



"An Experience To Remember"

SPECIFICATIONS

FOR ONE (1)

FIRE SERVICE

PUMPER

REQUEST FOR PROPOSAL DOCUMENT

For:

Township of Rideau Lakes
1439 County Road 8
Delta, Ontario
K0E 1G0

RFP FOR ONE (1) PUMPER FIRE APPARATUS

Sealed Proposals Will Be Received at the address below until:

1:00pm Fri Nov 2/2018

RFP's are to be mailed or hand delivered to the attention of:

Steve Fournier, Fire Chief
Township of Rideau Lakes
1439 County Road 8
Delta, Ont
K0E 1G0
613-928-2251 ext 237

INTENT

As per the specifications provided, the Township is inviting qualified manufacturers to submit pricing and delivery for one (1) Pumper Fire Apparatus.

Respondents shall reply to the specifications on the forms supplied.

All items in these specifications must be answered indicating compliance or noncompliance. Respondents shall state "Yes" for compliance or state the deviation. Information relating to deviations must accompany this document including a separate cover letter and shall state the page and section for ease of reference.

The specifications shall be answered on the forms provided or the proposals may be disqualified.

It is the intent that the specifications clearly identify the furnishing and delivery of a complete Pumper Fire Fighting Apparatus as specified. The purchaser shall have the right to change/alter specifications that cannot be met, supplied, delivered in consultation with respondents.

Proposals submitted will be reviewed and evaluated based on qualifications, bonding, quality programs, irregularities, delivery and price.

The purchaser shall be the sole determining organization as to the award of any contract, and the lowest price or any proposal may not necessarily be accepted.

As a part of the contract negotiations, the township may consider a multi-year contract to securing three fire apparatus pumpers over the next 5 years.

RFP EVALUATION

This RFP will be evaluated on a points system based on the documents submitted with this call. Failure to submit requested documents may result in your RFP being rejected or 0 points being assigned. Evaluation of points being received in each section is at the discretion of the purchaser. Lowest price or any RFP may not be excepted.

1) Price	40%
2) Design and specification compliance	35%
3) Warranty and after sales service	10%
4) Similar project Experience	5%
5) Service and parts accessibility	5%
6) Corporate History and References	5%

Total 100 points

DEMONSTRATION

An authorized representative of the manufacturer shall provide demonstration of the completed vehicle. One (1) day of orientation shall be provided and performed by a qualified representative of the manufacturer.

TERMS AND CONDITIONS OF PAYMENT

90% of the complete purchase price will be paid on arrival of the pumper, the remaining 10% will be paid within 30 days of delivery. Payments will be made in 2019 only.

QUALIFICATION SHEET

All firms must fill this form out completely. Proposals not returned with this form completely filled out may be disqualified.

Any blank spaces or noncompliance could result in the manufacturers proposal submittal being disqualified.

REQUIREMENTS

1) The firm must have been in the fire apparatus manufacturing sector for a minimum of five (5) years.

Comply (Yes/No) _____

2) The vehicle proposed must not be a prototype. Photos of the proposed model to be included with the bid package with the customer's contact information

Comply (Yes/No) _____

Photos Attached (Yes/No) _____

Customer Contact Attached (Yes/No) _____

3) How long has the proposed vehicle been in production?

Number of Years _____

4) The firm shall have a documented and certified ISO 9001 quality program in place. A copy of the certifications must be included with the bid submittal. The apparatus manufacturer shall provide the name of the ISO provider, as well as the ISO providers contact information including phone number.

Comply (Yes/No) _____

Certificates Attached (Yes/No) _____

Contact Information Attached (Yes/No) _____

5) The firm shall have a quality manual available for inspection by the purchaser

Comply (Yes/No) _____

6) The firm must indicate that they are the prime contractor for this proposal, and that all non-purchased components are not subcontracted.

Comply (Yes/No) _____

7) All welding on the apparatus body and plumbing systems must be performed by certified welders. The certificates must be certified in a minimum of Division 2. Copies of the certification must be attached with the bid submittal.

(Yes/No) _____

Certificates Attached (Yes/No) _____

8) The apparatus manufacturer shall be a current member of the Fire Apparatus Manufacturers Association (FAMA). A copy of the certificate must be attached with the bid submittal.

(Yes/No) _____

Certificate Attached (Yes/No) _____

9) The apparatus manufacturer must provide documentation of having a certified engineer on staff with the bid submittal.

(Yes/No) _____ Certificates Attached (Yes/No) _____

10) The manufacturer of the apparatus must supply a Certificate of Insurance proving that they carry a minimum of \$25,000,000.00 in product liability insurance. A copy of the certificate shall be included with the bid submittal.

(Yes/No) _____ Certificates Attached (Yes/No) _____

11) The manufacturer of the apparatus must be registered with Transport Canada to the National Safety Mark Standards. Copies or registration must be attached with the bid submittal.

Yes/No) _____ Certificate Attached (Yes/No) _____

12) The manufacturer of the apparatus must be certified and in good standing with the Workers Compensation Board. Proof of certification must be supplied with the bid. A manufacturer that is not certified in Factory Manufacturing or not in good standing with their local Workers Compensation Board shall be disqualified.

Yes/No) _____ Certificate Attached (Yes/No) _____

REQUIREMENTS OF THE APPARATUS MANUFACTURER

The manufacturer of the apparatus must be fully owned and managed by a Parent Company, Corporation, Partnership, or that is a company 100% held in North America.

All chassis, pumps and major components must be manufactured in North America and must be able to supply parts for an emergency vehicle within 48 hours.

Proposals from any manufacturer that is fully or partially owned and/or operated by a Foreign Company, Corporation, Partnership, or that is a company under any type of ownership partnership, or any similar type of agreement will be rejected immediately and their bid disqualified.

SERVICE REQUIREMENTS

The firm shall provide a "24 Hour", "7-Day Per Week" emergency parts and service toll free telephone number. This phone number must be listed on a separate statement included in the proposal package, along with the contact name, business name, address, and phone number of the local service agency, which will service the vehicle after being placed into service.

The service agency shall be capable to perform all required service work, and shall also have at their disposal the ability to have any required subcontracting work, such as engine, transmission, etc. work performed on behalf of the apparatus manufacturer.

ENGINEERING DRAWINGS

Engineering drawings shall be submitted to the purchaser prior to commencement of the manufacturing process. A pre construction meeting shall take place with the purchaser and the manufacturer at this time.

This drawing shall show at a minimum the front, left, right and rear views of the vehicle, as it will look at the time of completion.

A copy of this drawing shall be signed and returned to the apparatus manufacturer and become part of the vehicle contract.

BODY MANUAL - ELECTRONIC

One (1) digitized manual(s) shall be provided on operation of the complete apparatus. The manual(s) shall include a troubleshooting guide complete with recommended daily, weekly and annual maintenance procedures.

The apparatus manufacturer shall supply a complete wiring diagram for the color coded wiring harness.

WEIGHT AND BALANCE CALCULATION

The apparatus, prior to acceptance will be required to meet the vehicle stability of the applicable NFPA or ULC automotive fire apparatus standard.

A calculated center of gravity shall be performed to ensure the apparatus meets these requirements. The calculated center of gravity shall be no higher than 80 percent of the rear track axle width.

TESTING AND CERTIFICATION

The completed vehicle shall be tested and labeled to CAN/ULC-S515-13 by an independent third party certification organization.

The completed vehicle shall be tested and labeled to NFPA 1901 by an independent third party certification organization

The third party organization shall be accredited for testing systems on fire apparatus in accordance with ISO/IEC 17020 or ISO/IEC Guide 65.

The certification organization shall not be owned or controlled by manufacturers or vendors of the apparatus being tested.

The certification organization shall be primarily engaged in certification work and shall not have a monetary interest in the product's ultimate profitability.

The certification organization shall witness all test and shall refuse to certify any test result for a system if the components do not pass the testing required by this system.

There shall be no conditional, temporary, or partial certification of test results.

Appropriate forms of data sheets shall be provided and used during testing.

Manufacturer's certification **is not** acceptable.

The manufacturer shall be certified to ISO 9001

The completed vehicle shall undergo, prior to delivery, a two (2) hour road test with all applicable emergency equipment activated. A certification shall be provided to the purchaser outlining the results of this road test.

CARRYING CAPACITY PLATE

A warning label shall be provided in the cab within sight of the driver stating the seating capacity of the cab/crew cab.

Another warning label shall be provided in the cab within sight of the driver that the occupants must be seated and belted.

VEHICLE DIMENSION PLATE

A warning label shall be provided in the cab within sight of the driver stating the following apparatus dimensions:

Height and length in standard and metric measurements.

Gross vehicle weight rating in pounds and kilograms.

DIELECTRIC VOLTAGE TESTING

The wiring and permanently connected devices and equipment shall be subject to a dielectric voltage withstand test of 900 volts for one minute. The testing shall be performed after all body work has been completed. The electric polarity of all permanently wired equipment, cord reels, and receptacles shall be tested to verify that wiring connections have been properly made.

FLUID CAPACITY AND TYPE LABEL

A permanent label shall be provided and shall state the type and quantity of the following fluids used in the vehicle:

- Engine Oil
- Engine Coolant
- Chassis Transmission Fluid
- Drive Axle Fluid
- Pump Gear Case
- Primer Lubricant (If Applicable)

HELMET HOLDERS

There shall be two (2) Zico helmet holders supplied with the apparatus. The helmet holder shall comply with the 2009 edition of NFPA 1901 for use inside of crew cabs. It holds both traditional and contemporary style helmets without any adjustment needed.

CHASSIS SPECIFICATIONS

A commercial two door INTERNATIONAL 7400 series chassis shall be supplied as per the following minimum specifications;

- 340 HP Cummins Engine
- Allison EVS3000 transmission
- 18 cfm air compressor or larger
- 14,000lb front axle
- Taper leaf front suspension
- 26,000lb rear axle
- Leaf spring rear suspension system
- Air brakes, S-cam system
- Air brake system to have an air dryer
- 12R22.5 tires front and rear, rear tires to be grip tread style
- Stainless steel front bumper
- Tilt steering column
- Bucket seats
- Engine-exhaust brake system with a two position on-off switch
- Horizontal exhaust with tail pipe a head of rear wheels

270 amp alternator minimum
3-maintenance free 12-volt batteries 1950cca
Chrome grill
Two (2) heavy duty chrome tow hooks shall be located in the front bumper assemble
Tilting hood
Air conditioner
Chrome heated and with lights mirrors
Painted steel wheels

CHASSIS WHEELS

The chassis wheels shall be painted by the chassis supplier and the color shall be specified in the chassis specifications.

CHASSIS PREPARATION

The chassis shall be carefully inspected for compliance to the required specifications and to assure that it is ready for apparatus construction.

Any components that require relocation or modification shall be done at this time.

EXHAUST SYSTEM

The chassis exhaust system shall be modified and routed to the right hand side of the apparatus ahead of the rear wheels. The end of the exhaust shall have a straight cut end which is suitable for a fire hall exhaust extraction system.

EXHAUST SYSTEM HEAT SHIELD

Where the chassis exhaust piping passes under or near a body compartment, the exhaust piping shall be shielded to prevent compartment exposure to radiant heat.

FRONT AND REAR MUD FLAPS

Four (4) heavy duty rubber rear mud flaps shall be provided and installed on the apparatus. The mud flaps shall be installed behind the front and rear wheels.

CHAINED IGNITION KEY

The key utilized for the ignition shall be securely chained to either the steering column or the cab dash to prevent loss or removal of the ignition key.

ALUMINUM CHECKER PLATE COVERS

There shall be .125" aluminum checker plate trim installed at the chassis steps. The checker plate shall be easily removable for ease of service and maintenance if required.

BATTERY CHARGER PACKAGE - 40AMP

The following components shall be installed:

Battery Charger - Kussmaul - Auto Charge 1200 PLC

A Kussmaul Auto Charge #1200 Series Model #091-187-12, 40 amp high output battery charger shall be installed.

The charger shall have the following operational specifications:

- a) 120 volts AC input at 10 amps
- b) 12 volts DC output at 40 amps
- c) Dimensions of: 13.25" high x 7" wide x 5.25" deep and weighs 26 lbs.

The battery charger shall supply a 'single battery bank' with automatic operation and with an aluminum enclosure. The system shall have a built-in sense circuit to check battery voltage 120 times a second; the system shall compensate for voltage drop in charging wires and provide quick recharging with no overcharging. The unit shall include front panel connections for a remote display.

Air Inlet Connection

There shall be an air inlet shoreline installed at the left cab door area and connected into the chassis air brake system. The air fitting for this inlet shall be male.

Shoreline Inlet - Kussmaul Super Auto Eject - 20 Amp

A Kussmaul Super Auto Eject Model #091-55-20-120, 20 amp 120 volt shore power assembly, cover, solenoid input wire, power cord, and plug shall be installed near drivers door. The 12 volt solenoid shall eject the shore power cord away from vehicle path upon sensing engine start; after ejection, the weatherproof cover snaps into position over inlet. The unit shall sequence energizing of an Auto Eject, eliminating terminal arcing when connecting and disconnecting power cord.

The unit shall have a waterproof back enclosure with watertight cable fittings, which protect mechanism from road contamination. A pre-wired 3 foot AC electrical cord and starting sense wire (side wired) shall be installed. Electrical receptacles located in compartments R1 and L1 shall be hardwired from this location.

The assembly shall have the following dimensions: 6.17" high x 4.08" wide x 2.8" deep with 4 lb. weight.

Cover color to be yellow.

Battery Charger Remote Digital Display

The charger shall include a Model #091-199-001 single bar remote digital display.

CAB STEP LIGHTING

The cab step lighting shall be chassis supplied and as per the chassis specifications.

TRANSPORTATION ROAD SAFETY KIT

The following Transportation Road Safety Kit shall be supplied.

One (1) 5 lb. ABC vehicle type fire extinguisher with mounting bracket.

One (1) standard First Aid Kit shall be provided.

One (1) set of three (3) dual faced triangular warning flares to meet the Department of Transportation's Motor Vehicle Safety Standards.

Two(2) wheel chocks shall be provided but not attached to vehicle

There shall be a one inch wide reflective stripe applied to the front of the apparatus. The reflective stripe shall be a 3M Scotchlite product.

There shall be reflective striping applied to the interior chassis cab doors of the apparatus. The reflective stripe shall be a 3M Scotchlite product.

PUMP HOUSE - TOP CONTROL

The pump house shall be a full frame module constructed from 2" x 2" x .188", 3" x 2" x .250", and 3" x 3" x .250" (6061-T6 / 6063-T6) heavy-duty structural aluminum extrusions which shall provide maximum strength and durability.

The gauge and operator side vertical panels shall form an integral structure to the pump house module. The interior of each gauge and operator vertical side panel shall be trimmed with 14 gauge 304 stainless steel with a #4 polished finish. The exterior trim of each vertical gauge and

operator side panel shall be trimmed with 14 gauge 3003 aluminum checker plate. All trim shall be fastened with stainless steel screw fasteners.

There shall be two running boards on each side, meeting the requirements of NFPA 1901, running the full length of the pump house module. The step framing shall be 3" x 2" x .250" and 3" x 3" x .250" 6061-T6 heavy duty structural aluminum and shall be welded to the pump house module framing. The running board framing shall be covered with 3/16" 3003-H22 aluminum checker plate with NFPA1901 approved slip resistance.

The exterior rear wall of the pump house shall be trimmed with 1/8" 3003 - H22 aluminum checker plate fastened with stainless steel screw fasteners.

Pump House Painted - PPG

The pump house shall be done in accordance with automotive practices using Delfleet® Evolution FBCH high solids polyurethane paint with the PPG painting process.

All painting shall be baked at 160 degrees F. for a minimum 45 minutes to provide an automotive quality finish.

After assembly, the body substructure shall be deburred and hand sanded.

All ledges inside and outside shall be cleaned and sealed.

The painting process consists of the following applications:

- a) Wash entire body with DX 440 wax and grease remover
- b) Etch primer, PPG F3963 (0.2 - 0.35 mils dry)
- c) Primer, PPG F3975 (3.0 - 6.0 mils dry)
- d) Wash entire body with DX 330 wax and grease remover
- e) Primer sealer, Epoxy PPG F399x (1.0 - 4.0 mils dry)
- f) Base coat, Delfleet® evolution PPG FBCH (1.0 - 3.0 mils dry)
- g) Clear coat, PPG F3906 clear (minimum of 2.0 mils)

Only after the entire painting process is completed shall the body structures be installed on the chassis.

Only after the body is painted shall the components such as doors, aluminum inlay panels, mounting brackets, handrails, pump panels, and other accessories be installed.

PAINT POLISH - PUMP HOUSE - A.C.T. STANDARDS #3

The paint finish on the pump house shall meet the ACT test panel #3 level for orange peel visual standard. Test sample swatches shall be made available on request for paint finish comparison.

Walkway

A minimum 20"W x 72"L walkway shall be supplied at the transversely mounted pump operator panel.

The walkway shall be manufactured as part of the pump house and constructed using heavy duty 3" x 2" x .188" and 3" x 3" x .188" (6061-T6 / 6063-T6) heavy-duty structural aluminum extrusions.

The operator panel, walk way surface shall be covered with NPFA slip resistant 3/16" aluminum checker plate and shall be fastened to the framework with stainless steel bolts. The vertical surfaces shall be covered in 3003- H22 1/8" high shine aluminum checker plate.

Isolation tape (UHMW) shall be installed between the checker plate and the framework prior to installation.

Each side of the vertical surface leading to the operator panel walkway shall come with two (2) Cast Products aluminum fixed steps. For maximum stepping surface strength, the steps shall be fastened to a .375" thick aluminum plate located behind the vertical surface checker plate. This plate shall be welded directly to the walkway structure. The fasteners shall be stainless steel bolts.

Access on each side leading to the operator panel walkway shall be assisted by one (1) vertically mounted 24" knurled aluminum handrail and one (1) 12" knurled aluminum handrail mounted on the roadside and curbside walkway entrances.

The walk way and walkway entrances shall be illuminated by two 4" round LED lights. These lights shall be inset into rubber grommets. There shall be one light on each side.

Exterior Rear Cab Trim

The exterior back wall of the cab shall be covered with high shine .125" aluminum checker plate (3003-H22). Isolation tape (UHMW) shall be installed between the checker plate and the chassis cab prior to installation. The trim shall be secured using stainless steel bolts.

Industrial grade caulking shall be applied to the top surface of the trim.

Removable Pump House Inspection Panel - Checker Plate

The pump house interior shall be accessible by a large 34" high by 47" wide .125" hi shine aluminum checker plate inspection door at the walkway / pump operator panel.

This door shall be easily removable by unlatching, lifting, and removing.

This door shall be removable utilizing six (6) paddle latch assemblies.

The vertical surface on each side of the inspection door shall be covered in the same material as the inspection door.

Side Control Panels

The roadside and curbside pump panels shall be constructed from 1/8" aluminum with a black anti glare vinyl coating. Both the right side and left side pump panels shall be bolted to the pump house for ease of removal.

Each side panel shall come with an upper flip up inspection panel for access to the interior of the pump house. The panels shall be manufactured from 1/8" aluminum with a black anti glare vinyl coating. Each panel shall come with a stainless steel piano hinge and gas strut to keep the door open and assist in closing the door. Each door shall come with two (2) flush fit paddle latches.

The main pump inlet shall come with a 1/8" aluminum trim ring with black anti glare coating

All discharges and auxiliary inlets shall be sealed with rubber grommets for maximum heat retention.

HEAT PANS

The bottom of the pump house shall be fitted with a heat pan. The heat pan shall enclose all sides, front, and rear and bottom of the pump house.

The heat pan vertical side walls shall be constructed from 1/8" 5083-H321 salt water grade sheet aluminum and shall be installed to the underside of the pump house. They shall be installed as high as possible to the apparatus to give maximum ground clearance.

There shall be dual 12 gauge 5052 H321 aluminum panels that shall be split in the center and removable for access to the pump house components.

Any additional vertical enclosure to properly enclose the heat pan around chassis components shall be with 12 gauge 5052 H321 aluminum.

CONTROL PANEL - TRANSVERSE

The gauge and operator panel shall be 1/8" aluminum with a black vinyl anti glare coating.

The top tier (portion) of the panel shall be bottom hinged with a stainless steel piano hinge and shall have two (2) lift and turn twist lock latches located at the top of the panel for pump and gauge servicing. This panel shall contain all gauges and monitoring instruments.

All gauges and controls shall be symmetrically and logically laid out to easily enable the pump operator to monitor all aspects of pump operation.

The bottom/lower tier (portion) shall be screwed into place and can be removed using a Phillips head screwdriver. The lower level contains all the valve controls, discharges, suction, drains, etc. All suction and discharge ports exiting through the panels shall be laser cut to provide a smooth exact fit. No cover overlay plates shall be used.

MASTER GAUGE TEST PORTS

The pump operator panel shall come with Class 1 P/N 121384 vacuum and pressure testing ports.

PUMP BYPASS CONTROL

A Class 1 P/N 105120 brass assembly with chrome plated zinc handle petcock control valve shall be mounted at the pump operator panel to allow tank water to re circulate thru the pump. The port size and plumbing shall be 1/4"

AUXILIARY HEAT EXCHANGER

There shall be an auxiliary heat exchanger mounted on the chassis. The heat exchanger will allow tank water to cool the chassis engine.

The heat exchanger shall be operated by a Class 1 P/N 105120 brass assemble with chrome plated zinc handle petcock control valve. This valve shall be mounted at the pump operator panel. The plumbing to the auxiliary heat exchanger control valve shall be 1/4".

CROSS LAY HOSE BED

Two (2) cross lay hose beds(one 1.5” flange and one 2.5” flange) shall be provided and installed transversely above the pump house and shall have vinyl hose matting flooring to allow for water drainage and air movement under the hose. A 3/16" aluminum divider shall separate the hose beds. Each hose bed shall be sized to hold 200' of 1 3/4" and 2.5 “ hose respectively.

CROSS LAY PLUMBING - 1.5" DISCHARGE

The plumbing on the 1.5" and 2.5” discharges shall be heavy duty piping with Victaulic and Class 1 SBR synthetic rubber hose with stainless steel couplings.

Each discharge shall be equipped with a 90 degree swivel to allow them to be used from either side of the apparatus.

Discharge Gauge - Dual Scale

A 2.5" discharge gauges shall be mounted adjacent to the discharge valve control handle. A removable bright metal or color coded trim ring meeting NFPA's requirements for color coding shall be supplied.

The gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem .

The gauges shall be in dual scale and measure in increments of 0-400 psi and 0-2800 kPa.

THREAD TYPE - DISCHARGE 1.5"

All 1.5" and 2.5”thread types shall be NPSH.

Akron Style 8820 Swing - Out™ Valve

The valve shall be Akron Brass Style 8820 Swing-Out™ Valves. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. All stainless steel parts must be 316 grade for increased resistance to corrosion. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. Product must carry a 10 year manufacturer’s warranty.

Valve Actuator

All valve controls shall be made by usage of heavy duty cast aluminum twist lock control handles mounted at the pump operator panel. The handles shall be connected to the valve with stainless steel sealed aircraft type cables.

Drain Valves

A drain shall be installed at the pump panel. The drain shall have 3/4" Synflex drain lines tied to a 1/4 turn drain valve with high pressure brass fittings.

CROSS LAY TARP

A heavy duty vinyl tarp cover shall be provided over the cross lay compartments and held in position with a combination of shock cord fastener and 1/4 turn fasteners. The vinyl tarp shall be black in color.

PUMP HOUSE RUBBER SEAL

There shall be a rubber foam cell permanently mounted between the pump house and the body for maximum pump house heat retention. The seal shall be mounted vertically down the height of the pump house, one each side.

RUB RAILS - PUMP HOUSE RUNNING BOARDS - NON SLIP

Three inch "C" channel aluminum rub rails shall be bolted into place with nylon spacers on the lower framework on the pump house running boards. The rub rail will extend to the outside edges of the running boards for protection from impact damage

The top surface of the rub rail shall have a non-slip surface meeting the requirements of NFPA 1901 for non slip walking surfaces.

CANOPY / PUMP HOUSE ENCLOSURE HEATERS

Two (2) 17,500 BTU forced air coolant heaters shall be installed.

The heaters shall be mounted low in the pump house so that the heat will be distributed evenly in the pump house and will keep the drain lines open. A two speed switch shall be mounted on the pump panel for operation of the heaters.

PUMP OPERATOR PANEL LIGHTS - LED

There shall be a total of three (3) 2" x 6" clear LED lights mounted under a light hood of the same material as the pump operator panel for illuminations of the operator gauges and controls.

A light switch shall be mounted at the pump operator panel for activation of the pump panel lights.

PUMP PANEL LIGHTS - LED - SIDE PANEL

There shall be a total of four (4) 6.5" x 3" Tecniq E10 clear LED dome lights, (two (2) each side) to adequately illuminate the side pump panels. The lights shall be mounted under a protective hood of the same material as the side pump panels. The lights shall be activated by a switch at the pump operator panel.

PRESSURE GOVERNOR and ENGINE MONITORING DISPLAY

Fire Research PumpBoss series PBA400-A00 pressure governor and monitoring display kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 6 3/4" high by 4 5/8". The control knob shall be 2" in diameter with no mechanical stops, have a serrated grip, and a red idle push button in the center. It shall not extend more than 1 3/4" from the front of the control module. Inputs for monitored engine information shall be from a J1939 data bus or independent sensors. Outputs for engine control shall be on the J1939 data bus or engine specific wiring. Inputs from the pump discharge and intake pressure sensors shall be electrical.

The following continuous displays shall be provided:

- Engine RPM; shown with four daylight bright LED digits more than 1/2" high

- Check engine and stop engine warning LEDs

- Engine oil pressure; shown on a dual color (green/red) LED bar graph display

- Engine coolant temperature; shown on a dual color (green/red) LED bar graph display

- Transmission Temperature: shown on a dual color (green/red) LED bar graph display

- Battery voltage; shown on a dual color (green/red) LED bar graph display

- Pressure and RPM operating mode LEDs

- Pressure / RPM setting; shown on a dot matrix message display

- Throttle ready LED.

A dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. All LED intensity shall be automatically adjusted for day and night time operation.

The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:

- High Battery Voltage
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Transmission Temperature
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of Water (visual alarm only)
- No Engine Response (visual alarm only).

The program features shall be accessed via push buttons located on the front of the control module. There shall be a USB port located at the rear of the control module to upload future firmware enhancements.

The governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A throttle ready LED shall light when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

The pressure governor and monitoring pressure display shall be programmed at installation for a specific engine.

MASTER PRESSURE AND INTAKE GAUGES - DUAL SCALE

Two (2) 4.5" master pump gauges shall be supplied and mounted in close proximity to the throttle, primer, and engine instrumentation. The intake gauge shall be to the left of the discharge gauge. Bright metal trim rings shall be supplied with each gauge.

They shall be fully filled with pulse and vibration dampening Inter lube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation. The Zytel nylon cases shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area.

To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem

The gauges shall be in dual scale and measure in increments of 0-400 psi and 0-2800 kPa.

WATER TANK VOLUME INDICATOR

Fire Research Tank Vision Pro model WLA300-A00 tank indicator kit shall be installed. The 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 RGB LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be waterproof, manufactured of Polycarbonate/Nylon material, and have a distinctive blue label.

The program features shall be accessed from the front of the indicator module. The program shall support self-diagnostics capabilities, self-calibration, six (6) programmable colored light patterns to display tank volume, adjustable brightness control levels and a data link to connect remote indicators. Low water warnings shall include flashing LEDs at 1/4 tank, down chasing LEDs when the tank is almost empty, and an output for an audio alarm.

The indicator shall receive an input signal from an electronic pressure sensor. The sensor shall be mounted from the outside of the water tank near the bottom. No probe shall be placed on the interior of the tank. Wiring shall be weather resistant and have automotive type plug-in connectors.

PUMP – HALE DSD

The pump shall be a Hale Pump, Model DSD 1250.

The pump shall be rated at: 5000 Liters per minute at 150 P.S.I.
 1050 Imperial Gallons per minute at 150 P.S.I.
 1250 U.S. Gallons per minute at 150 P.S.I.

The pump shall be the class "A" type and shall deliver the percentage of rated discharge at pressures indicated below.

- 100% of rated capacities at 150 PSI net pump pressure.
- 100% of rated capacities at 165 PSI net pump pressure.
- 70% of rated capacities at 200 PSI net pump pressure.
- 50% of rated capacities at 250 PSI net pump pressure.

The pump when dry shall be capable of taking suction and discharging water with a lift of 10 feet in not more than 30 seconds through 20 feet of suction hose of the appropriate size. An additional 15 seconds shall be allowed when the system includes an auxiliary 4" or larger front or rear intake pipe.

Pump Assembly

1. The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis, and have the capacity of 1250 gallons per minute (U.S. GPM), NFPA-1901 rated performance.
2. The entire pump shall be assembled and tested at the pump manufacturer's factory.
3. The pump shall be driven by a drive line from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.
4. The entire pump shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by the latest NFPA Pamphlet No. 1901. Pump shall be free from objectionable pulsation and vibration.
5. The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (2069 bar). All metal moving parts in contact with water shall be of high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.
6. Pump body shall be vertically split, on a single plane for easy removal of entire impeller assembly including clearance rings.
7. Pump shaft to be rigidly supported by two bearings for minimum deflection. The bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.
8. The pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined, hand-ground and individually balanced. The vanes of the impeller intake eye shall be hand ground and polished to a sharp edge, and be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.
9. Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined hand ground and individually balanced. The vanes of the impeller intake eyes shall be hand ground and polished to a sharp edge and be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.
10. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body.
11. The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

Gearbox

1. Pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. ft. of torque of the engine. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature..
2. The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2-3/4 inches in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine.
3. All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate

- gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust. (No exceptions.)
4. The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.
 5. If the gearbox is equipped with a power shift, the shifting mechanism shall be a heat treated, hard anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.
 6. For automatic transmissions, three green warning lights shall be provided to indicate to the operator(s) when the pump has completed the shift from Road to Pump position. Two green lights to be located in the truck driving compartment and one green light on pump operators panel adjacent to the throttle control. For manual transmissions, one green warning light will be provided for the driving compartment. All lights to have appropriate identification/instruction plates.

FOAM SYSTEM

There shall be a Foam Pro 2002 automatic foam injection system plumbed into the main discharge manifold so all lines will be capable to distribute foam. The system shall have a 30 imperial gallon supply tank.

MASTER DRAIN VALVE

A Hale #DV-5 master drain valve shall be provided and plumbed at the lowest point of the plumbing.

PUMP OPERATION WARNING LABEL

There shall be a warning label mounted on the pump operator's panel that states the following:

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

HALE AIR PUMP SHIFT

The drive unit shall be provided with a Hale #VPS air power shift system. The shifting mechanism shall be a heat treated, hard anodized aluminum power cylinder, with a stainless steel shaft. An in-cab guarded electric control switch for rapid shift shall be provided that locks in to either the "road" or "pump" mode with a slight twist.

To the left of the air operated pump shift control in the cab, there shall be two indicator lights to positively show the position of the pump when the control lever is moved to the pump position. A GREEN light shall be energized when both the pump shift has been completed and the chassis transmission is engaged in pump gear and shall be labeled "OK TO PUMP". Another GREEN

indicator light shall be installed adjacent to the hand throttle on the pump operator's panel. This light shall be labeled "WARNING: DO NOT OPEN THROTTLE UNLESS LIGHT IS ON".

Hale ESP Oilless Primer

The priming pump shall be a positive displacement, vane type and electrically driven. This primer shall be a Hale #ESP electric oil-less priming system. One (1) priming control shall both open the priming valve and start the priming motor.

The primer valve shall be connected to the top of both pump volutes making it possible to prime the pump no matter if the pump is in pressure or volume modes. If a front suction is supplied and additional line shall be connected to the highest point or points between the pump and the inlet thus insuring a complete prime.

PRIMING SYSTEM LABEL

The priming system shall be marked with a label to indicate proper operation.

6" MAIN SUCTION MANIFOLD - STAINLESS STEEL

There shall be a total of two (2) 6" main inlets on each side of the pump house.

The plumbing for the two (2) main suction inlets shall be single piece design manufactured from schedule 10 stainless steel with schedule 40 threaded fittings.

The suction manifold shall be bolted to the pump utilizing heavy duty grade 8 bolts for firm vibration free installation. A victaulic coupler is not acceptable.

MAIN SUCTION INLET VALVE AND CAPS

Each 6" inlet shall come with a single handle butterfly gate valve.

The right side will come with a 6" chrome cap.

The left side will come with a reducer, 4" storz fitting and cap.

AUXILIARY SUCTION - ROAD SIDE

One (1) 2-1/2" gated inlet(s) shall be provided at the left side pump panel. The inlet(s) shall come complete with a chrome female swivel threaded adaptor. There shall be a chrome cap with the inlet(s) and the cap shall come with a chain that is attached to the pump operator panel.

The plumbing shall be schedule 10 stainless steel.

A rubber grommet shall enclose the plumbing coming out of the pump panel for maximum heat retention in the pump house.

Akron Style 8825 Swing - Out™ Valve

The valves shall be Akron Brass Style 8825 Swing-Out™ Valves. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. All stainless steel parts must be 316 grade for increased resistance to corrosion. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. Product must carry a 10 year manufacturer's warranty.

Valve Actuator

All valve controls shall be made by usage of heavy duty cast aluminum twist lock control handles mounted at the pump operator panel.

The handles shall be connected to the valve with stainless steel sealed aircraft type cables.

Drain Valves

A drain shall be installed at the pump panel. The drain shall have 3/4" Synflex drain lines tied to a 1/4 turn drain valve with high pressure brass fittings.

SUCTION RELIEF VALVE

A 2-1/2" Elkhart model 40-20 flange mounted adjustable suction relief valve shall be provided and installed in the suction side of the pump. The discharge side of the valve shall be plumbed to the area below the running board, away from the pump operator, and shall terminate with a 2-1/2" NST male threaded adapter, marked "**INTAKE PRESSURE RELIEF OUTLET-DO NOT CAP**". The relief valve shall have an adjustable working range of 75 PSIG to 250 PSIG and be pre-set at 125 PSI.

TANK FILL LINE - PUMP TO TANK

There shall be a 2" discharge provided at the pump operator panel for a pump to tank line.

Akron Style 8820 Swing - Out™ Valve

The valve shall be Akron Brass Style 8820 Swing-Out™ Valves. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. All stainless steel parts must be 316 grade for increased resistance to corrosion. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. Product must carry a 10 year manufacturer's warranty.

Valve Actuator

All valve controls shall be made by usage of heavy duty cast aluminum twist lock control handles mounted at the pump operator panel.
The handles shall be connected to the valve with stainless steel sealed aircraft type cables.

DISCHARGE MANIFOLD - STAINLESS STEEL

All plumbing for the discharge manifold and discharge plumbing shall be schedule 10 stainless steel with schedule 40 threaded fittings. In some cases, heavy duty, high pressure, wire reinforced flexible hose with stainless steel couplings shall be utilized for plumbing connections.

Victaulic couplings shall be used on the plumbing lines to take tension off piping and to permit flexing and movement without damage to the pump and its components.

Heavy duty U-bolt clamps and bracing shall be used on all plumbing lines and connections were required for firm vibration free installation.

TANK SUPPLY LINE

A 4" tank supply line shall be installed from the tank to the pump. A 3" check valve shall be installed in the pump to eliminate the possibility of pressure expanding and damaging the tank.

Butterfly Valve

The valve shall be a 3" manually operated butterfly valve.

Valve Actuator

All valve controls shall be made by usage of heavy duty cast aluminum twist lock control handles mounted at the pump operator panel. The handles shall be connected to the valve with stainless steel sealed aircraft type cables.

2.5" DISCHARGE - LEFT SIDE

Two (2) 2.5" gated discharge(s) shall be provided at the left side pump panel.

This discharge(s) shall be equipped with a chrome 30 degree adapter, chrome plated rocker lug cap, and retaining chain that is attached to the pump panel.

A rubber grommet shall enclose the plumbing coming out of the pump panel for maximum heat retention in the pump house.

Discharge Gauge - Dual Scale

A 2.5" discharge gauges shall be mounted adjacent to the discharge valve control handle. A removable bright metal or color coded trim ring meeting NFPA's requirements for color coding shall be supplied.

The gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation.

To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem.

The gauges shall be in dual scale and measure in increments of 0-400 psi and 0-2800 kPa.

Akron Style 8825 Swing - Out™ Valve

The valves shall be Akron Brass Style 8825 Swing-Out™ Valves. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. All stainless steel parts must be 316 grade for increased resistance to corrosion. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. Product must carry a 10 year manufacturer's warranty.

Valve Actuator

All valve controls shall be made by usage of heavy duty cast aluminum twist lock control handles mounted at the pump operator panel. The handles shall be connected to the valve with stainless steel sealed aircraft type cables.

Drain Valves

A drain shall be installed at the pump panel. The drain shall have 3/4" Synflex drain lines tied to a 1/4 turn drain valve with high pressure brass fittings.

2.5" DISCHARGE - CURBSIDE

Two (2) 2.5" gated discharge(s) shall be provided at the right side pump panel.

This discharge(s) shall be equipped with a chrome 30 degree adapter, chrome plated rocker lug cap, and retaining chain that is attached to the pump panel.

A rubber grommet shall enclose the plumbing coming out of the pump panel for maximum heat retention in the pump house.

Discharge Gauge - Dual Scale

A 2.5" discharge gauges shall be mounted adjacent to the discharge valve control handle. A removable bright metal or color coded trim ring meeting NFPA's requirements for color coding shall be supplied.

The gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem (no exceptions).

The gauges shall be in dual scale and measure in increments of 0-400 psi and 0-2800 kPa.

Akron Style 8825 Swing - Out™ Valve

The valves shall be Akron Brass Style 8825 Swing-Out™ Valves. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. All stainless steel parts must be 316 grade for increased resistance to corrosion. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. Product must carry a 10 year manufacturer's warranty.

Valve Actuator

All valve controls shall be made by usage of heavy duty cast aluminum twist lock control handles mounted at the pump operator panel. The handles shall be connected to the valve with stainless steel sealed aircraft type cables.

Drain Valves

A drain shall be installed at the pump panel. The drain shall have 3/4" Synflex drain lines tied to a 1/4 turn drain valve with high pressure brass fittings.

THREAD TYPE - DISCHARGE 2.5"

The threads that shall be provided for the 2.5" Discharges and 2.5" Suction Inlets shall be CSA.

1.5" DISCHARGE - REAR

Two (2) 1.5" gated discharge(s) shall be provided at the very rear of the apparatus.

The plumbing leading to the rear discharge shall be high pressure Class 1 hose and schedule 10 stainless steel with schedule 40 threaded fittings.

The discharge(s) shall be equipped with a chrome 30 degree adapter, chrome plated rocker lug cap, and retaining chain that is attached to the apparatus body

Discharge Gauge - Dual Scale

A 2.5" discharge gauges shall be mounted adjacent to the discharge valve control handle. A removable bright metal or color coded trim ring meeting NFPA's requirements for color coding shall be supplied.

The gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation.

To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem .

The gauges shall be in dual scale and measure in increments of 0-400 psi and 0-2800 kPa.

Akron Style 8825 Swing - Out™ Valve

The valves shall be Akron Brass Style 8825 Swing-Out™ Valves. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an

automatic friction lock design and specially designed flow optimizing stainless steel ball. All stainless steel parts must be 316 grade for increased resistance to corrosion. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. Product must carry a 10 year manufacturer's warranty.

Valve Actuator

All valve controls shall be made by usage of heavy duty cast aluminum twist lock control handles mounted at the pump operator panel.

The handles shall be connected to the valve with stainless steel sealed aircraft type cables.

Drain Valves

A drain shall be installed at the pump panel. The drain shall have 3/4" Synflex drain lines tied to a 1/4 turn drain valve with high pressure brass fittings.

BOOSTER TANK

The booster tank shall have the following capacities:

1000 Imperial gallons
4546 liters

The tank shall be provided with a lifetime tank manufacturer warranty.

The transverse and longitudinal swash partitions shall be manufactured of Polypropylene Copolymer material. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow and meet NFPA rules. All swash partitions interlock with one another and are welded to each other as well as to the walls and floor of the tank.

The tank shall have a combination vent and fill tower. The fill tower shall be constructed of .5" thick Polypropylene Copolymer and shall be a minimum dimension of 8"x 8" outer perimeter. The tower shall be located in the left front corner of the tank unless otherwise specified by the purchaser. The tower shall have a .25" thick removable Polypropylene Copolymer screen and a Polypropylene Copolymer hinged-type cover. Inside the fill tower, there shall be a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 pipe with a minimum I.D. of 4", unless a dump chute is included in the design in which case the I.D shall be 6". Both shall be of a design to run through the tank. The tank overflow shall be piped behind the rear wheels.

The tank cover shall be constructed of recessed .5" thick Polypropylene Copolymer, stress relieved, U.V. stabilized material. A minimum of two lifting dowels shall be drilled and tapped .5" x 2" to accommodate the lifting eyes.

There shall be one (1) sump standard per tank. The sump shall be constructed of .5" Polypropylene Copolymer and be located in the left front corner of the tank and shall meet the requirements of NFPA.

There will be two (2) standard tank outlets: one for tank to sump suction line and one for a tank fill line. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1,000 G.P.M.

The tank shall rest on the body cross members in conjunction with such additional cross members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor. In cases where overall height of the tank exceeds 40 inches, cross member spacing must be decreased to allow for not more than 400 square inches of unsupported area.

The tank must be isolated from the cross members through the use of hard rubber strips with a minimum thickness and width dimension of .25" x 2" and a minimum Rockwell hardness of 60 durometer. Additionally, the tank must be supported around the entire bottom outside perimeter and capture both, front and rear as well as side to side to prevent tank from shifting during vehicle operation.

The tank shall be mounted in the apparatus body in a manner that the total outside bottom perimeter of the tank shall be supported. The bottom of the tank shall be completely isolated from the frame by heavy-duty .25" thick rubber strips. There shall be a picture frame type cradle mount system utilized for the purpose of capturing the tank. There shall be a support system across the top of the tank to prevent excessive bouncing when the tank is empty.

Although the tank is designed as a free-floating suspension unit, it is required that the tank has adequate hold down restraints to minimize movement during vehicle operation. If proper retention has not been incorporated into the apparatus hose floor structure, an optional mounting restraint system shall be located on the top of the tank, halfway between the front and rear on each side of the tank.

The tank shall be completely removable without disturbing or dismantling the apparatus structure.

TANK DRAIN

The tank shall have a 1.5" tank drain installed in the bottom of the tank and accessible from the ground.

ROLL OUT TRAY(S)

Four (4) heavy duty ball bearing roll out tray shall be provided and located in compartments L1, L3, R1 and R3.

The tray(s) shall have two (2) side mounted, 500 lb. rated ball bearing roll out 18" travel sliding tracks and a 3/16" aluminum tray with up turned edges. The tray shall be supplied with plastic floor matting and corner drain holes.

The tray(s) shall have a drop bar tray retainer to keep the tray secure in either the open or closed position.

All trays shall come with rubber matting.

APPARATUS BODY

The body shall be fabricated with the highest quality components available, and acceptable to the fire service industry. Only new components shall be in the manufacturing process.

The body shall be engineered and designed to provide a low center of gravity and carry a correct load distribution.

The entire body superstructure and sub frame shall be constructed of heavy-duty tubular aluminum and channels to provide a full frame body design.

The use of tubular aluminum and channels shall provide for extreme strength, maximum durability, and maximum resistance to buckling and failure.

The full frame body construction method shall provide for greater strength and integrity. Formed body construction shall not be acceptable.

All compartments shall be fabricated with 1/8" aluminum panels, salt-water marine grade 5083-H321, which are inserted into the body framework. The framework allows for reinforcement to the compartment, for installation of heavy equipment. The 1/8" aluminum panels, salt-water marine grade 5083-H321 panels shall provide extreme strength, rust corrosion resistance, and maximum durability.

Skilled craftsmen shall perform all welding operations on the body. All welding shall be electronically with the highest quality components. All seams shall be 100 percent welded.

Certified welders shall perform all welding. Proof of welder certification shall be provided with the completed vehicle.

BODY SUBFRAME

The body framework shall be assembled on a jig, and shall be clamped together and squared. The framework shall be electronically welded with digital pulse welders forming the integral superstructure. All seams shall be 100 percent welded

The body frame rails shall be constructed of 6061T6/6063-T6, 3" x 3" aluminum extrusions, with a wall thickness of 1/4".

The front cross member shall be a heavy duty 3" x 3" x 1/4" aluminum extrusions providing maximum strength and durability.

The rear crossmembers shall be heavy duty 3" x 3" x 1/4" aluminum extrusions providing maximum strength and durability at the rear section of the body.

These body cross members shall extend the full width of the body. The cross members shall provide support for the body side compartments and rear tailboard section.

The body sub frame and the chassis frame shall be insulated and separated by a rubberized belt.

The body side compartments, both sides and the rear shall be full frame constructed from heavy-duty aluminum extrusions 2" x 2" x 3/16".

The body shall be mounted to the chassis frame rails with four side mounting plates. This shall provide for maximum mounting strength and flexibility.

CORROSION PROTECTION

All body components or attachments made from dissimilar metals shall be fastened to the body utilizing an UHMW/Polyethylene material to prevent metal-to-metal contact preventing dielectric corrosion.

All fasteners used in attaching or fastening or aluminum panels shall be installed with stainless steel hardware. Rivets shall not be acceptable.

All fasteners shall be installed in a manner, which shall involve drilling, tapping, and application of non-corrosive grease before the stainless steel bolts are installed. Self-tapping screws or screws without threads shall not be acceptable.

BODY COMPARTMENTS

The body compartments shall be fabricated with 1/8" 5083-H321 salt-water marine aluminum panels. These panels shall be non-corrosive, durable, and add strength and integrity to the body construction.

The interior compartment seams shall be 100 percent welded.

All compartments shall have a 1" drop on the lower edge of the door opening to accommodate the door seal, and to stop moisture from entering the compartment

All compartments shall have sweep out floors.

All compartments shall be fitted with vinyl matting.

The external compartments tops shall be constructed of hi-shine 1/8" 3003-H14 aluminum tread plate.

All compartments shall have an aluminum drip molding installed over the top of the compartment doors.

All compartments shall be weatherproof.

SUB STRUCTURE WARRANTY - 20 YEAR

The substructure shall be warranted for a period of twenty (20) years on the apparatus sub structure for corrosion perforation.

BODY WARRANTY - 20 YEAR

The apparatus body warranty shall cover the entire body against manufacturer defects for a period of twenty 20 years on aluminum and stainless steel full framed bodies.

HOSE BED

The main hose bed shall be located above the booster tank and be sized to meet the requirements for a Pumper Fire Apparatus as specified in NFPA 1901 (Latest Edition) and ULC S515-13

The inner sides of the hose bed shall be natural finish aluminum smooth plate free of protrusions and obstructions.

There shall be three (3) Aluminum unistrut tracks for the optional hose bed divider(s), two (2) at the forward section of the hose bed, and one (1) at the rear.

The rear track shall have come with 10' of snap cover to prevent the hose couplings from catching the track. The snap cover shall be shipped loose for customer installation after the hose bed dividers have been set up.

HOSE BED MATTING

The hose bed flooring shall be fitted with vinyl type matting to allow for air movement under the hose.

HOSE BED DIVIDERS - ADJUSTABLE

There shall be two (2) adjustable hose bed dividers provided.

Each partition shall be easily adjustable in the hose bed slide tracks.

Each divider shall be constructed from 3/16" 5083-H321 salt water marine grade aluminum which shall be welded into a custom aluminum extrusion base frame.

Each hose bed divider shall have an oval handhold provided at the rear portion of the divider.

HOSE BED TARP

One (1) vinyl hose bed tarp shall be provided with shock cord fasteners or depending on hose bed obstructions, a combination of shock cord fasteners and nickel plated quarter turn fasteners for the main hose bed. The hose bed tarp shall have an end flap with Velcro fasteners provided to cover the rear of the hose bed. The tarp shall be black in color.

REAR FENDERS

The rear fenders of the apparatus shall be fully removable to allow for servicing of the apparatus suspension system.

The rear fender outer skin shall be fabricated from 1/8" 3003-H14 hi shine aluminum checker plate. The inner wheel well shall be fabricated from 1/8" 5083-H321 salt water grade aluminum.

The fender shall be attached to the body using stainless steel screws. The screws shall be pre tapped before installation. Self tapping screws are not acceptable.

All dissimilar metals shall receive a strip of UHMW isolation tape for corrosion resistance.

SIDEWALL AND FRONT COMPARTMENT TRIM - CHECKER PLATE

The sidewalls and compartment tops shall be 1/8" 3003 - H22 aluminum checker plate. The compartment tops shall extend past the compartments to form a drip guard.

The sidewall shall be fastened with stainless steel fasteners.

The front apparatus body exterior compartment trim shall be 1/8" 3003 - H22 aluminum checker plate. The exterior trim shall be fastened with stainless steel fasteners.

REAR BODY SECTION - NATURAL FINISH ALUMINUM

The rear section of the apparatus body shall be finished with 1/8" 5083 H321 aluminum plate panels. The panels shall have a natural finish for installation of Chevron. The panels shall be fastened to the rear body framework with stainless steel fasteners. The stainless steel fasteners are drill tapped. Sheet metal screws or self tapping screws are not acceptable.

CHEVRON STRIPPING

There shall be 6" chevron stripping decals applied to the rear face of the apparatus. The chevron decals shall be made of high visibility Reflexite™ material that is red / yellow in color and shaped to form an "A" style pattern. A minimum of 50% of the rear body shall be covered with Chevron. Stripping shall be NFPA compliant

COMPARTMENT MATTING

There shall be versatile PVC matting supplied on the all body compartment floors. The matting shall be interlocking and 1" high to allow for air movement.

LEFT SIDE BODY COMPARTMENTS - HIGH

The following compartments shall be provided on the drivers side of the apparatus body and referred to at L1, L2 and L3.

One (1) compartment forward of the rear wheel measuring 36"W x 65"H x 13.5" / 26"D frame opening. One 110 volt receptacle fed from shore power connection will be provided in this compartment

One (1) compartment over the rear wheel measuring 60"W x 35"H x 13.5"D frame opening.

One (1) compartment behind the rear wheel measuring 36"W x 65"H x 13.5" / 26"D frame opening.

The body compartments shall be fabricated with 1/8" 5083 salt water marine grade aluminum panels. These panels shall be non-corrosive, durable, and add strength and integrity to the body construction.

The interior compartment seams shall be 100 percent welded

All compartments shall have a 1" drop on the lower edge of the door opening to accommodate the door seal, and to stop moisture from entering the compartment.

All compartments shall have sweep out floors.

All compartments shall be weatherproof.

RIGHT SIDE BODY COMPARTMENTS

The following compartments shall be provided on the curbside of the apparatus body and referred to as R1,R2 and R3..

One (1) compartment forward of the rear wheel measuring 36"W x 48"H x 13.5" / 26"D frame opening .One 110 volt receptacle fed from shore power connection will be located in this compartment

One (1) compartment over the rear wheel measuring 60"W x 18"H x 13.5"D frame opening.

One (1) compartment behind the rear wheel measuring 36"W x 48"H x 13.5" / 26"D frame opening.

The body compartments shall be fabricated with 1/8" 5083 salt water marine grade aluminum panels. These panels shall be non-corrosive, durable, and add strength and integrity to the body construction.

The interior compartment seams shall be 100 percent welded.

All compartments shall have a 1" drop on the lower edge of the door opening to accommodate the door seal, and to stop moisture from entering the compartment.

All compartments shall have sweep out floors.

All compartments shall be weatherproof.

LADDER RACK - MANUAL FOLD DOWN

A side mounted manually operated fold down ladder rack shall be installed on the right side of the apparatus body above the body compartments. The ladder rack shall accommodate four (4) banks of ladders. There shall be two trim plates mounted to the body wall behind the ladder racks for scuff protection. The trim plates shall be manufactured from 16ga. 304 #4 finish stainless steel.

The folding rack shall be lockable in a closed position. A switch and sensor shall be provided to notify the driver if the rack is in the unlocked position when the parking brake is released as per the requirements of NFPA 1901 latest edition and ULC S515-04

The ladder rack shall be painted grey in color.

ROOF LADDER

A Duo-Safety model 775-A, 14 foot roof ladder shall be provided.

EXTENSION LADDER

A Duo-Safety model 900-A, 24 foot, 2-section extension ladder shall be provided.

ATTIC LADDER BRACKET

A custom aluminum channel attic ladder bracket, with retaining pin, shall be provided for storage of the attic ladder.

FOLDING LADDER

A Duo-Safety model 585-A, 10 foot folding ladder shall be provided.

REAR BODY COMPARTMENT

The following compartment shall be provided on the rear of the apparatus body.

One (1) compartment measuring 46"W x 62"H x 28"D frame opening.

There shall be a hose reel installed at the rear bottom center of the compartment and contain a minimum of 150 feet of 1.0" rigid hose line. The valve shall be a quarter turn ball type and fixed pivot design. Valve shall be controlled at the pump panel with a chrome handle. The reel shall be equipped with a 12 volt electric rewinding motor.

AMDOR ROLL UP DOORS

The compartment doors shall be Amdor Roll-Up type doors to include: double wall aluminum box section slats with integral hinge joint and recessed slat seal, reusable end shoes with snap-in securement, double wall aluminum reinforced bottom rail with either Stainless Steel Lift Bar door latching system, aluminum track with side frame, sill plate, and top gutter with non-marring top seal, side seals, bottom seal, with all wear component material to be Type 6 Nylon.

The slats shall have a true box section with a flat interior surface to prevent equipment hang-up. The slats shall have a face depth of 1.0 inches and a wall thickness of 0.045 inches. Each slat

incorporates a recessed slat seal to weatherproof the compartment and reduce rattle between slats.

For every inch of height an integral continuous hinge joint spans the width of the door to provide superior strength.

The door glides on non-interlocked end shoes. Each end shoe is independent and positively secured by an exclusive snap-in device. Door slats can be easily removed and replaced when required.

The Stainless Steel Lift Bar system shall be provided to keep the door securely closed. This system complements the superior strength of the bottom rail with bottom seal and integral reinforcing flange.

Wear components are constructed of Type 6 Nylon to provide maximum strength and durability. Type 6 Nylon is a naturally lubricating material, which provides exceptional temperature characteristics.

Each door is equipped with slat, top, bottom and side seals to keep moisture and dirt on the outside. The non-marring top seal provides a seal without marking the door surface.

COMPARTMENT DOORS – PAN DOORS

The pan door shall be flush fit and have an inner and outer pan design. The outer pan is constructed of 1/8" 5083-H321 salt water marine grade smooth plate aluminum with a 1" break on all four sides. The inner pan shall be manufactured from 12 gauge. 5052-H321 aluminum. To eliminate warping, the two panels shall be bound together utilizing an industrial grade epoxy adhesive.

A 1/4" drain hole shall be provided in the lower inner pan to allow for drainage of any accumulated moisture.

The door opening shall have an extrusion installed around the inner perimeter. A custom designed hollow cell seal shall be installed in the channel. The hollow cell seal shall completely seal the door making it weatherproof.

The compartment doors shall be bolted to a two inch polished piano stainless steel hinge. The hinge shall be secured to the apparatus body with stainless steel bolts and washers and locknuts and shall utilize a UHMW isolation tape between the body and hinge for corrosion protection.

The framework shall be drilled and tapped. The doors and all hardware shall be pre fitted to the body prior to painting.

A single stainless steel D-Ring type twist handle with a gasket seal shall be supplied for each compartment with a Pan Door. The inner door latch mechanism shall be covered with a 14 gauge 304 stainless steel plate to avoid fouling of the door mechanism by any compartment stored items.

The compartment doors and all hardware shall be installed to the body door opening frame only after the doors and the body has been painted.

The painting process for the doors shall match the body painting process and color.

The compartment door at the L1 location shall be Amdor roll up style.

The compartment door at the L2 location shall be Amdor roll up style.

The compartment door at the L3 location shall be Amdor roll up style.

The compartment door at the R1 location shall be Amdor roll up style.

The compartment door at the R2 location shall be a single horizontal hinge flush fit drop down pan style door. The door shall come with plastic coated wire cables to support the door when dropped down.

The compartment door at the R3 location shall be Amdor roll up style.

The compartment door at the B1 location shall be Amdor roll up style.

COMPARTMENT SHELVING - ADJUSTABLE

One(1) adjustable 3/16" aluminum compartment shelves with upturned edges shall be provided in each of the six (6) compartments. Each shelf shall be provided with plastic matting.

ADJUSTABLE SHELVING UNI-STRUT SIDE TRACKS

Four (4) set(s) of four (4) aluminum unistrut side tracks shall be provided for installation of adjustable shelves.

RUB RAILS - APPARATUS BODY

Three inch "C" channel aluminum rub rails shall be bolted into place with nylon spacers on the lower framework below the apparatus body compartments. The rub rail will extend to the outside edges of the apparatus body for protection of the body from impact damage.

REAR TOW HOOKS - PAINTED

Two (2) heavy duty steel painted tow hooks shall be bolted directly to the rear frame rails.

The tow hooks shall be easily accessible from the rear of the apparatus body thru a removable panel. The panel shall have lift and turn paddle latches. The door shall be manufactured from 3/16" 5052 - H32 aluminum.

ACCESS LADDER - ZICO - REAR

There shall be a 12" wide Zico Quic-Ladder provided on the rear of the apparatus for access to the main hose bed. The ladder assembly shall consist of a two step fold-down with a 3 step straight section and the ladder will store parallel to the body. There is a release mechanism with a locking handle so you can pull the ladder out to a comfortable climbing angle. The ladder automatically latches and will not retract until the scissor lock is raised. Cast aluminum rungs have a flat, non-skid surface to provide traction and safety. The handrails are 1¼" heavy-walled aluminum tubing, covered in a rough grip black powder coat.

HOSE BED ACCESS LADDER STEP LIGHT

The hose bed access ladder steps area shall be illuminated by one (1) Whelen PELCC LED light.

BODY HAND RAILS

The following handrails shall be installed on the apparatus body.

One (1) 48" handrails mounted vertically on the curbside rear.

One (1) 42" mounted horizontally on the upper rear, below the hose bed area.

The body hand rail shall be 1 1/4" in diameter and shall be knurled aluminum for maximum grip and safety

The hand rail shall be installed and supported with chrome plated polished cast brackets.

The hand rail brackets shall be provided with an isolation gasket and held in place with stainless steel screws.

CAST STEPS - CURB SIDE REAR

One (1) cast aluminum fixed cast steps shall be installed on the curb side rear of the apparatus. Each steps shall come with a hand hold built into the step.

The steps shall be mounted to a 3/8" plate with stainless steel screws. The plate shall be permanently welded to the apparatus body frame.

FOLDING STEPS - ROAD SIDE FRONT

One (1) folding aluminum steps shall be installed on the road side front of the apparatus.

The steps shall be mounted to a 3/8" plate with stainless steel screws. The plate shall be permanently welded to the apparatus body frame.

STEP LIGHTS - LED

All steps on the body shall have adequate light for illumination. The lights shall be Tecniq EON-Linear White 2.9"W lights for folding and cast step lighting or shall be already supplied with the manufacturer supplied steps.

LICENSE PLATE ILLUMINATION

A LED light shall illuminate the rear license plate mount. The light shall come with a chrome bezel.

COMPARTMENT LIGHTS - LED

All body compartments shall have LED lights activated by a switch. The LED compartment lights shall be flush mount and provide a consistent 120 degree wide beam pattern. There shall be a minimum of two strip lights installed in each compartment.

HARD SUCTION HOSE MOUNTING

Suction hose storage for two (2) lengths of hard suction hose shall be installed above the body compartments. One rack shall be installed above the left side body compartments and the other rack shall be installed above the right side body compartments.

The hose troughs shall be fabricated from polished custom aluminum extrusions. The hose shall be fastened to the tray with heavy duty type Velcro Straps.

HARD SUCTION HOSE - KOCHER

Two (2) ten foot section(s) of 6" Kocher PVC lightweight, flexible, clear, hard suction hose shall be provided with lightweight male and long handle fem threaded couplings.

BARREL STRAINER

One (1) 6" Kochek barrel strainer shall be provided and shipped loose with the completed vehicle.

ELECTRICAL SYSTEM - MULTIPLEXED

The manufacturer shall design the wiring system for the apparatus in accordance to the SAE, Society of Automobile Engineers.

The manufacturer shall determine the circuit loads and design the system to accommodate these loads with appropriate circuit routings and relays.

All wiring harnesses shall be properly secured and routed. All passages required for routing shall be grommeted and sealed as required.

All wiring shall be easily accessible for servicing.

All wiring shall be SAE J1128 and SAE J1292 GXL type wire, as per fire industry standards.

All exposed wiring shall be crimped and heat shrunk for added protection.

The wiring harnesses shall be pre-engineered for correct circuit loading and shall be custom made. The harnesses shall be function, number, and color coded and shall be fitted inside automotive high temperature loom. All connections to the main panel box must be made with waterproof automotive style guided pin locking connectors

An enclosed main electrical distribution panel that provides protection against dirt, dust, oil, and water shall be installed in the upper section of the pump house.

All electrical connections to the panel shall be made through positive locking environmentally sealed connectors. The panel features a solid state power distribution board(s) with visual diagnostics.

All circuits are protected by automatic resetting circuit breakers. All breakers shall be properly sized to the circuit load and are direct plug in sockets.

All wiring shall have a strain pull test on wiring connections of 40 pounds.

BATTERY MASTER SWITCH

A 300 amp solenoid master battery switch shall be installed in the cab within reach of the driver.

ZONE A UPPER EMERGENCY LIGHTING

The zone A upper emergency lighting zone shall have the following:

L

A Whelen Justice 56" light bar (**Model: JE2NFPA**) warning system shall be furnished and rigidly mounted.

ZONE A LOWER EMERGENCY LIGHTING

The zone A lower emergency lighting zone shall have the following lights and shall be mounted to the chassis grill:

There shall be Two (2) Whelen model 600 (4" x 6") LED lights installed. These lights shall have red lenses, red LED's and come with a chrome bezel.

ZONE B LOWER EMERGENCY LIGHTING

The zone B lower emergency lighting zone shall have the following:

There shall be Two (2) Whelen model 600 (4" x 6") LED lights installed. These lights shall have red lenses, red LED's and come with a chrome bezel.

ZONE C LOWER EMERGENCY LIGHTING

The zone C lower emergency lighting zone shall have the following:

There shall be Two (2) Whelen model 600 (4" x 6") LED lights installed. These lights shall have red lenses, red LED's and come with a chrome bezel.

ZONE D LOWER ZONE

The zone D lower emergency lighting zone shall have the following:

There shall be Two (2) Whelen model 600 (4" x 6") LED lights installed. These lights shall have red lenses, red LED's and come with a chrome bezel.

REAR WARNING LIGHTS - LED – UPPER

Two (2) Whelen, model L31HRFN LED red beacons lights shall be provided and mounted for upper Zone C lighting, one (1) each side, and controlled by a switch located in the cab.

REAR BEACON MOUNTING BRACKET - POLISHED ALUMINUM

There shall be two (2) Cast Products LB0025 polished aluminum light mounting bracket(s) for mounting of the one or all of the rear beacons as necessary to meet the requirements of the upper zone c lighting area.

TRAFFIC ADVISOR

There shall be a Whelen TAL 65 LED traffic advisor located below the rear hose bed and above the rear compartment door. The controller shall be mounted in the chassis cab.

HEADLIGHT WIG WAG FLASHER

The chassis high beam headlights shall be equipped with an alternating flashing , wig wag headlight system. An electronic flasher shall be used to control the lights. A control switch panel shall activate the flashing system.

ELECTRONIC SIREN

A Whelen Siren Amplifier model # 295SLSA1 shall be provided. The siren amplifier shall incorporate a 12V/200W siren installed on an aluminum alloy chassis covered by a black polycarbonate powder coated housing for maximum protection. The 295SLSA1 shall have the ability for either 100 or 200 watt output. The front overlay shall be made of velvet Lexan™ with a matte finish. The lettering and artwork on the overlay shall be illuminated with adjustable backlighting of soft LED non-glaring green. The operating controls will consist of a power switch, manual button, PA volume switch, horn button, and rotary switch. The 295SLSA1 PC board shall have input polarity protection, output short circuit protection. The siren amplifier shall include a 20A/32V fuse. The solid state siren speaker amplifier shall be vibration resistant. The microphone shall be hardwired to the 295SLSA1.

The 295SLSA1 shall have 21 Scan-Lock™ siren tones with two manual functions for additional siren tones. The siren amplifier shall have the ability to customize the placement of each siren tone with the rotary switch. The siren amplifier shall have a “Siren in Use” icon driver and adjustable preset repeat radio volume. The 295SLSA1 shall have a “Park Kill” feature that disables the siren when the vehicle is in park. The PTT (push to talk) switch on the microphone shall override all siren functions. The 295SLSA1 shall have a combination On/Off and horn ring transfer switch with Bi-polarity horn/ring activation control. The 295SLSA1 shall have SI Test® capability to perform a complete diagnostic silent test of amplifier and speaker(s). The siren amplifier shall have a quick disconnect plug. The 295SLSA1 shall have the ability to activate siren tones with “Aux Enable” input either with a slide switch, power controls, or relay-to-ground connector. The 295SLSA1 shall meet Class A requirement for SAE, AMECA,

KKK1822, and California Title XII. The sire amplifier shall have an adjustable bail bracket with installation hardware. The 295SLSA1 is covered by a two year factory warranty.

SWITCH CONTROL PANEL

There shall be a Whelen model PCC6R, 6 switch control panel provided and installed in the cab for the emergency lighting.

ELECTRONIC SIREN SPEAKER

There shall be a Whelen model # SA 315P, 123db / 100 watt electronic siren speaker provided at the front bumper and connected into the electronic siren.

REAR TAIL LIGHT ASSEMBLY

The rear tail light assembly shall consist of the following:

There shall be a total of Two (2) Whelen Plast3VL chrome plated plastic brake / tail / turn light bezels installed on the rear of the apparatus. One (1) each side. The bezels shall be attached with pre-tapped stainless steel fasteners.

Brake Light Assembly - LED

There shall be Two (2) Whelen 600 Series LED turn lights, model 60BTT, installed on the rear of the apparatus. These lights shall be installed in the tail light bezels on the rear of the apparatus and shall come with red lenses

Turn Light Assembly - LED

There shall be Two (2) Whelen 600 Series amber LED turn lights, model 60A00TAR installed on the rear of the apparatus. These lights shall be installed in the tail light bezels on the rear of the apparatus.

Turn Light Assembly - LED - Minimum Intensity

There shall be Two (2) Whelen 600 Series Minimum Intensity White LED backup lights, model 60C00VCR installed on the rear of the apparatus. These lights shall be installed in the tail light bezels on the rear of the apparatus.

HAND HELD CAB SPOT LIGHT

One (1) 300,000 candle power hand held spot light, with a momentary type control switch, coiled cord, and bracket, shall be provided and mounted on the right side in the cab and wired into the 12 volt electrical system.

The light shall be secured in the chassis cab with a stainless steel NFPA compliant hook.

HOSEBED FLOOD LIGHT(S) - LED

There shall be two (2) chrome Unity AG-S-P46WLC 6" LED 12V light(s) provided for hose bed and area lighting. The light(s) shall be furnished with a heavy duty chrome finish. The mounting base shall be the No. 7037 square mount for flat surfaces. The lights shall be individually controlled from the pump panel and shall come with a shut off switch at the light head. These lights shall be located on the sides of pump panel or front of body but not interfering with hose bed operations.

GROUND LIGHTS

There shall be six (6) clear LED ground lights with outward facing angle brackets installed underneath the apparatus. The ground lights shall be activated by a switch installed in the chassis cab. Ground lights that are directly underneath a door opening will turn on automatically when the door is opened.

ENGINE COMPARTMENT LIGHT - LED

One (1) Tecniq EON LED light(s) shall be installed in the engine compartment. The lights shall be activated when the hood is opened.

DOOR AJAR SYSTEM

A Whelen P/N OSF00FCR LED red flashing warning light for the door ajar system shall be provided in the cab. This light shall be activated when a compartment door on the apparatus body is open.

A magnetic sensor shall be installed in all compartments with a roll up door

A On / Off depression style switch shall be supplied in all compartments with a pan door.

CLEARANCE AND MARKER LIGHTS - LED

All clearance / marker lights, reflectors shall comply with department of transport motor vehicle safety standards. The clearance / marker lights shall be LED (light emitting diode) type.

BACK UP ALARM

A 107db back up alarm shall be installed at the rear of the apparatus body. This back up alarm shall be activated when the chassis transmission is placed into reverse.

TWO WAY RADIO POWER SUPPLY

There shall be a dedicated 12V power supply line coiled underneath the chassis dash for the future install of a customer supplied two way radio.

ANTENNA MOUNT(S)

One (1) mounts for future antenna installation shall be installed on the chassis cab roof. The antenna leads shall be wired to the chassis cab dash area for future installation of a radio.

PAINT COLOR - CHASSIS

The chassis shall be painted a two color black over red “Chicago Fire spec” by the chassis manufacturer. A pin strip shall separate the two colors. This shall be the final paint color and finish for the completed vehicle.

FINISH AND PAINTING - PPG

The painting shall be done in accordance with automotive practices using Delfleet® Evolution FBCH high solids polyurethane paint with the PPG painting process.

All painting shall be baked at 160 degrees F. for a minimum 45 minutes to provide an automotive quality finish.

After assembly, the body substructure shall be deburred and hand sanded.

All ledges inside and outside shall be cleaned and sealed.

The painting process consists of the following applications:

- a) Wash entire body with DX 440 wax and grease remover
- b) Etch primer, PPG F3963 (0.2 - 0.35 mils dry)
- c) Primer, PPG F3975 (3.0 - 6.0 mils dry)
- d) Wash entire body with DX 330 wax and grease remover
- e) Primer sealer, Epoxy PPG F399x (1.0 - 4.0 mils dry)

f) Base coat, Delfleet® evolution PPG FBCH (1.0 - 3.0 mils dry)

g) Clear coat, PPG F3906 clear (minimum of 2.0 mils)

All outside seams shall be 100 percent welded.

Only after the entire painting process is completed shall the body structures be installed on the chassis.

Only after the body is painted shall the components such as doors, aluminum inlay panels, mounting brackets, handrails, pump panels, and other accessories be installed.

PAINT WARRANTY

The paint shall be warranted by PPG for a period of Ten (10) years and shall be non-prorated.

Items covered in the warranty shall include all body interior and exterior surfaces and painted pump houses and shall cover the following:

Peeling or delaminating of the topcoat and other layers of paint.

Cracking or checking due to failure of the product

Excessive loss of gloss caused by cracking, checking, or hazing.

See attachment for full requirements of the warranty.

PAINT POLISH BODY - A.C.T. STANDARDS #3

The paint finish on the body shall meet the ACT test panel #3 level for orange peel visual standard. Test sample swatches shall be made available on request for paint finish comparison.

COMPARTMENT FINISH

The interior of all compartments of the body shall also be sealed and caulked. A textured finish of light gray urethane paint with a dark gray spatter finish shall be applied to all compartment interiors.

BODY UNDERCOATING - CORASHIELD®

The whole frame / cross members / wheelwell area / and inner body of the apparatus body shall be thoroughly prepared and sprayed with Corashield® that will help prevent rust and corrosion. A minimum of 8-10 mils of Corashield® shall be sprayed. The bottom, sides and tops of the cross members shall be fully covered.

The Corashield® is a sprayable latex coating designed for use on aluminum, fiber glass, cold rolled steel, galvanized steel, and most metal primers. Corashield® is formulated to give very good corrosion protection. This medium viscosity, sag resistant coating can be easily sprayed onto exposed underbody areas, and into restricted areas such as tubing and "hidden" areas accessible only with spray wands.

Corashield® dries quickly at ambient temperatures and will withstand urethane paint bakes after only 30 min drying at room temperature.

Corashield® provides better protection than any of the competitive products tested without the environmental and safety problems inherent in many of the undercoating available today.

4" REFLECTIVE BODY PRIMARY STRIPING

There shall be a four inch wide reflective stripe applied to the left and right sides of the apparatus according to the requirements of NFPA 1901 latest edition. The reflective stripe shall be a 3M Scotchlite product.