallbe unacceptable, due to potential delays or difficulties in an unlikely event of future repairs or when service becomes necessary.

All external upright supports for integral compartments shallincorporate a second set of upright supports constructed of 3 inch wide x 2 inch deep x .250 inch wall thickness and shallbe located outboard of the internal upright supports to provide a rigid structure for the compartments to be mounted to. The compartment openings shallbe constructed of 3 inch high x 2 inch wide x .125 inch wall thickness cross members and shallbe placed in between the external upright supports to define the openings of all enclosed body compartments again, providing a rigid mounting location for compartments.

COMPARTMENTATION

All compartments shall be constructed of 14 gauge E.G. steel welded for strength and shall be sealed from the elements. The compartments shall be attached to the steel superstructure only, in order to maintain a truly modular design. Each compartment shall feature a smooth edges and surfaces from the walls to each weld without burs or sharp edges in the material.

BODY FRAME EXTENSION TO PROTECT CAB

The framing of the front wall of the body shall be extended above the hose bed deck to be at least as high as the top of the cab. The section of this extension above the hose deck height shall be tapered to resemble the contour of the cab.

Modified FS type 3

COMPARTMENT DFF

One compartment shall be provided on the driver's side of the apparatus body in front of the rear wheels. This compartment shall span from the front of the body to the front of the rear wheel well quarter panel. Approximate compartment dimensions: 36" wide x 52" high x 14" deep.

COMPARTMENT FLOOR DRAIN

The compartment shall be provided with rear corner floor drains to the underside of the body.

COMPARTMENT SILL PLATE

The compartment shall feature a polished stainless steel sill plate protecting the painted surface of the compartment when items are accessed.

ADJUSTABLE TRACKING -- COMPARTMENT EQUIPMENT MOUNTING

Adjustable Uni-Strut equipment mounting tracks shall be installed inside the compartment with two (2) channels on the left wall and two (2) channels on the right wall. The tracks shall be positioned to provide support for equipment mounting. The length of the tracks shall be sized to allow for optimum use of the compartment interior.

COMPARTMENT GRATING

The compartments shall be fitted with removable interlocking vinyl Dri-Dek grating. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

DRIVERS SIDE COMPARTMENT DCU #1

One compartment shall be provided on the driver's side of the apparatus body above the rear wheels. Approximate compartment dimensions: 55.5" wide x 33" high x 14"/25” deep.

COMPARTMENT FLOOR DRAIN

The compartment shall be provided with rear corner floor drains to the underside of the body.

COMPARTMENT SILL PLATE

The compartment shall feature a polished stainless steel sill plate protecting the painted surface of the compartment when items are accessed.

ADJUSTABLE TRACKING -- COMPARTMENT EQUIPMENT MOUNTING

Adjustable Uni-Strut equipment mounting tracks shall be installed inside the compartment with two (2) channels on the left wall and two (2) channels on the right wall. The tracks shall be positioned to provide support for equipment mounting. The length of the tracks shall be sized to allow for optimum use of the compartment interior.

COMPARTMENT GRATING

The compartments shall be fitted with removable interlocking vinyl Dri-Dek grating. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

DRIVERS SIDE REAR COMPARTMENT DRF

One compartment shall be provided behind the rear wheel well on the driver's side of the apparatus body. Approximate compartment dimensions: 18-1/2" wide x 55" high x 24" deep. The compartment shall include adjustable tracks which shall be installed, with tracks on each side wall.

COMPARTMENT FLOOR DRAIN

The compartment shall be provided with rear corner floor drains to the underside of the body.

COMPARTMENT SILL PLATE

The compartment shall feature a polished stainless steel sill plate protecting the painted surface of the compartment when items are accessed.

ADJUSTABLE TRACKING -- COMPARTMENT EQUIPMENT MOUNTING

Adjustable Uni-Strut equipment mounting tracks shall be installed inside the compartment with two (2) channels on the left wall and two (2) channels on the right wall. The tracks shall be positioned to provide support for equipment mounting. The length of the tracks shall be sized to allow for optimum use of the compartment interior.

COMPARTMENT GRATING

The compartments shall be fitted with removable interlocking vinyl Dri-Dek grating. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

DRIVER'S SIDE HOSE WELL COMPARTMENT

There shall be a hose well compartment located directly below the FoamPro compartment on the driver's side of the body.

DRIVER SIDE DUNNAGE COMPARTMENT

The driver's side dunnage compartment shall be located at the top outer edge of the body; above the driver's side compartments.

PASSENGER'S SIDE COMPARTMENT PFU

One compartment shall be provided on the passenger's side of the apparatus body in front of the rear wheels. This compartment shall span from the front of the body to the front of the rear wheel well quarter panel. Approximate compartment dimensions: 36" wide x 52" high x 14/24" deep.

COMPARTMENT FLOOR DRAIN

The compartment shall be provided with rear corner floor drains to the underside of the body.

COMPARTMENT SILL PLATE

The compartment shall feature a polished stainless steel sill plate protecting the painted surface of the compartment when items are accessed.

ADJUSTABLE TRACKING -- COMPARTMENT EQUIPMENT MOUNTING

Adjustable Uni-Strut equipment mounting tracks shall be installed inside the compartment with two (2) channels on the left wall and two (2) channels on the right wall. The tracks shall be positioned to provide support for equipment mounting. The length of the tracks shall be sized to allow for optimum use of the compartment interior.

COMPARTMENT GRATING

The compartments shall be fitted with removable interlocking vinyl Dri-Dek grating. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

PASSENGER’S SIDE COMPARTMENT PCU #1

One compartment shall be provided on the passenger's side of the apparatus body above the rear wheels. Approximate compartment dimensions: 55-1/2" wide x 33" high x 14”/25" deep.

COMPARTMENT FLOOR DRAIN

The compartment shall be provided with rear corner floor drains to the underside of the body.

COMPARTMENT SILL PLATE

The compartment shall feature a polished stainless steel sill plate protecting the painted surface of the compartment when items are accessed.

ADJUSTABLE TRACKING -- COMPARTMENT EQUIPMENT MOUNTING

Adjustable Uni-Strut equipment mounting tracks shall be installed inside the compartment with two (2) channels on the left wall and two (2) channels on the right wall. The tracks shall be positioned to provide support for equipment mounting. The length of the tracks shall be sized to allow for optimum use of the compartment interior.

COMPARTMENT GRATING

The compartments shall be fitted with removable interlocking vinyl Dri-Dek grating. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

PASSENGER'S SIDE COMPARTMENT PRL

One compartment shall be provided on the passenger's side of the apparatus body behind the rear wheels. Approximate compartment dimensions: 18.50" wide x 55" high x 14/24" deep.

COMPARTMENT FLOOR DRAIN

The compartment shall be provided with rear corner floor drains to the underside of the body.

COMPARTMENT SILL PLATE

The compartment shall feature a polished stainless steel sill plate protecting the painted surface of the compartment when items are accessed.

ADJUSTABLE TRACKING -- COMPARTMENT EQUIPMENT MOUNTING

Adjustable Uni-Strut equipment mounting tracks shall be installed inside the compartment with two (2) channels on the left wall and two (2) channels on the right wall. The tracks shall be positioned to provide support for equipment mounting. The length of the tracks shall be sized to allow for optimum use of the compartment interior.

COMPARTMENT GRATING

The compartments shall be fitted with removable interlocking vinyl Dri-Dek grating. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

PASSENGER'S SIDE HOSE WELL COMPARTMENT

There shall be a hose well compartment located on the passenger's side, directly below the PFU compartment. It shall have a hinged aluminum diamond plate drop down door.

PASSENGER SIDE DUNNAGE COMPARTMENT

The passenger's side dunnage compartment shall be located at the top outer edge of the body; above the passenger's side compartments.

REAR COMPARTMENT BL

The rear compartment shall have the approximate dimensions of 40" wide x 30" high x 27" deep.

COMPARTMENT FLOOR DRAIN

The compartment shall be provided with rear corner floor drains to the underside of the body.

COMPARTMENT SILL PLATE

The compartment shall feature a polished stainless steel sill plate protecting the painted surface of the compartment when items are accessed.

HARD SUCTION HOSE COMPARTMENT

The hose bed shall be provided with a rear slide-in hard suction hose storage compartment in the center of the hose bed. The compartment shall be fabricated from .125" smooth aluminum. It shall hold three (3) seven (7) foot lengths of 2-1/2" hard suction hose.

WHEEL WELL PANEL CONSTRUCTION

The outer wheel well panel shall be galvanneal steel of the same gauge as compartment construction and an integral part of the overall body design. The exterior wheel well area shall be painted to match the body.

WHEEL WELL LINERS

Wheel well liners designed to protect the body from impact resulting from road debris thrown by the tires shall be installed. The removable liners shall be constructed from UHMW material to encompass the entire inner wheel well area. The liners shall be secured with stainless steel threaded fasteners.

REAR WHEEL FENDERETTES

Black radius rubber fenderettes shall be installed at each rear wheel opening. The fenderettes shall be positioned outside of the wheel well panel to cover the tire area that extends past the body. The fenderettes shall be secured with stainless steel threaded fasteners.

WHEEL CHOCK STORAGE COMPARTMENTS

Two (2) chock block storage compartments, each with a bright aluminum diamond plate door and quarter turn latch, shall be provided in the driver's side wheel well area, one (1) forward of the rear wheel well opening, one (1) rearward of the rear wheel well opening.

RUB RAILS

The sides of the lower body area fore and aft of the wheel well area shall be provided with 3" x 1.5" x .125" aluminum tread plate "C" shaped rub rails, with end caps or angle corners.

FRONT CORNERS OF BODY -- PROTECTIVE SURFACE

The front corners of the apparatus body shall include a protective surface, constructed of aluminum tread plate material.

FRONT CORNERS OF BODY -- PROTECTIVE SURFACES

The front corners of the apparatus body shall include a protective surface installed. The surface shall be constructed of mirror finish stainless steel material.

REAR BODY PANELS

The rear tail panels of the apparatus body shall be unpainted, to accommodate chevron striping.

OUTER REAR BODY PANELS -- PROTECTIVE COVERING

The rear outer panels of the body shall have protective surfaces installed on the corners. The protective covering shall be constructed of mirror finish stainless steel material.

STAINLESS STEEL BODY TRIM

All enclosed compartment door thresholds shall be covered with horizontal polished stainless steel scuff guards to provide paint protection against chips and scratches.

All vertical exterior body corners shall be covered with polished stainless steel angles to act as body corner scuff guards and to provide paint protection against chips and scratches.

The horizontal rear hose bed exit threshold shall be covered with a polished stainless steel angle.

ANODIZED ALUMINUM DRIP RAIL

All enclosed compartment doors shall be provided with an anodized aluminum drip rail above the doors.

ROLL UP DOOR CONSTRUCTION

The apparatus shall include a roll up door. The roll up door shall be fabricated from anodized aluminum extrusions and shall be manufactured by ROM. The track shall be a one (1) piece aluminum assembly that has an attaching flange and finishing flange incorporated into the design that facilitates installation and provides a finished look to the door without additional trim or caulking. A low profile side seal shall be utilized to maximize usable compartment space.

A drip rail designed to prevent water from dripping into the compartment shall be provided. The drip rail shall have a built in replaceable non-contacting seal to eliminate scratching of the surface of the door.

Bottom rail extrusion must have smooth back to prevent loose equipment from jamming the door and have "V" shaped double seal to prevent water and debris from entering the compartment. A two (2) inch wide finger pull shall be integrated into the bottom rail extrusion for easy one hand opening and closing. The door latch system shall be a full width one (1) piece lift bar that enables the user to operate with one hand.

A magnetic door ajar system shall be integrated in the lift bar handle and the lift bar handle retainer block to signal an open door.

The roll mechanism shall have a clip system that connects the curtain slats to the operator drum to allow for easy tension adjustment without tools. A four (4) inch diameter counter balanced operator drum shall be incorporated to assist in lifting the door.

ALUMININUM – COMPARTMENT DOOR, HINGED OVERLAP

Four (4) single, vertically hinged doors shall be provided and shall be fabricated of aluminum. The frame of the door shall be constructed of 1.75" x 1.75" x .125" aluminum tubing to prevent corrosion and provide structural support. The spacing created by the frame tubing shall be filled with Styrofoam for added insulation and noise reduction. The exterior surface shall be .125" aluminum for durability. The interior surface shall be .080" aluminum. There shall be no mechanical fasteners, such as bolt heads or rivets on the inside or outside of the doors.

The exterior of the door shall overlap the opening of the compartment. A .75" lip shall be constructed around the opening of the compartment and the exterior of the door. A rubber seal shall be installed on the .75" lip on both the compartment and the door to provide for a double seal against water and dust. A rain gutter shall be mounted above the door creating a third layer of water protection.

The door shall be designed utilizing a D-ring style latch system. A 6" stainless steel D-ring latch, large enough to accommodate a gloved hand, shall be mounted on the exterior of the door. A stainless steel bezel shall be installed to house and protect the D-ring latch mechanism. The easily serviced bezel shall be mounted utilizing stainless steel screws. The D-ring latch mechanism shall be a double catch design. The first catch shall engage

to secure the door in the event of improper closure. The second catch shall seal the door from water and other elements once the door has been properly closed.

The door shall be mounted using a stainless steel piano style hinge and a .250” diameter hinge pin for stability. The vertical hinge shall be mounted to the body frame with threaded inserts and stainless steel screws.

A gas strut shall be utilized to hold the door in the open position and to prevent the door from slamming during closing. The gas strut shall be mounted directly to the door with a stainless steel bracket assembly for stability and ease of maintenance. The gas strut shall be mounted to the interior of the compartment with a fully adjustable assembly.

The exterior of the compartment doors and the door frames shall be painted to match the body in quality and tone. The interior surface shall not be painted, it shall be sanded utilizing a dual orbital technique.

ALUMININUM – COMPARTMENT DOOR, LIFT UP HINGED OVERLAP

Two (2) single, horizontally hinged doors shall be provided and shall be fabricated of aluminum. Each door shall feature exterior surfaces which overlap the opening of the compartment. The exterior surface shall be .125” aluminum. The interior surface shall be .080” aluminum. The frame of the door shall be constructed of aluminum tubing to provide structural support. The spacing created by the frame tubing shall be filled with Styrofoam for insulation, and noise reduction.

A .75” lip shall be constructed around the opening of the compartment and the exterior of the door. A rubber seal shall be installed on the .75” lip of both the compartment and the door to provide for a double seal against water and dust. A rain gutter shall be mounted above the latch type door for an added third layer of water protection.

The door shall be designed utilizing a D-ring latch system. A 6” large D-ring latch will be provided to accommodate a gloved hand. A stainless steel bezel shall be installed to house and protect the D-ring latch mechanism. The easily serviced bezel shall be mounted utilizing stainless steel screws for added stability of the mechanism and ease of maintenance in the event of damage. The door shall be mounted with a stainless steel hinge with .25” diameter hinge pin for stability. The horizontal hinge shall be mounted to the body frame with threaded inserts, and stainless steel screws to preserve functionality with use or age and ease of maintenance in the event of damage.

Gas struts shall be utilized to hold the door in the open position and to prevent the door from slamming during closing. The gas struts are mounted directly to the door with a stainless steel bracket assembly for stability and ease of maintenance. The gas struts shall be mounted to the interior of the compartment with fully adjustable assembly for ease of adjustment and maintenance while increasing stability.

The exterior of the compartment doors and the door jams shall be painted to match the body in quality and tone. The interior of the door shall not be painted due to lack of exposure and inherent resistance to corrosion. The interior of the door shall be sanded utilizing a dual orbital technique.

LOCKING D-DING DOOR LATCHES

The compartment door shall have locking D-Ring door latches.

COMPARTMENT SILL PLATE

The compartment shall feature a polished stainless steel sill plate protecting the painted surface of the compartment when items are accessed.

REAR STEP

The rear step shall be mounted to the chassis frame rails with two (2) combination rear body and bumper supports, each with a cutout under the rear step for use as the rear tow eyes. The rear step shall be painted with the top surfaces of the rear step which shall feature black Dura-coat. The step shall be mounted 2” higher than that of the body. The rear step shall feature one (1) side-facing LED type red clearance light, with an armored mount, on each side of the rear step.

PULL-OUT/DROP DOWN STEP

A Zico "Quic-Step" model #PS-8-5, pull out, drop down style step shall be provided. It shall be constructed of corrosion resistant steel and a cast aluminum stepping surface. The step is fully NFPA 1901 compliant.

REAR VERTICAL RAILING

One (1) knurled non-slip handrail, approximately 36” in length, shall be vertically installed on the passenger side beaver tail.

ACCESS LADDER

An access ladder constructed of aluminum shall be installed on the left rear panel of the apparatus. The ladder shall provide access to the top of the body.

HOSE BODY CONSTRUCTION SPECIFICATIONS

The hose bed side sheets and floor shall be constructed from aluminum material. The entire surface shall be watertight to prevent leakage into the compartment areas. The hose body shall be free of sharp corners, bolts, or other obstructions that may catch hose and other equipment.

Hose Bed Divider, Adjustable, .250" Aluminum, Center Divider

HOSE BED DIVIDERS

Three (3) hose bed dividers shall be provided and mounted in the hose bed. The dividers shall be fabricated from .250" smooth aluminum plate, with an extruded aluminum base for strength. The dividers shall be completely adjustable, excluding the fill tower areas, through the use of extruded aluminum Uni-Strut type channels at the front and the rear of the hose bed.

Each hose bed partition have approximately 3" deep x 8" high hand hole cut-outs installed. The openings shall be trimmed with vinyl grip-lock moldings.

HOSE STORAGE BRACKETS

Two (2) folding I-Zone hose brackets shall be provided on the rear of the apparatus body, rear-facing, one (1) on each side of the body. The brackets shall be located on the exterior surfaces of the beavertails. Each I-Zone bracket assembly shall consist of an aluminum diamond plate mount and a tubular aluminum fold down bracket.

The pivot point of the bracket shall be located in the aluminum diamond plate mount. The bracket shall be held in a vertical position when not in use. A nylon insulated clip shall be provided to secure the bracket when stowed in the vertical position. A protective cap shall be provided on the outboard end of the fold down bracket.

ALUMINUM HOSEBED GRATING

The hose bed compartment deck shall be constructed entirely from maintenance-free, extruded aluminum slats. The slats shall feature an anodized, contoured, ribbed top surface. The slats shall be of widths approximately 3/4" high x 4.5" wide and shall be welded into a one-piece grid system to prevent the accumulation of water and allow ventilation to assist in drying hose.

ALUMINUM HOSEBED COVER

The hose bed shall have a two-piece aluminum diamond plate cover. The two-piece cover shall be fabricated from .125" bright finish aluminum diamond plate, reinforced as required to be sturdy enough to support the weight of two personnel standing on the cover. The cover shall be mounted with full-length polished stainless steel hinges on the outboard edges of the hose bed.

Each cover section shall be angled up from the outer edge of the hosebed to increase the hose bed storage area and to provide drainage. The covers, when closed, shall rest in a fixed channel "trough" mounted on a .250" thick aluminum plate support running the length of the hose bed. A downwards flange, approximately 1" wide and spanning the length of each cover section, shall be formed at 90 degrees to the cover, along the inboard edges. The flange of each cover shall rest in the trough when the lids are closed.

Each cover section shall be equipped with a heavy duty gas strut mounted at its outboard front corner to assist with opening the cover section. Two (2) heavy duty cam lock style latches shall be mounted on the top surface of the covers, one (1) at the front and one (1) at the rear, to secure the covers during transport. The walking surfaces of the two-piece hose bed cover shall be coated with black Dura-Coat non-skid material.

A black fabric flap, fabricated from Herculite 80 material, shall be provided at the rear of each cover section, secured with straps and spring-loaded metal buckles. The Herculite 80 material shall be flame retardant, resistant to mildew, abrasion, tearing and ultraviolet sun rays.

HOSE BED HANDRAIL

Four (4) 1-1/4" diameter knurled non-slip handrails, shall be provided on the cover section exterior surfaces to facilitate access to the top of the truck and to assist in opening and closing the cover sections. Each handrail shall be secured with two chrome plated end stanchions. The handrails shall be provided as follows:

- Two (2) handrails, each approximately 24" long, shall be mounted running front to rear on the top rear of the driver's side cover section, directly ahead of each access ladder side rail.

- Two (2) 18" handrails, one (1) on each cover section, shall be installed on the top surface at the opening edge, running side to side, starting approximately 4"-6” from the rear edge of the cover.

HOSEBED -- AREA LIGHTS

Two (2) 4” diameter L.E.D. hose bed area lights with clear lens shall be installed, wired to parking brake circuit.

WATER TANK SPECIFICATIONS

The water tank shall have a capacity of 600 gallons.

The water tank shall be constructed of polypropylene, nitrogen-welded and tested inside and out. The tank manufacturer shall define the floor, top, sides, ends, and baffles material thicknesses. The tank shall carry a lifetime warranty.

The transverse and longitudinal swash partitions shall be interlocked and welded to each other as well as to the walls of the tank. The partitions shall be designed and equipped with vent holes to permit air and liquid movement between compartments. The .cover shall be recessed .375" from the top of the side walls. Hold down dowels shall extend through and be welded to both the covers and the transverse partitions, providing rigidity during fast fill operations. Drilled and tapped holes for lifting eyes shall be provided in the top area of the water tank.

The water tank manufacturer shall certify the capacity of the water tank prior to delivery of the apparatus. This capacity shall be recorded on the manufacturer's record of construction and the certification shall be provided to

the purchaser when the apparatus is delivered. Tank construction shall conform to applicable NFPA standards.

NFPA COMPLIANCE

The water tank construction shall conform to applicable NFPA standards.

BAFFLING SYSTEM

The internal baffling partitions shall be installed right to left and front to rear on inside of tank. The partitions shall be designed and equipped with vent holes to permit air and liquid movement between baffled compartments.

TANK FILL AND OVERFLOW PROVISIONS

The water tank shall have a combination vent and manual fill tower. The fill tower shall be fabricated from 1/2" polypropylene and shall have a minimum outer perimeter dimension of 8" x 8". The tower shall have a 1/4" thick polypropylene screen and a polypropylene hinged cover. Inside the fill tower, halfway down from the top, shall be fastened a vent overflow pipe. The vent overflow shall be fabricated from Schedule 40 polypropylene pipe, with a minimum I.D. of 4”. The vent overflow shall be designed to run through the tank interior and shall be designed to exit the water tank interior behind the rear wheels.

The tank cover shall be fabricated from 1/2" thick polypropylene and shall incorporate a three-piece design which allows for the removal of each individual cover section for inspection or repair of the tank interior, if necessary. The tank cover shall be recessed 3/8" from the top of the tank sides and shall be welded to both the sides and the longitudinal baffles. Each of the three cover sections shall have hold downs to assist in keeping the cover rigid under fast filling conditions. These hold downs shall consist of 2" polypropylene dowels, spaced a maximum of 30" apart, fitted and then welded to the transverse partitions. The dowels shall extend through the cover sections and be welded to them. Two of the dowels shall be drilled and tapped to accommodate the tank lifting eyes.

The sump shall have a minimum dimension of 8" x 6" with a 3/4" thick bottom. On all tanks with a bulkhead suction inlet, a 3" Schedule 40 polypropylene pipe sweep shall be provided from the front of the tank to the sump location. The sump shall have a threaded plug located at the bottom of it for a tank drain and clean out.

There shall be two standard tank outlets: one for the tank to pump suction line, which shall be a minimum of a 3" NPTF coupling, and one for a tank fill line, which shall be a minimum of a 1-1/2" NPTF coupling. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

The water tank shall rest on the body subframe cross members, which shall be spaced a maximum of 22" apart. The tank shall be insulated from those cross members by hard rubber insulators, with a minimum thickness of 1/4", glued and mechanically fastened to the cross members to protect the tank from direct contact with the steel body subframe. The tank shall be designed on a free-floating suspension principle and shall not require the use

of additional hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure.

TANK SUMP AND DRAIN PROVISIONS

The sump shall have a minimum dimension of 8" x 6" with a 3/4" thick bottom. On all tanks with a bulkhead suction inlet, a 3" Schedule 40 polypropylene pipe sweep shall be provided from the front of the tank to the sump location. The sump shall have a threaded plug located at the bottom of it for a tank drain and clean out.

WATER TANK DRAIN PROVISIONS

A 3" plugged drain provision shall be installed in the bottom of the water tank, sump, or plumbing for water tank draining and the flushing-out of debris.

CLASS A FOAM TANK SPECIFICATIONS

A 25 gallon capacity Class A foam concentrate tank shall be provided. The foam tank shall be polypropylene manufactured by United Plastics (UPF).

FOAM TANK FILL AND VENTING PROVISIONS

The foam concentrate tank shall be provided with a fill pipe having a volume of not less than 2 percent of the total tank volume. The filler opening shall be capped with a sealed air-tight threaded cover. The fill opening shall be designed to incorporate a removable screen and shall be located so that foam concentrate from a five (5) gallon container can be dumped into the tank.

The foam tank filler shall be equipped with a pressure/vacuum vent that enables the tank to compensate for changes in pressure or vacuum when filling or withdrawing foam concentrate from the tank. The pressure/vacuum vent shall not allow atmospheric air to enter the foam tank except during operation or to compensate for thermal fluctuations. The vent shall be protected to prevent foam concentrate from escaping or directly contacting the vent at any time. The vent shall be of sufficient size to prevent tank damage during filling or foam withdrawal.

A color coded label or visible permanent marking that reads "CLASS A -- FOAM TANK FILL" shall be placed at or near the foam concentrate tank fill opening. An additional label shall be placed at or near any foam concentrate tank fill opening stating the type of foam concentrate the system is designed to use.

Any restrictions on the types of foam concentrate that can be used with the system shall also be stated, along with a warning message that states "WARNING: DO NOT MIX BRANDS AND TYPES OF FOAM."

A 3/4" diameter connection, piping, and gate type valve shall be installed for the foam tank for draining purposes.

TANK TO PUMP CONNECTION

A 3" PVC pipe shall be provided on the water tank for connection of the tank to the suction side of the pump with a flexible hump hose assembly. The tank suction valve and hump hose required to complete this connection shall be supplied by the final assembler.

TANK FILL VALVE - LEFT REAR

A valve for direct filling of the tank shall be supplied. The 1/4 turn valve shall be configured with 2-1/2" NH female threads, debris screen, threaded plug with retention chain and lever handle. The valve shall be located on the left rear of the body.

BACK PACK FILL

There shall be one (1) back pack fill provided and installed.

ADJUSTABLE TRACKING -- COMPARTMENT EQUIPMENT MOUNTING

Adjustable Uni-Strut steel equipment mounting tracks shall be installed inside the compartments with two (2) channels on the left wall and two (2) channels on the right wall. The tracks shall be positioned to provide support for equipment mounting. The length of the tracks shall be sized to allow for optimum use of the compartment interior.

Adj tracks, Steel, Lo-Cmpt, Type 3 #325

ADJUSTABLE SHELVES

Adjustable shelves, one (1), shall be installed and shall be constructed of .125" thick smooth aluminum plate and be mounted in specified compartments with double bolt cast aluminum shelf brackets. Each shelf shall have a broken front edge, and a broken rear edge for added strength and reinforcement.

COMPARTMENT DIVIDER

There shall be one (1) compartment divider(s) installed in the specified compartment. The divider(s) shall be bolted in place for ease of removal.

ADJUSTABLE TRACKING -- COMPARTMENT EQUIPMENT MOUNTING

Adjustable Uni-Strut equipment mounting tracks shall be installed inside the compartment with two (2) channels on the left wall and two (2) channels on the right wall. The tracks shall be positioned to provide

support for equipment mounting. The length of the tracks shall be sized to allow for optimum use of the compartment interior.

COMPARTMENT SHELF GRATING

The specified compartment shelf shall be fitted with removable interlocking vinyl Dri-Dek grating. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

COMPARTMENT GRATING

The exterior compartments shall be fitted with removable interlocking vinyl Dri-Dek grating. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant.

BODY ELECTRICAL REQUIREMENTS

The following describes the low voltage electrical system on the apparatus including all panels, electrical components, switches and relays, wiring harnesses and other electrical components. The apparatus manufacturer shall conform to the latest Federal DOT standards, current automotive electrical system standards and the applicable requirements of the NFPA 1906.

All apparatus body electrical components shall be served by independent circuits which shall be separate and distinct from the apparatus cab and chassis electrical circuits. All wiring supplied and installed by the apparatus manufacturer shall be installed in flexible split convoluted loom and shall be color coded and function labeled at 6” intervals. All wiring supplied and installed by the apparatus manufacturer shall be grease, oil and moisture resistant; and shall be securely fastened with insulated metal clamps and nylon wire ties. Solder less insulated connectors shall be utilized at all splice joints and shall be enclosed with heat shrink tubing for extra corrosion protection. Automatic reset type circuit breakers shall be provided wherever possible.

Wiring shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for which the circuit is protected. Voltage drops shall not exceed 10 percent in all wiring from the power source to the using device. 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. Exposed wiring shall be run in a loom with a minimum 289 degree Fahrenheit rating. Wiring looms shall be properly supported and attached to body members. Electrical conductors shall be constructed in accordance with applicable SAE standards, except when good engineering practice requires special construction.

All wiring connections and terminations shall provide positive mechanical and electrical connections and be installed in accordance with the device manufacturer's instructions. When wiring passes through metal panels, electrical connections shall be with mechanical type fasteners and rubber grommets.

Wiring between cab and body shall be split using Deutsche type connectors or enclosed in a terminal junction panel allowing body removal with minimal impact on the apparatus electrical system. Connections shall be crimp-type with heat shrink tubing with insulated shanks to resist moisture and foreign debris such as grease and road grime. Weather resistant connectors shall be provided throughout the system.

Electrical junction or terminal boxes shall be weather resistant and located away from water spray conditions. When required, automatic reset breakers and relays shall be housed in the main body junction panel.

There shall be no exposed electrical cabling, harnesses, or terminal connections located in compartments, unless enclosed in an electrical junction box or covered with a removable electrical panel. Wiring shall be secured in place and protected against heat, liquid contaminants damage.

Low voltage over current protective devices shall be provided for the electrical circuits. The devices shall be accessible and located in required terminal connection locations or weather resistant enclosures. Over current protection devices shall be automatic reset type suitable for electrical equipment and meet SAE standards. All electrical equipment, switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. Electro-magnetic interference suppression shall be provided in the system as required in applicable SAE standards.

The electrical system shall include the following:

7. Electrical terminals in weather exposed areas shall have a non-conductive grease or spray applied. All terminal plugs located outside of the cab or body shall be treated with a corrosion preventative compound.
8. All electrical wiring shall be placed in a protective loom or be harnessed.
9. Exposed connections shall be protected by heat shrink material and sealed connectors.
10. Large fender washers shall be used when fastening equipment to the underside of the cab roof and all holes made in the roof shall be caulked with silicone.
11. Electrical components installed in exposed areas shall be mounted in a manner that will not allow moisture to accumulate inside.
12. A coil of wire must be provided behind an electrical appliance to allow them to be pulled away from mounting area for inspection and service work.
13. All lights in a weather exposed area that have their sockets shall have corrosion preventative compound added to the socket terminal area.
14. Warning lights shall be switched in the chassis cab with labeled rocker type switches located in an accessible location. Individual rocker switches shall be provided only for warning lights provided exceeding the minimum level of warning lights in either the stationary or moving modes. All electrical equipment switches shall be appropriately identified as to their function and mounted on a switch panel mounted in the cab convenient to the operator. For easy nighttime operation, an integral indicator light shall be provided to

indicate when a circuit is energized.

A single warning light switch shall activate all required warning lights. This switch shall allow the vehicle to respond to an emergency "calling for the right of way". When the parking brake is activated, a "blocking the right of way" system shall be automatically activated per NFPA 1906 requirements. "Clear" warning lights shall} be automatically shed on actuation of parking brake.

The fire apparatus low voltage electrical system shall be tested as required by this section and the test results shall be certified by the apparatus manufacturer. The certification shall be delivered to the purchaser with the documentation for the completed apparatus. The tests shall be performed when the air temperature is between 0°F and 110°F.

Test Sequence

The three (3) tests defined below shall be performed in the order in which they appear. Before each test, the chassis batteries shall be fully charged until the voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for 10 minutes. The failure of any of these tests shall require a repeat of the test sequence.

Reserve Test Capacity

The chassis engine shall be started and kept running until the chassis engine and engine compartment temperatures are stabilized at normal operating temperatures and the chassis battery system is fully charged. The chassis engine shall be shut off and the minimum continuous electrical load shall be applied for 10 minutes. All electrical loads shall be turned off prior to attempting to restart the chassis engine. The chassis battery system shall then be capable of restarting the chassis engine. The failure to restart the chassis engine shall be considered a failure of this test.

Alternator Performance Test at Idle

The minimum continuous electrical load shall be applied with the chassis engine running at idle speed. The chassis engine temperature shall be stabilized at normal operating temperature. The chassis battery system shall be tested to detect the presence of a chassis battery current discharge. The detection of chassis battery current discharge shall be considered a failure of this test.

Alternator Performance Test at Full Load

The total continuous electrical load shall be applied with the chassis engine running up to the engine manufacturer’s governed speed. The test duration shall be a minimum of two (2) hours. The activation of the electrical system load management system shall be permitted during this test. The activation of an alarm due to excessive chassis battery discharge, as detected by the system required by NFPA (current edition), or an

electrical system voltage of less than 11.8 VDC for a 12 VDC nominal system, for more than 120 seconds, shall be considered a failure of this test.

Low Voltage Alarm Test

Following the completion of the tests described above, the chassis engine shall be turned off. With the chassis engine turned off, the total continuous electrical load shall be applied and shall continue to be applied until the excessive battery discharge alarm activates. The chassis battery voltage shall be measured at the battery terminals.

The test shall be considered to be a failure if the low voltage alarm has not yet sounded 140 seconds after the voltage drops to 11.70VDC for a 12 VDC nominal system. The chassis battery system shall then be able to restart the chassis engine. The failure of the chassis battery system to restart the chassis engine shall be considered a failure of this test.

Documentation

The apparatus manufacturer shall provide the results of the low-voltage electrical system performance test, certified in writing, with the documentation provided to the purchaser at the time of delivery of the completed apparatus.

The test results shall consist of the following documents:

a) Documentation of the electrical system performance tests.

b) A written electrical load analysis, including the following:

1) The nameplate rating of the alternator.

2) The alternator rating under the conditions specified in NFPA 1906.

3) Each component load specified that make up the minimum continuous electrical load.

4) Additional electrical loads that, when added to the minimum continuous electrical load, to determine the total continuous electrical load.

5) Each individual intermittent electrical load.

ELECTRICAL WIRING HARNESS

The electrical system shall be divided into separate harnesses. The individual harness shall be connected to the electrical box with Deutsch type quick connectors. The wiring and appliances shall be protected by automatic

reset type circuit breakers. The electrical power to all apparatus lighting and accessories shall be supplied by an ignition activated solenoid.

CUSTOM FABRICATED CONSOLE

A custom fabricated electrical console and enclosure shall be located between the driver's and the officer's seating positions and shall include rocker control switches and removable panels. It shall include cab mounted electrical switching devices and equipment as required. The exact design and layout of this console shall be subject to the chassis design, available space, and cab seating provisions.

BATTERY SWITCH - MASTER DISCONNECT

A battery cutoff switch shall be provided in the cab within easy reach of the driver. The switch shall be a Cole Hersee brand, Model #M-2484-16 with a Model #82065 switch plate Off/On label. The switch shall be rated for 175 amps continuous duty and 800 amps at intermittent duty.

BATTERY ON INDICATOR LIGHT

One (1) "Battery On" indicator light, with a green lens, shall be provided on the dashboard in the cab interior within view of the driver’s seating position. This light shall illuminate anytime the battery switch is turned to the "ON" position.

BATTERY CHARGER

A Kussmaul Autocharge Model #091-12-12 automatic battery charger, wired to the 12 volt battery system, shall be mounted in a clean dry area accessible for service and/or maintenance.

REAR UPPER MARKER, CLEARANCE LIGHTS, AND REFLECTORS

Two (2) Weldon brand, Model #9186-1500-10 red LED marker lights, with stainless steel guards, shall be provided at the rear of the body. The lights shall be located in the upper outboard corners of the body, one (1) each side, facing to the rear of the apparatus.

Three (3) Weldon brand, Model #9186-1500-10 red LED marker lights, with stainless steel guards, shall be provided at the rear of the body, below the rear hose bed horizontal exit threshold.

Two (2) Weldon brand, Model #9186-1500-10 red LED marker lights, with stainless steel guards, shall be provided on the vertical surfaces of the rear step, one each side of the body, facing to the sides of the apparatus.

Two (2) self-adhesive red reflectors, one (1) each side of the body, shall be provided on the lower rear corners of the compartment doors behind the rear wheel wells, facing to the sides of the apparatus.

Two (2) self-adhesive red reflectors, one (1) each side of the body, shall be provided on the lower outboard corners of the body, above the rear step, facing to the rear of the apparatus.

Two (2) self-adhesive amber reflectors, one (1) each side of the body, shall be provided on the forward lower corners of the compartment doors forward of the rear wheel wells, facing to the sides of the apparatus.

D.O.T. 3 LIGHT CLUSTER

There shall be a red LED three (3) cluster light assembly provided and installed on the rear of the body.

LICENSE PLATE BRACKET

A chrome plated license plate bracket with LED light shall be provided at the rear of the apparatus.

STOP AND TAIL LIGHTS

Two (2) Code 3, 4" x 6" LED stop and tail lights with red lenses shall be provided. The light shall be furnished with a polycarbonate lens for maximum light spread.

TURN SIGNALS

Two (2) Code 3, 4" x 6" LED directional lights shall be provided. The turn signal lights shall incorporate amber LED's for a maximum population configuration with an amber polycarbonate lens.

BACK-UP LIGHTS

Two (2) Code 3, 4" x 6" rear halogen back-up lights shall be installed. The back-up lights shall have a clear polycarbonate lens.

TAILLIGHT BEZELS

Two (2) chrome plated plastic housings shall be installed at the rear of the apparatus for four (4) Code 3, 4" x 6" stop-tail-turn-backup and warning lights.

MAP LIGHT

One (1) Havis Shields #C-MAP-T-LED 12" LED map light, 12 volt, with a gooseneck arm an on-off switch located on the base of the light {will/shall} be installed: Location:

FRONT BUMPER -- GROUND LIGHTS

Two (2) LED ground lights shall be installed under the front bumper automatically activated when the headlights are on and the parking brake is applied.

CAB GROUND LIGHTS

Four (4) LED ground lights shall be installed under the cab step area in compliance with NFPA standards; and activated with the parking brake.

GROUND LIGHTS - MID BODY

Two (2) Tecniq E10, LED ground lights shall be installed under the mid-body compartment floor, one on each side of the apparatus, wired to parking brake circuit.

GROUND LIGHTS - UNDER REAR STEP

Two (2) LED ground lights shall be installed under the rear step area, one on each side of the apparatus, wired to parking brake circuit.

DECK LIGHTS

Two (2) Buyers Products LED 360 degree floodlights with on/off switch shall be installed. One each side of the cab protector.

HOSE BED OR DECK LIGHT

Two (2) Buyers Products LED 360 degree swivel floodlight with on/off switch {will/shall} be installed on the rear side of the body. They shall be mounted high enough to serve as area flood lights to the rear and sides of the body.

COMPARTMENT LIGHTING

Two (2) Code 3 800 Series Corner LED lights shall be installed in each of the specified compartment(s).

COMPARTMENT LIGHTING

Two (2) Code 3 800 Series Corner LED lights shall be installed in each of the specified compartment(s).

COMPARTMENT LIGHTING

One (1) TruckLite 4" diameter LED clear light shall be installed in each compartment door.

RADIO ANTENNA INSTALLATION

There shall be two (2) radio antennas installed on the apparatus at a location determined by the purchaser. The antenna cable shall be routed to the cab interior, terminating at the location of the radio mounting bracket.

RADIO PRE-WIRE

The chassis cab interior shall be wired with battery power, battery ground, switched power, and radio prebroadcast wires to the siren or PA, and labeled to simplify USFS radio installation.

12 VOLT POWER SOURCE

There shall be two (2) 12 volt plug-in utility power connection(s) rated at 20 amps provided and installed in the cab console.

USB CHARGING PORT

Four (4) USB charging port(s) shall be installed in the cab of the truck for the fire departments accessory devices. The USB charging port shall have two (2) USB connections and shall have a 5 volt, 3.1A output.

BACK UP ALARM

One (1) solid state back up alarm shall be provided at the rear of the apparatus. The back up alarm shall be wired to the reverse circuit of the transmission, and shall provide an audible alarm to the rear of the apparatus when reverse gear is selected. The alarm shall have a volume of 87 to 112 db while in operation.

HEADLIGHT FLASHING

The headlights shall be programmed to flash in an alternating pattern when the apparatus is in "Calling For Right Of Way" mode.

ELECTRONIC SIREN

One (1) Federal Signal PA300 Series Model #690000 electronic siren shall be provided. The siren shall be 200W/12V and shall meet SAE and Class A requirements. The PA300 siren shall provide wail, yelp, and hi-lo siren tones, as well as the Tap II feature, public address (PA), radio rebroadcast and air horn sound.

The siren shall be protected against failure modes (including reversed polarity) by a replaceable fuse. The PA300 siren shall be provided with a noise-canceling microphone which shall be wired-in to prevent loss or theft. The microphone shall provide high quality voice reproduction without feedback “squeal”. The microphone push-to-talk switch shall override any siren signal for instant PA use. The PA and radio volume shall be adjustable by means of a front panel GAIN control feature.

SIREN SPEAKER

One (1) Code 3 brand, Model #Z100, 100 watt siren speaker shall be provided and mounted behind the driver's side of the front bumper. The speaker shall be wired to the specified electronic siren controller.

WHELEN 56" JUSTICE SERIES LIGHTBAR

A Whelen 56" Justice series lightbar model # JE2NFPA shall be supplied and permanently mounted on the cab roof, as low and as far forward as possible. The lightbar system shall be NFPA compliant.

ZONE A -- UPPER -- TRAFFIC LIGHT CONTROL

One (1) Opticom traffic light emitter system and control device shall be installed as specified in the apparatus cab lightbar.

ZONE A -- LOWER FRONT WARNING LIGHTS

Two (2) Whelen brand, 700 Series red LED warning lights, with mounting flanges, shall be provided and mounted in the lower outboard corners of the cab grille, forward-facing, one (1) on each side. The lights shall be wired to the "Warn Lights" switch on the cab center console.

The specified Whelen 3" x 7" lights shall be equipped with chrome plastic flange type light bezel mountings.

ZONE B AND D -- LOWER MID-CAB WARNING LIGHTS

Two (2) Whelen Series 700, 3" x 7" warning lights shall be installed. The warning lights shall be installed one (1) each side, lower mid cab. The warning lights shall incorporate Linear-Super LED and Smart LED technology. The light head configuration shall be designed with eight (8) red Super-LEDs with a red optic polycarbonate lens. The light heads shall utilize a hybrid TIR optic reflector and chrome vacuum metalized reflector for maximum illumination. The light head shall include fourteen (14) internal Scan-Lock flash patterns including steady burn and High/Low power functions. The lights shall have red lens and chrome plastic bezels.

The specified Whelen 3" x 7" lights shall be equipped with chrome plastic flange type light bezel mountings.

ZONE B AND D -- LOWER MID-BODY WARNING LIGHTS

Two (2) Whelen Series 600 Model #60R02FRR, 4" x 6" warning lights shall be installed. The warning lights shall be located one (1) each side, lower mid body. The warning lights shall incorporate Linear-Super LED and Smart LED technology. The lights shall have red lens and chrome plastic bezels.

The specified Whelen 4" x 6" lights shall be equipped with chrome plastic flange type light bezel mountings.

ZONE B AND D -- LOWER REAR CORNER WARNING LIGHTS

Two (2) Whelen Series 600 Model #60R00FRR, 4" x 6" warning lights shall be installed. The warning lights shall be located one (1) each side low, as far rearward as possible. The warning lights shall incorporate Linear-Super LED and Smart LED technology. The lights shall have red lens and chrome plastic bezels.

The specified Whelen 4" x 6" lights shall be equipped with chrome plastic flange type light bezel mountings.

ZONE B AND D -- UPPER SIDE REAR WARNING LIGHTS

Two (2) Whelen Series 600 Model #60R02FRR, 4" x 6" warning lights shall be installed. The warning lights shall be located one (1) each side high on the body, as far rearward as possible. The warning lights shall incorporate Linear-Super LED and Smart LED technology. The light head shall include fourteen (14) internal Scan-Lock flash patterns including steady burn and High/Low power functions. The lights shall have red lens and chrome plastic bezels.

The specified Whelen 4" x 6" lights shall be equipped with chrome plastic flange type light bezel mountings.

ZONE C -- UPPER REAR WARNING LIGHTS

Two (2) Whelen Series 600 Model #60R00FRR, 4" x 6" warning lights shall be installed. The warning lights shall be located one (1) each side, rear upper area of the body. The warning lights shall incorporate Linear-Super LED and Smart LED technology. The light head configuration shall be designed with eight (8) red Super-LEDs with a red polycarbonate lens. The light head shall include fourteen (14) internal Scan-Lock flash patterns including steady burn and High/Low power functions. The lights shall have red lens and chrome plastic bezels.

ZONE C -- LOWER REAR WARNING LIGHTS

Two (2) Whelen 600 series, 4" x 6" warning lights shall be installed. The warning lights shall be located one (1) each side, rear lower area of body. The warning lights shall incorporate Linear-Super LED and Smart LED technology. The light head shall include fourteen (14) internal Scan-Lock flash patterns including steady burn and High/Low power functions. The color of the lens shall be red.

REAR DIRECTIONAL LIGHT BAR

One (1) Sound Off brand, directional light bar shall be provided at the rear of the apparatus body. The light bar shall be 36" wide and shall consist of 12 lamps. The light bar shall be surface- mounted, centered below the upper rear body edge, and shall be controlled by three (3) switches on the cab center console.

WILDLAND DRIP TORCH, MOUNTED

two (2) Sure Seal drip torch(s) shall be provided, one on each side of the rear bumper. Top loading torch holders with spring loaded restraints shall be provided to assure secure retntion in an off-road environment.

WHEEL PAINTING

The front and rear wheels shall be finish painted to match the apparatus body. Wheels shall be properly prepared and finished with primer coats and top coats as specified.

BODY PAINTING SPECIFICATIONS

All exposed steel surfaces shall be thoroughly cleaned and prepared for finish painting.

All removable items, such as brackets and compartment doors, shall be removed and painted separately to insure finish paint behind them after they are reinstalled.

The apparatus body shall be masked as needed to prevent the painting of unwanted areas and overspray damage. Due to its modular design, the apparatus body shall be completely finish painted prior to its installation on the chassis.

All exterior surface scratches and blemishes shall be filled with body putty and sanded down, along with all primed surfaces.

The complete apparatus body shall be cleaned, blown free of dust; washed with thinner; and wiped with tack cloths. A non-sanding primer shall be applied and when dry, the apparatus body shall be sprayed with three (3) coats of finish paint. All loose body components shall be treated in the same manner.

Any irregularity in any painted surface shall be repaired prior to the application of the finish paint coats.

The apparatus body shall be painted to match the color of the chassis cab exterior. The chassis cab shall not be repainted.

INTERIOR COMPARTMENT FINISH

The compartment interiors shall be sealed for leaks and the inside surface areas cleaned and prepped, then finish painted with Zolatone #20-11 (Apollo Gray).

TOUCH-UP PAINT

Touch-up paint and activator shall be furnished with the completed truck at final delivery.

MALTESE CROSSES

Two (2) Scotchlite reflective gold Maltese crosses with black outlining shall be applied to the apparatus. The crosses shall be 12" in diameter. Purchaser shall determine location of Maltese crosses.

CAB AND BODY STRIPING

The cab and body shall have a straight Scotchlite reflective stripe applied horizontally. The stripe shall be similar to Castle Rock Fire example in photos showing lettering and color. The logos and stripe shall conform to and be applied in accordance with NFPA standards.

COMPARTMENT DOOR EDGE STRIPING

The hinged compartment doors shall have a red and white 3M Diamond Grade reflective stripe applied on the edges. The stripe shall be a 2" minimum in width.

CHEVRON STRIPING

The outer rear panels of the body shall have Scotchlite brand 6” wide reflective red and amber striping installed over 50% of available area. The Chevron style stripe shall be applied at a 45-degree angle, pointing towards the center upper portion of the rear panel.

SUCTION HOSE

Three (3) 2.5” x 7 foot lengths of Kochek PVC flexible suction hose shall be provided and equipped with lightweight couplings.

WHEEL CHOCKS

Two (2) Worden brand, Model #HWC-7 wheel chocks shall be provided.

5# DRY CHEMICAL FIRE EXTINGUISHER

One (1) 5# ABC dry chemical fire extinguisher and mounting bracket shall be provided on the apparatus. The extinguisher shall have a pressure gauge and shall be filled with a dry chemical extinguishing agent.

EQUIPMENT AND TOOL MOUNTINGS

One (1) set of tool holders and mountings, per USFS design, shall be purchased or fabricated from stainless steel and/or steel with a gray Dura Coat finish.

The tool holders shall be shipped with the loose equipment accompanying the completed apparatus.

REFLECTOR

A set of three (3) triangular reflectors shall be provided.

DISCOUNT FOR PRE-PAY

A 1.4% discount of the proposed price shall be provided for full payment, less the discount, of the proposed price at time of order