

FIRE DEPARTMENT SPECIFICATIONS

SPECIFICATIONS FOR ONE (1) TRIPLE COMBINATION PUMPER



FIRE DEPARTMENT SPECIFICATIONS
BID DOCUMENT

For:

BID FOR ONE (1) RESCUE APPARATUS

Sealed Bids Will Be Received Until:

At

Bids Are To Be Mailed To:

FIRE DEPARTMENT SPECIFICATIONS

INTENT

As per the specifications provided, each manufacturer is invited to submit pricing and delivery for one (1) Rescue Apparatus.

Bidders shall reply to the specifications on the forms supplied.

All items in these specifications must be answered indicating compliance or noncompliance. Bidders shall state "Yes" for compliance or state the deviation. Information relating to the deviation may 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 bid will be disqualified. Each bidder shall submit a set of specifications outlining the exact vehicle proposed.

Other bid forms or the submission of alternates, not detailed in the specifications, shall be cause for disqualification.

It is the intent that the specifications clearly identify the furnishing and delivery of a complete Rescue Apparatus as specified.

Bids 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 the bid, and the lowest price may not necessarily be accepted.

PRICING

One (1) Rescue Apparatus as outlined in these bid specifications:

Selling Price: \$ _____

Applicable Taxes: \$ _____

Total Proposal Price: \$ _____

Delivery of the completed vehicle shall be F.O.B. _____ Fire Department within ____ to ____ calendar days after the acceptance of the order dependent on chassis delivery.

Note: Pricing provided shall be held firm for a maximum of thirty (30) calendar days.

FIRE DEPARTMENT SPECIFICATIONS

WORKERS COMPENSATION BOARD CERTIFICATION

The successful bidder 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 W.C.B. shall be disqualified (**Mandatory Requirement**)

TENDER EVALUATION

This tender will be evaluated on a points system based on the documents submitted with this tender. Failure to submit requested documents may result in your tender being rejected or 0 points being assigned. Evaluation of points being received in each section is at the discretion of the purchaser / fire department.

1) Insurance Certificate for \$25,000,000.00	25 points
2) Business Credit Report Available on Request	10 points
3) ISO Certificate	10 points
4) Length of Time in Business / No prototypes	10 points
5) Professional Engineering Certificate of Staff Member	15 points
6) Welding Certificates	10 points
7) Fire Apparatus Manufacture Association Certificate	10 points
8) Licensed Motor Vehicle Sales Permit	10 points
9) 24 Hour Warranty Policy/ Service within 100 Miles	10 points
10) Tender Meets Specs	25 points
11) Body & Paint Warranty Certificates	25 points
12) Price	<u>10 points</u>

Total 170 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

The chassis shall be paid in full when it is received at the apparatus manufacturer's facilities.

The balance of payment shall be paid upon completion and delivery acceptance.

QUALIFICATION SHEET

All bidders must fill this form out completely. Bids not returned with this form completely filled out will be disqualified.

FIRE DEPARTMENT SPECIFICATIONS

Any blank spaces or non compliance to **Mandatory Requirements** could result in the manufacturers bid submittal being disqualified.

REQUIREMENTS

1) The bidder must have been manufacturing fire apparatus continuously, without interruption for a minimum of Twenty (20) years. (**Mandatory Requirement**)

Comply (Yes/No) _____

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

Comply (Yes/No) _____ Photo's Attached (Yes/No)_____

Customer Contact Attached (Yes/No)_____

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

Number of Years _____

4) The bidder 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. (**Mandatory Requirement**)

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

Contact Information Attached (Yes/No)_____

5) The bidder shall have a quality manual available for inspection by the purchaser (**Mandatory Requirement**)

Comply (Yes/No) _____

6) The bidder must indicate that they are the prime contractor for this bid, 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. (**Mandatory Requirement**)

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

FIRE DEPARTMENT SPECIFICATIONS

8) The apparatus manufacturer must 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. **Sub Contracted Engineers Shall Not Be Acceptable And Shall Disqualify The Bid (Mandatory Requirement)**

(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. Bids not meeting this requirement will not be accepted. A copy of the certificate shall be included with the bid submittal. **(Mandatory Requirement)**

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

11) The manufacturer of the apparatus must meet F.M.V.S.S. requirements. **(Mandatory Requirement)**

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

Specifications	Yes	No	Exceptions
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. (Mandatory Requirement)			
ENGINEERING DRAWINGS			
Engineering drawings shall be submitted to the purchaser prior to commencement of the manufacturing process.			
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.			

FIRE DEPARTMENT SPECIFICATIONS

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

BODY MANUAL - CD

One (1) compact disc manual(s) shall be provided on operation of the complete apparatus. The CD 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 N.F.P.A. 1901 standards, 2016 edition 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. **(Mandatory Requirement)**

FIRE DEPARTMENT SPECIFICATIONS

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)

VEHICLE DATA RECORDER (VDR)

Meeting the requirements of NFPA 1901-2016, the new Vehicle Data

FIRE DEPARTMENT SPECIFICATIONS

Recorder collects essential data for your training needs. Reviewing the information is made easy with an intuitive computer application. Apply this data to your training programs to improve response times, driver awareness and seat belt safety.

Recorded Data Includes: Vehicle Speed, Acceleration, Deceleration, Engine Speed, Engine Throttle Position, ABS Event, Seat Occupied Status, Seat Belt Status, Master Optical Warning Switch, Park Brake, Service Brake, Time, Date and Engine Hours.

Six (6) seat position inputs for occupied and belts buckled. Data is extracted by a standard, mini USB cable.

OCCUPANT RESTRAINT INDICATOR

Designed to alert driver and officer, this module will indicate where restraints of occupied seats are properly fastened keeping personnel safe.

The indicator shall be low profile, compact size and support commercial and custom cab seating layouts up to 12 seats. A dimming feature will adjust the indicator intensity to synchronize with dash lights and shall have a built-in audible alarm.

TIRE PRESSURE MONITORING - VISUAL

There shall be a visual six (6) wheel tire pressure system supplied that monitors all of the tires on your apparatus. A LED valve cap shall be attached to your tires valve-stem that contains a Pressure Sensor to alert you of a developing tire problem.

HELMET HOLDERS

There shall be six (6) 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 Freightliner two door chassis shall be supplied as per the attached specifications.

SPEAKER COVER – BUMPER MOUNT

The chassis bumper shall come with a cut out for mounting the siren speaker behind. The cutout shall come with a stainless steel cover that is slotted to allow sound to pass thru.

FIRE DEPARTMENT SPECIFICATIONS

The bumper shall be chromed after the cutout has been made (**Mandatory Requirement**)

CHASSIS WHEELS

The chassis wheels shall be an aluminum polished finish from the chassis supplier.

CHROME HUB AND LUG NUT COVERS

The front wheels shall be fitted with chrome baby moon type hub covers.

The rear wheels shall be fitted with chromed "Top Hat" type hub covers.

All front and rear wheel lug nuts shall have chrome lug nut covers installed.

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

FIRE DEPARTMENT SPECIFICATIONS

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.

KUSSMAUL PUMP PLUS 1000

A Kussmaul Pump Plus 1000 combination battery charger, 12V air compressor, auto eject 20WP 20 amp automatic power line disconnect and remote bar graph indicator shall be provided.

The output side of the battery charger shall be connected to the chassis batteries, and the input side connected to the auto eject receptacle. The output side of the air pump shall be connected into the chassis air system, and the input side connected to the auto eject receptacle.

A 110 volt Kussmaul Auto-Eject, 3-prong, straight blade receptacle shall be provided at the left cab door area. This receptacle shall have a hinged weatherproof cover.

CAB STEP LIGHTING

Each cab step shall be illuminated by Tecniq P/N E03 LED lights to meet the requirements of NFPA 1901.

TRANSPORTATION ROAD SAFETY KIT

One (1) 2.5 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.

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.

CANOPY

The canopy shall fully enclose the pump house and carries a complement of four (4) seated firefighters.

FIRE DEPARTMENT SPECIFICATIONS

There shall be a full 80" of headroom at the pump operator's panel standing position.

The canopy shall be constructed of heavy duty 2" x 2" x .188", 2" x 2" x .25", 3" x 2" x .188", and 3" x 3" x .25" (6061-T6 / 6063-T6) heavy-duty structural aluminum extrusions which shall provide maximum strength and durability.

The canopy exterior panels shall be 3/16" 5052-H32 aluminum sheet.

To minimize canopy vibration and stress on the structure, the canopy shall be mounted to the chassis frame rails utilizing a rubber cone inserted into a 1/4" painted mild steel plate fastened to the chassis frame rails with a minimum of four (4) 5/8" grade 8 bolts. The canopy structure shall sit on the rubber cone. Metal to metal installation of the enclosure canopy is not allowed. **(Mandatory Requirement)**

ECE-R29 STATIC ROOF CRUSH TEST

The manufacturer's pump house enclosure design must have performed and passed the ECE-R29 Roof Crush Test as performed by a third party testing organization. Documentation of this test must be available for the fire departments review prior to entering into a purchase contract. **(Mandatory Requirement)**

PUMP HOUSE

The pump house shall be integral to the canopy structure and manufactured as a single unit.

The pump house shall be a full frame module constructed from 2" x 2" x .188" and 3" x 3" x .25" (6061-T6 / 6063-T6) heavy-duty structural aluminum extrusions which shall provide maximum strength and durability.

The pump house / pump operator panel enclosure shall be manufactured separately from the apparatus body to allow for movement and flexibility. To minimize pump house structure vibration and stress the mounting shall be to the chassis frame rails utilizing a rubber cone inserted into a 1/4" painted mild steel plate fastened to the chassis frame rails with a minimum of four (4) 5/8" grade 8 bolts. The pump house structure shall sit on the rubber cones. Metal to metal installation of the pump house section is not allowed.

FIRE DEPARTMENT SPECIFICATIONS

FINISH AND PAINTING - PUMPHOUSE - PPG

After assembly, the body substructure shall be deburred and sanded for paint preparation.

All ledges inside and outside shall be cleaned and sealed.

All outside seams that are not 100 percent welded shall be sealed and caulked inside and outside.

All exterior side panels and other components to be screwed to the structure shall have their holes predrilled and tapped prior to the painting process. The canopy structure shall be entirely painted inside and outside before it is installed on the chassis frame rails, and before any attachments such as aluminum inlay panels or stainless steel side panels are installed.

(Mandatory Requirement)

The interior of the pump house enclosure shall be a durable Polyurethane enamel splatter coat finish that is gray in color.

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

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

STONE GUARD

There shall be a stone guard mounted on the front bottom corners of the crown to prevent road chips debris from chipping the paint. The stone guard shall be approximately 18.5" high and be manufactured from 1/8" 3003 hi shine aluminum checker plate.

FIRE DEPARTMENT SPECIFICATIONS

CANOPY DOORS

There shall be Two (2) full height doors, one (1) on the left side, and one (1) on the right side. Each door shall be 31"W x 99"H.

Each door shall be a double pan flush mount construction. The outer pan shall be manufactured from 1/8" 5083-H321 salt water grade aluminum. The inner pan shall be manufactured from 12 gauge 5052-H321 aluminum.

All interior crew and driving compartments door handles shall be designed and installed to protect against accidental or inadvertent opening.

The door handles shall be fail safe type so the sleeve of the coat does not inadvertently catch a handle and open a door.

Each door exterior shall have stainless steel D-Ring handles. The interior of each door shall come with a chrome handle. Two point rotary latches and stop bolt must be compliant with CMFSS and FMVSS standards.

A gas strut shock shall be utilized at the top of each door to maintain an open position and assist closing of each canopy door. A cloth belt shall be installed to keep the door from inadvertently opening too wide and damaging the gas strut.

There shall be a diagonally installed, 1 1/4" diameter, knurled aluminum grab bar located on the inside of each canopy door.

CAB/CROWN COMMUNICATIONS OPENING

There shall be a pass through opening installed in the back wall of the canopy allowing for visibility and communications between the chassis cab and the canopy enclosure occupants.

There shall be a rubber boot installed between the chassis cab rear wall and the canopy enclosure which shall encompass the complete window opening to keep road dust, noise, and any possible outside elements from entering the canopy enclosure. **(Mandatory Requirement)**

CANOPY INTERIOR TRIM

The lower portion of the side wall adjacent to the seat base, and left side corner and right side corner shall be covered in 1/8" black vinyl covered aluminum.

The forward portion of the seat base shall be trimmed with 3/16" 3003 H22 .125" aluminum hi shine checker plate.

FIRE DEPARTMENT SPECIFICATIONS

The pump operator panel base on the left side and right side, and the pump operator panel left side corner and right side corner shall be covered in 1/8" black vinyl covered aluminum.

ENTRANCE STEP

The steps leading to the pump operator panel and seating positions shall be aluminum grip strut steps. The side walls and kick plate of the entrance step area shall be trimmed with 1/8" 3003 aluminum checker plate.

WALKWAY

The walkway shall be from 2" x 2" x .188" and 3" x 3" x .25" (6061-T6 / 6063-T6) heavy-duty structural aluminum extrusions which shall provide maximum strength and durability.

The walkway framework shall be primed and painted prior to final installation onto the chassis frame rails.

NFPA rated slip resistant high shine 3/16" aluminum checker plate (3003-H22) shall be fastened to the framework with stainless steel bolts.

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

PUMP INSPECTION DOOR

The pump house interior shall be accessible by a large approximately 35" high by 48" wide .125" aluminum black vinyl covered inspection door at the walkway / pump operator panel.

This door shall have six (6) cast black paddle latch/handle assemblies for door installation and removal.

This door shall be easily removable by unlatching, lifting, and removing. This door shall be removable to provide easy access to the pump for repair and maintenance without removal of the pump house side panels.

CONTROL PANEL - SIDE

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

FIRE DEPARTMENT SPECIFICATIONS

CREW SEATING - BOSTROM FLIP UP

Four (4) seating positions shall be provided with Bostrom SCBA flip up seats and holder brackets complete with air bottle/air pack collision restraining straps installed in the center of the air pack bracket. The crew seating shall be covered with long wearing heavy-duty Durawear material and shall also be fitted with automotive approved three point seat belts.

CREW SEATING EMBROIDERY

The crew area seating shall come with the manufacturers logo embroidered on the top headrest.

Four (4) air bottle/air pack collision restraining strap(s) shall be installed in the center of the air pack bracket.

CANOPY WINDOWS

The window glass shall be tinted, automotive grade laminated safety glass. For maximum operator visibility the following windows shall be installed on the enclosed pump panel enclosure. **(Mandatory Requirements)**

Front Upper Canopy Area:

One (1) full length window in the upper forward facing section above the crew seating area, measuring 12"H x 67"W.

Side / Front Sloped Canopy Area:

Two (2) 9.625" W x 34"H windows. One (1) each side
Exception: One or both of these windows are to be deleted if push up pole scene lights are to be installed in these locations.

Side / In Front Of Canopy Doors:

Two (2) 13"W x 47.75"H windows. One (1) each side.

Canopy Doors:

Each Canopy Door shall have two (2) 23.75"W. x 43.625"H. windows. One upper and one lower.

Side / Behind Canopy Doors:

Two (2) triangular shaped windows with a maximum height of 14.1"W x 29.9"H. One (1) each side.

Rear / Upper Above Operator Panel Area:

Two (2) 23.75"H x 43.625"W windows.

Rear / Lower / Side Pump Panel Viewing Windows:

Two (2) 6"W x 20"L windows. One (1) each side shall be installed to allow

FIRE DEPARTMENT SPECIFICATIONS

the pump operator to view each side pump panel.

CANOPY DOOR WINDOW MODIFICATION

In place of the standard permanently installed upper canopy door windows, two (2) vertically sliding windows shall be installed in the right and left side canopy doors. Each vertically sliding window shall have an integral bug screen.

SUNROOF PACKAGE

There shall be a 33.5" x 18.5" pop up tinted sunroof installed in the center of the canopy roof panel.

HEAT PANS

The bottom of the pump house shall be fitted with a removable heat pan. The heat pan shall totally enclose all sides, front, and rear bottom of the pump house. **(Mandatory Requirement)**

The heat pan shall be constructed from salt water grade sheet aluminum and shall be installed to the underside of the pump house in a sliding tray that shall be split in the center and easily removable.

CONTROL PANEL - TRANSVERSE ENCLOSED

The pump operator's panel shall be constructed from 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.

The underside of the valve operators shall have a rubber barrier mounted inside the pump house to keep contaminants from the pump house interior from coming up the valve operators.

FIRE DEPARTMENT SPECIFICATIONS

PUMP PANEL WEATHERPROOFING

A heavy-duty rubber barrier shall be installed under the pump operator's panel valve actuators to aid in retention of pump compartment heat and to reduce contaminants from entering the pump operator's area.

MASTER GAUGE TEST PORTS

The pump panel shall have master gauge test ports.

PUMP BYPASS CONTROL.

A bypass control shall be mounted at the pump operator panel to allow tank water to re circulate thru the pump to cool it.

AUXILIARY HEAT EXCHANGER

There shall be an auxiliary heat exchanger mounted on the chassis. The controls for the heat exchanger shall be at the pump operator panel. The heat exchanger will allow for tank water to cool the chassis engine.

SPEED LAY HOSE BEDS

Two (2) speed lay hose beds shall be provided and installed transversely at the front of the pump house. The speed lay beds shall be slotted to allow for drainage of the hoses.

Two (2) removable trays shall be included in the speed lay hose beds. The trays shall be manufactured from 1/8" 5083-H32 salt water grade aluminum. The trays shall have slots cut for handholds on each side of the trays. The trays shall be removable from either side of the apparatus.

SPEED LAY PLUMBING - 1.5" DISCHARGE

The plumbing on the 1.5" discharge(s) shall be a combination of schedule 10 stainless steel 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.

THREAD TYPE - DISCHARGE 1.5"

All 1.5" thread types shall be NST.

Elkhart EB20 Valve

An Elkhart EB20 valve shall be provided. The valve shall have an all brass

FIRE DEPARTMENT SPECIFICATIONS

body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. This valve shall be actuated using an Elkhart Brass R1F manual valve actuator.

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.(No Exceptions).

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.

SPEED LAY DOORS

Hinged aluminum checker plate doors with D-Ring latches shall be provided on each side of the speed lay compartments. The aluminum checker plate doors shall be a minimum of 1/8" thick.

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

Four (4) 17,500 BTU forced air coolant heaters shall be installed.

Two (2) heaters shall be installed at the lower section of the canopy enclosure, one (1) at each side at the step area.

Two (2) heaters shall be installed at the front lower section of the pump

FIRE DEPARTMENT SPECIFICATIONS

house enclosure, one (1) each side.

The heaters shall be installed thru a custom copper manifold to evenly distribute heat from the chassis coolant. The coolant hoses shall be wrapped in insulation.

INTERIOR PUMP PANEL LIGHTS - WHITE

The pump operator panel on the interior of the pumphouse enclosure shall be illuminated by One (1) Amdor Lumabar 62" LED strip light.

There shall be a switch mounted on the pump operator panel to activate the lights.

INTERIOR PUMP PANEL LIGHTS - RED

The pump operator panel on the interior of the pump house enclosure shall be illuminated by One (1) Amdor Lumabar 62" LED strip light with red LED lights.

There shall be a switch mounted on the pump operator panel to activate the 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, MONITORING, and MASTER PRESSURE DISPLAY

Fire Research InControl series TGA400-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 5 1/2" high by 10 1/2" wide by 2" deep. 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 information shall be from a J1939 data bus or independent sensors. Outputs for engine control shall be on the J1939 databus or engine specific wiring.

The following continuous displays shall be provided:

Pump discharge; shown with four daylight bright LED digits more than

FIRE DEPARTMENT SPECIFICATIONS

1/2" high
Pump Intake; shown with four daylight bright LED digits more than 1/2" high
Pressure / RPM setting; shown on a dot matrix message display
Pressure and RPM operating mode LEDs
Throttle ready LED
Engine RPM; shown with four daylight bright LED digits more than 1/2" high
Check engine and stop engine warning LEDs
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.

The 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 and a control knob located on the front of the control panel. There shall be a USB port located at the rear of the control module to upload future firmware enhancements.

Inputs to the control panel from the pump discharge and intake pressure sensors shall be electrical. The discharge pressure display shall show pressures from 0 to 600 psi. The intake pressure display shall show pressures from -30 in. Hg to 600 psi.

WATER TANK VOLUME INDICATOR

Fire Research TankVision 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

FIRE DEPARTMENT SPECIFICATIONS

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.

CANOPY FANS

There shall be two (2) Temro 215 CFM defogger fans provided on the operator panel. The fans shall be installed above each side of the pump operator's panel.

CANOPY AIR CONDITIONING MODIFICATION

The canopy area shall full air conditioned.

This air conditioning system shall be connected into the chassis air condition system with an evaporator installed in the canopy area and suspended from the canopy ceiling.

This air conditioning evaporator shall have an on/off control switch along with a blower motor control switch.

The evaporator shall have a drain line installed to remove excess water. This drain line shall drain through the lower portion of the canopy structure and empty to the ground.

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.

FIRE DEPARTMENT SPECIFICATIONS

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 machines, hand-ground and individually balanced. The vanes of the impeller intake eye shall be hand ground and polished to a sharp edge, and be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.
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.

FIRE DEPARTMENT SPECIFICATIONS

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.

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

FIRE DEPARTMENT SPECIFICATIONS

water hydraulics hazards and component limitations."

Hale Standard Gearbox

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 Oil Less 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.

FIRE DEPARTMENT SPECIFICATIONS

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. **(Mandatory Requirement)**

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. **(Mandatory Requirement)**

Elkhart EB25 Valve

An Elkhart EB25 valve shall be provided. 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 specially designed flow optimizing stainless steel ball. This valve shall be actuated using an Elkhart Brass R1F valve actuator.

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.(No Exceptions).

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

FIRE DEPARTMENT SPECIFICATIONS

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.

Elkhart EB20 Valve

An Elkhart EB20 valve shall be provided. 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 specially designed flow optimizing stainless steel ball. This valve shall be actuated using an Elkhart Brass R1F manual valve actuator.

Valve Actuator

The valves shall have chrome T handle actuators. For chemical and wear resistance a Lamacoid label specifying the discharge shall be inset into the T handle actuator. The label shall be color coded as per NFPA 1901 requirements.

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

FIRE DEPARTMENT SPECIFICATIONS

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.(No Exceptions).

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. (**Mandatory Requirement**)

Elkhart EB25 Valve

An Elkhart EB25 valve shall be provided. 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 specially designed flow optimizing stainless steel ball. This valve shall be actuated using an Elkhart Brass R1F valve actuator.

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.(No Exceptions).

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

One (1) 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.

FIRE DEPARTMENT SPECIFICATIONS

A rubber grommet shall enclose the plumbing coming out of the pump panel for maximum heat retention in the pump house. (**Mandatory Requirement**)

Elkhart EB25 Valve

An Elkhart EB25 valve shall be provided. 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 specially designed flow optimizing stainless steel ball. This valve shall be actuated using an Elkhart Brass R1F valve actuator.

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.(No Exceptions).

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.

3" DELUGE GUN DISCHARGE WITH SLO-CLOZ

A 3" deluge gun discharge shall be provided and installed above the pump house. The plumbing leading to the monitor standpipe shall be schedule 40 stainless steel plumbing with Schedule 40 threaded fittings. A threaded cap shall come with the monitor standpipe if no monitor is ordered.

Elkhart EB30 Valve

An Elkhart EB30 valve shall be provided. 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 specially designed flow optimizing stainless steel ball.

The valve shall come with a Slow Close actuator which meets the requirements of NFPA 1901 latest edition.

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.(No Exceptions).

FIRE DEPARTMENT SPECIFICATIONS

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 NST.

2.5" DISCHARGE - REAR

One (1) 2.5" gated discharge(s) shall be provided at the 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

Elkhart EB25 Valve

An Elkhart EB25 valve shall be provided. 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 specially designed flow optimizing stainless steel ball. This valve shall be actuated using an Elkhart Brass R1F valve actuator.

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.(No Exceptions).

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.

FOAM PRO 1600 FOAM SYSTEM

The vehicle shall be equipped with an electronic, fully automatic, variable speed direct injection, discharge side foam proportioning system. The system shall be capable of handling Class "A" foam concentrate. The foam system shall be a FoamPro 1600.

FIRE DEPARTMENT SPECIFICATIONS

The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows, and pressures. The system must be capable of delivering accuracy to within 3% of calibrated settings over the advertised operation range when installed according to factory standards.

The system shall be equipped with a control module suitable for installation on the pump panel. Incorporated within the motor driver shall be a microprocessor that receives input from the system flow meter, while also monitoring foam concentrate pump output, comparing values to ensure that the operator preset proportional amount of foam concentrate is injected into the discharge side of the fire pump.

A paddlewheel type flow meter shall be installed in the discharge specified to be foam capable.

The control module shall enable the pump operator to activate the foam proportioning system and select the proportioning rates from .1% to 1.0%.

A 12-volt electric motor driven positive displacement plunger pump shall be provided. The pump capacity shall be 1.7 gpm at 200 psi. The motor shall be controlled by the microprocessor. It shall receive signals from the control module and power the 1/3 hp electric motor in a variable speed duty cycle to ensure that the correct proportion of concentrate is injected into the water system.

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

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

- Operator control module
- Paddlewheel flow meter
- Pump and electric motor/motor driver
- Wiring harnesses
- Low-level tank switch
- Foam injection check valve

An operations manual shall be provided for the unit.

FOAM SYSTEM DISCHARGE MANIFOLD

A brass foam discharge manifold shall be provided for the foam system.

FIRE DEPARTMENT SPECIFICATIONS

This foam manifold shall have two (2) outlets for connection into the apparatus plumbing system.

INTEGRAL FOAM TANK

The integral foam tank shall have the following capacities:

*25 Imperial gallons
114 liters*

The foam tank shall be provided as an integral part of the booster tank and piped to the foam system. The tank shall have a separate fill tower with cover labeled ("FOAM FILL ONLY") for filling the foam tank.

Note: The main booster tank will be reduced in size in order to accommodate the integral foam tank.

INTEGRAL FOAM TANK WATER ALLOWANCE

The integral foam cell will deduct water from the specified water tank volume.

BOOSTER TANK

The booster tank shall have the following capacities:

1000 US Gallons

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

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

FIRE DEPARTMENT SPECIFICATIONS

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

FIRE DEPARTMENT SPECIFICATIONS

the apparatus structure.

Warranty - Tank - Poly - Pro Poly - Lifetime

TANK DRAIN

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

ROM ROLL OUT TRAY(S)

Five (5) heavy duty ball bearing ROM roll out tray shall be provided in a standard body compartment up to 27" in depth.

The tray(s) shall have a push / pull spring lock 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.

FIRE DEPARTMENT SPECIFICATIONS

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.

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 crossmembers shall extend the full width of the body. The crossmembers 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.
(Mandatory Requirement)

All fasteners shall be installed in a manner, which shall involve drilling, tapping, and application of non-corrosive grease before the stainless steel

FIRE DEPARTMENT SPECIFICATIONS

bolts are installed. Self-tapping screws or screws without threads shall not be acceptable. **(Mandatory Requirement)**

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 sealed and caulked with a permanent, pliable automotive type sealer.

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. **(Mandatory Requirement)**

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.

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 DIVIDERS - ADJUSTABLE

FIRE DEPARTMENT SPECIFICATIONS

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.

ROM Electric Roll up hosebed cover

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 3/16" 5083-H321 salt water grade aluminum. The aluminum shall be painted to the same color and paint process as the body.

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.

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. (**Mandatory Requirement**)

CHEVRON STRIPPING

There shall be 6" chevron stripping decals applied to the rear face of the

FIRE DEPARTMENT SPECIFICATIONS

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.

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.

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

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 sealed and caulked with a permanent, pliable automotive type sealer.

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. **(Mandatory Requirement)**

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.

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

FIRE DEPARTMENT SPECIFICATIONS

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 sealed and caulked with a permanent, pliable automotive type sealer.

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. **(Mandatory Requirement)**

All compartments shall have sweep out floors.

All compartments shall be weatherproof.

DOOR AJAR SYSTEM

A red 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 and the park brake is released. There shall be a magnetic sensor switch located in the compartment that will indicate when a door has been opened.

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.

ATTIC LADDER BRACKET

FIRE DEPARTMENT SPECIFICATIONS

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

REAR BODY COMPARTMENT

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

One (1) compartment measuring 48"W x 62"H x 28"D frame opening.

ROM ROLL UP DOORS

The compartment doors shall be ROM Roll-Up type doors to include:

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.

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 salt water marine grade aluminum 5083-H321, 1/8" smooth plate with a 1" break on all four sides.

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 stainless steel polished hinge, utilizing gaskets and stainless steel bolts with washers and lock nuts.

The doors and all hardware shall be prefitted to the body. The framework shall be drilled and tapped. The door and all hardware shall be removed prior to the painting process.

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.

FIRE DEPARTMENT SPECIFICATIONS

The compartment door at the L1 location shall be ROM roll up style.
The compartment door at the L2 location shall be ROM roll up style.
The compartment door at the L3 location shall be ROM roll up style.
The compartment door at the R1 location shall be ROM roll up style.
The compartment door at the R2 location shall be FGFT Pan style door.
The compartment door at the R3 location shall be ROM roll up style.
The compartment door at the B1 location shall be ROM roll up style.

Roll Up Door Gutter - Rom

COMPARTMENT SHELVING - ADJUSTABLE

Four (4) adjustable 3/16" aluminum compartment shelves with upturned edges shall be provided. 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.

FIRE DEPARTMENT SPECIFICATIONS

TAILBOARD

A heavy-duty 8" deep tailboard shall be provided

The tailboard shall be covered with slip resistant 3/16" embossed checker plate. The aluminum checker plate shall be bolted to the tailboard sub frame with non-corrosive stainless steel bolts. The bolt on aluminum tread plate shall allow for easy removal for service.

The forward section of the tailboard shall be gapped to allow washing without dirt being trapped and for the drainage of accumulated water.

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.

FOLDING STEPS - CURB SIDE REAR

One (1) folding aluminum steps shall be installed on the curb side rear 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.

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.

FIRE DEPARTMENT SPECIFICATIONS

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.

TRAFFIC CONTROL DIRECTIONAL LIGHT

One (1) Federal model SL8S-A directional light shall be mounted at the rear of the vehicle as high as possible for best visibility. The light shall be controlled by a SMC1 control box mounted in the cab or via a smart siren controller. The control box generates four patterns; left arrow, right arrow, center out and flashing warning patterns.

TRAFFIC CONTROL DIRECTIONAL LIGHT HOOD

The traffic control directional light shall come with a protective hood to prevent damage to the light when hose is pulled off the back of the unit. The hood shall be manufactured from 3003-H14 Aluminum checker plate.

BODY SCENE LIGHTING - LEFT SIDE

One (1) Fire Research model LED900-Q70 surface mount light(s) shall be installed on the left side of the body. The light(s) shall be mounted with four (4) screws to a flat surface. It shall be 6 3/4" high by 9" wide and have a profile of less than 1 3/4" beyond the mounting surface. Wiring shall extend from a weatherproof strain relief at the rear of the light.

The light(s) shall have twenty-four (24) white LEDs that generate a rated 7000 lumens at 12 or 24 volts DC. The lens shall redirect the light along the vehicle and out onto the working area. The light housing shall be aluminum with a chrome colored bezel.

BODY SCENE LIGHTING - RIGHT SIDE

FIRE DEPARTMENT SPECIFICATIONS

One (1) Fire Research model LED900-Q70 surface mount light(s) shall be installed on the right side of the body. The light(s) shall be mounted with four (4) screws to a flat surface. It shall be 6 3/4" high by 9" wide and have a profile of less than 1 3/4" beyond the mounting surface. Wiring shall extend from a weatherproof strain relief at the rear of the light.

The light(s) shall have twenty-four (24) white LEDs that generate a rated 7000 lumens at 12 or 24 volts DC. The lens shall redirect the light along the vehicle and out onto the working area. The light housing shall be aluminum with a chrome colored bezel.

BODY SCENE LIGHTING - RIGHT SIDE

Two (2) rear Tecniq K90 scene lights at upper rear body shall be installed and wire to the reverse gear of the truck to be actuated when the truck transmission is placed in reverse.

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.

FIRE DEPARTMENT SPECIFICATIONS

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

The battery master switch shall be supplied by the chassis manufacturer.

ZONE A UPPER EMERGENCY LIGHTING

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

A Federal Signal 53" Legend LPX LED light bar (Model: LPX53DNC-00002) warning system shall be furnished and rigidly mounted to meet the requirements of Zone A lighting as per NFPA 1901 (latest edition) and ULC S515-04

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:

Two (2) Federal Signal Quadraflare 6x4 intersection lights P/N QL64XF-R shall be installed. The lights shall have the high output Solaris LED technology. The light shall come with red LED lights and shall be encapsulated in a waterproof housing. The lens color shall be red in color. The light mounting bezel shall be chrome

ZONE B UPPER EMERGENCY LIGHTING

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

No emergency lights in this zone

ZONE B LOWER EMERGENCY LIGHTING

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

Two (2) Federal Signal Quadraflare 6x4 intersection lights P/N QL64XF-R shall be installed. The lights shall have the high output Solaris LED technology. The light shall come with red LED lights and shall be encapsulated in a waterproof housing. The lens color shall be red in color.

FIRE DEPARTMENT SPECIFICATIONS

The light mounting bezel shall be chrome

ZONE C UPPER EMERGENCY LIGHTING

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

No emergency lights in this zone

ZONE C LOWER EMERGENCY LIGHTING

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

Two (2) Federal Signal Quadraflare 6x4 intersection lights P/N QL64XF-R shall be installed. The lights shall have the high output Solaris LED technology. The light shall come with red LED lights and shall be encapsulated in a waterproof housing. The lens color shall be red in color. The light mounting bezel shall be chrome

ZONE D UPPER EMERGENCY LIGHTING

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

No emergency lights in this zone

ZONE D LOWER ZONE

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

Two (2) Federal Signal Quadraflare 6x4 intersection lights P/N QL64XF-R shall be installed. The lights shall have the high output Solaris LED technology. The light shall come with red LED lights and shall be encapsulated in a waterproof housing. The lens color shall be red in color. The light mounting bezel shall be chrome

ZONE D LOWER ZONE

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

REAR WARNING LIGHTS - UPPER

Two (2) Federal halogen beacon lights (model SY12FSR) with 175FPM standard rotators shall be provided and mounted on the upper rear stanchions, one (1) each side, and controlled by a switch located in the cab. One beacon shall be red and the other beacon shall be amber in color.

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

FIRE DEPARTMENT SPECIFICATIONS

necessary to meet the requirements of the upper zone c lighting area.

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

There shall be a Federal PA-300MCS electronic siren, with microphone and installed in the cab.

A wide range of features comes standard with any PA300 series siren. Included are 5 basic siren tones, TAP II (horn-ring transfer), PA, radio rebroadcast, and air horn sound with siren override. TAP II allows for effective intersection traffic clearing capability without removing your hands from the steering wheel or your eyes from the road. There is also a “Press-and-Hold” function, depressing and holding the horn ring will produce an alternate sound for as long as the operator keeps the horn ring circuit depressed. The siren’s PA volume level can be controlled with a rotary GAIN switch located on the unit’s backlit front panel, and radio rebroadcast volume is adjustable via an easily accessible rotary pot. The PA300 siren also includes a permanent noise-canceling microphone that produces high quality voice reproduction without feedback squeal, and the microphone’s push-to-talk switch will override any siren tone for instant PA use.

ELECTRONIC SIREN SPEAKER

There shall be a Federal model ES100 / 100 watt electronic siren speaker provided at the front bumper and connected into the electronic siren. The 100-watt speaker shall be of compact design and shall be 5.9” high X 5.5” long x 2.7” deep. The speaker shall be fully encapsulated with no terminals exposed and built to withstand tough conditions. The system shall contain the NS100W driver.

TAIL LIGHTS - LED

There shall be a set of LED tail lights installed the rear face of the apparatus body. These lights shall include brake, turn and clear back up lights installed in chrome trim bezels.

HAND HELD CAB SPOT LIGHT

One (1) SHO-ME 300,000 candle power hand held spot light, with a momentary type control switch, coiled cord, and bracket, shall be provided

FIRE DEPARTMENT SPECIFICATIONS

and mounted on the right side in the cab and wired into the 12 volt electrical system.

HOSEBED FLOOD LIGHT(S)

There shall be two (2) chrome Unity AG-2 halogen 12V light shall provided for hose bed and area lighting. The light(s) shall be furnished with halogen flood light bulbs. The lights shall be controlled from the cab and shall come with a shut off switch at the light head.

STEP LIGHTS

All steps on the body shall have adequate light for illumination. All step lights shall be LED style.

GROUND LIGHTS - LED

There shall be six (6) Tecniq E10S 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

One (1) 4" clear LED engine compartment light shall be installed in the engine compartment area and shall be activated by a mercury switch.

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.

A set of LED (light emitting diode) front clearance lamps shall be installed on the front of the body to comply with department of transport motor vehicle safety standards.

A set of LED (light emitting diode) mid body turn signals shall be installed to comply with department of transport motor vehicle safety standards for vehicles over 30 feet in length along with Tecniq E60 reverse lights on both rear fenders.

BACK UP ALARM

A Federal Signal 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.

FIRE DEPARTMENT SPECIFICATIONS

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.

TWO TONE CROWN PUMPHOUSE - UPPER

The upper portion of the enclosed pumphouse shall be painted in a two-tone paint pattern as required and outlined by the Fire Department. The chassis cab interior door jambs shall be painted to match as well.

Paint Break Striping

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 that are not 100 percent welded shall be sealed and caulked inside and outside.

Only after the entire painting process is completed shall the body structures

FIRE DEPARTMENT SPECIFICATIONS

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.

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 white and black 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.

PIN STRIPPING - CAB & BODY

The cab and the cab doors along with any other painted panels not including the roll up doors shall receive a gold trim pin stripping

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.