

SILVER LAKE VOLUNTEER FIRE DEPARTMENT

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GENERAL REQUIREMENTS

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INTENT

It is the intent of the department to specify an apparatus that will withstand the service and continuous use encountered in the emergency fire fighting field. Said apparatus shall comply with all state and federal laws, rules, regulations, ordinances and the like including the latest edition of the National Fire Protection Association Pamphlet #1901 which is incorporated by reference into these specifications.

Quality and workmanship of the apparatus, completion time, operating characteristics, availability of service, warranties, design, financial condition of the manufacturer and area representative, and manufacturing experience shall all be considered in awarding of the contract to the successful bidder.

All bids will be evaluated on the basis of compliance with the purchaser's advertised specifications. The purchaser does not wish to limit or exclude any manufacturers from submitting a proposal. However, the purchaser will hold all bidders to the minimum standards set forth in the advertised specifications.

The purchaser reserves the right to reject any and all bids and to accept the bid it deems will best meet the needs of the purchaser. This may not necessarily be the low bid.

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INSTRUCTIONS TO BIDDERS

The following instructions are to be observed and complied with by all bidders in preparing a bid proposal. To be considered, all proposals must be made in accordance with the "Instructions to Bidders". **NON-COMPLIANCE WITH THESE INSTRUCTIONS WILL BE CAUSE FOR IMMEDIATE REJECTION OF THE BID PROPOSAL.**

Any contract into which the purchaser shall enter will include the advertised specifications, in addition to the bidder's proposal specifications. Where the advertised specifications require brand names, model numbers, dimensions or capabilities of components, same shall be supplied as all have been carefully selected for their reliability, performance and ease of replacement on a local basis.

Should any bidder find, during examination of the advertised specifications, any discrepancies, omissions, ambiguities or conflicts, or be in doubt as to their meaning, he/she shall request from the purchaser, in writing, an interpretation or correction thereof not later than five (5) working days prior to the date of bid opening.

The purchaser will review the question, and where information sought is not clearly indicated or specified, in his/her opinion, he/she will issue a clarifying or correcting addendum bulletin. Proper interpretation or the making of any necessary inquiry will be sole responsibility of the bidder. Oral answers shall not be binding on the purchaser.

Each bid must give the full business name and address of the bidder. Bids by a partnership must furnish the full name of all partners and must be signed by the partners. Bids by a corporation must be followed by the name of the state of incorporation and by the signature and designation of the

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President, Vice-President or Secretary. The name of each person signing shall also be typed or printed below the signature.

The bid price shall not include any local, state or federal taxes. The bidder shall not be liable for any state or federally mandated tax or program after the sale of the apparatus.

Bids shall be enclosed in a sealed envelope endorsed on the outside of the envelope noting which proposal or proposals are enclosed. The name and address of the bidder shall also be noted on the outside of the envelope.

All bids must remain in effect for a minimum of thirty (30) days.

Bids may be withdrawn by certified mail or telegraphic request from the bidder prior to the time fixed for the opening of the bids. Negligence on the part of the bidder in preparing the bid confers no right for withdrawal of the bid after it has been opened. No bidder may withdraw his/her bid after the time set for the opening thereof.

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EXCEPTIONS, VARIATIONS OR CLARIFICATIONS

The advertised specifications shall be considered as minimum. Should the bidder's current published data or specifications exceed these, they shall be considered minimum and shall be furnished.

Since it is the desire of the purchaser to obtain a bid proposal from any and all qualified manufacturers that can meet or exceed the advertised minimum specifications, bidders are encouraged to submit proposals and to clarify any differences from the advertised minimum standards.

Since all components specified by brand, model number, dimensions size or capacity are readily available to all manufacturers and/or potential bidders, substitutes, alternates, variations and clarifications must be fully explained as follows: **(EXCEPTION TO ANY OF THESE REQUIREMENTS WILL RESULT IN IMMEDIATE REJECTION OF THE BID PROPOSAL.)**

- : Each bidder is required to provide in his/her bid, to purchaser, a complete and accurate description of his apparatus. The bidder's specifications shall be detailed to allow the purchaser to ascertain the type and quality of components, materials, equipment and construction techniques proposed.
- : Proposal specifications must be on the manufacturer's own standard forms. In no case shall a bidder photocopy the advertised specifications as his/her proposal specifications.
- : Each bidder is required to follow, in the bid proposal specifications, the same sequence as the advertised specifications to allow the purchaser to easily compare the proposed specifications to the advertised specifications on an item by item basis.
- : Additionally, all bidders are required to submit the advertised specifications in their proposal, underlining each and every item where the bidder's proposal differs and to consecutively number each differing item. The number shall correspond with the bidder's "EXCEPTION, VARIATION OR CLARIFICATION" page which must be attached to his/her proposal. A complete, detailed and accurate description of how

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the item differs from the specified item must be included.

- : The purchaser assumes that the lack of an exception, variation or clarification to an item indicates that the item will comply with the advertised specifications regardless of cost to the bidder. Should the item not comply upon completion of the apparatus, and an exception is not indicated and accepted, the item shall be rejected when completed and the bidder shall be required to bring the item into compliance regardless of cost to the bidder. Failure to make such changes as the purchaser may consider necessary to conform to any clause of these specifications within thirty (30) days after notice is given to the bidder to make such changes shall be cause for rejection of the completed apparatus.
- : **A GENERAL STATEMENT TAKING "TOTAL EXCEPTION" TO THE ADVERTISED SPECIFICATIONS WILL RESULT IN IMMEDIATE REJECTION OF THE BID PROPOSAL.**

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QUALIFICATIONS OF BIDDERS

The importance of public safety associated with emergency services covered by this specification will exclude from consideration, when evaluating bids, manufacturers of apparatus that have not built and field tested emergency apparatus for at least twenty-five (25) years.

The bidder should represent that manufacturing fire fighting apparatus is the principle business at the location the unit will be made.

Each bidder shall submit a list and telephone numbers of a minimum of twenty (20) fire departments for whom the vendor has constructed fire fighting apparatus.

The apparatus manufacturer should represent that it is approved by Underwriters Laboratory as a U.L. fire pump testing facility.

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MANUFACTURER'S RESPONSIBILITY

The manufacturer shall maintain full insurance coverage on the apparatus, including but not limited to the chassis, until the completed unit is delivered to, accepted by, and paid for by the purchaser.

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LIABILITY

The bidder, if his/her bid is accepted, shall defend any and all suits and assume liability for use and all claims against the purchaser or any of its officials or agents for the use of any patents, process, device or article forming a part of the apparatus furnished under contract.

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PAYMENT (TERMS)

The apparatus will be paid for upon acceptance of the apparatus at the manufacturer's facility.

Due to insurance liability, the apparatus will not be left at the purchaser's location without full acceptance and payment or agreement between the Purchaser and Bidder.

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COMPLETION

The bidder shall specify the number of calendar days after receipt of order. The manufacturer shall not be held liable for delay in completion caused by accidents, strikes, floods or other events not subject to their control. The completed unit must be delivered with full instructions provided to the purchaser's personnel on the operation, care and maintenance of the apparatus.

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INSURANCE

The manufacturer must have a minimum of \$5,000,000.00 Product Liability Insurance in effect. A copy of the Insurance Certificate is to be included with the bid proposal.

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QUALITY ASSURANCE

The purchaser reserves the right to make unannounced visits to the manufacturer's facilities to inspect the quality of the components and workmanship being performed and to observe any manufacturing methods or procedures. The cost of these inspection trips shall be borne by the purchaser.

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INSPECTION TRIP(S)

A final inspection trip upon completion of the unit at the apparatus manufacturer's factory shall be provided to the manufacturer's facilities. The apparatus manufacturer will cover the cost of transportation, meals and lodging for up to two (2) department personnel.

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DRAWINGS

The bidder must submit proposal drawings on a minimum 11" X 17" format at 1" = 30" scale, with the proposed specifications and bid. The drawings must show overall vehicle chassis and body from the streetside, curbside and rear view with placement of lighting and major tools and equipment such as, ladder racks, porta-tank racks, hose lays, hose reels, etc.. All compartments shall be shown with dimensions.

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WARRANTY COVERAGE

Bidders shall include complete warranty details with their proposal, the minimum acceptable warranty is Unlimited time on the polypropylene tank, thirty (30) years on the stainless steel frame assembly, thirty (30) years on the stainless steel body and seven (7) years on the exterior paint and finish.

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MANUALS

Two (2) sets of a complete operation and service manual on CD-ROM covering the completed apparatus shall be included at the time of completion.

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RESTRICTIONS

Maximum Overall Length 32' (384").

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WATER TANK

The tank shall have a minimum capacity of 2500 U.S. gallons and be covered by a Lifetime warranty from the tank manufacturer. The tank shall be of a specified configuration, and so designed to be completely independent of the compartment and/or fender modules. When placed on the chassis the tank should meet or exceed all federal DOT regulations regarding weight distribution, axle loading and horizontal and vertical center of gravity locations.

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TANK CONSTRUCTION

The tank shall be constructed using a virgin, stress-relieved, high-impact copolymer polypropylene with a thickness of 3/4" for the outside walls and base and minimum 1/2" for the remainder.

All joints and seems shall be welded and tested for maximum strength and integrity. All swash partitions shall interlock and be welded to each other as well as to the walls of the tank. This forms a "containment" style baffling system that meets the current NFPA 1901 and provides the most effective form of water surge control for improved safety.

The tank shall incorporate a manual fill tower with a 6" combination vent/overflow pipe. The fill tower shall be constructed of polypropylene and shall be large enough to provide filling by means of a conventional 2-1/2" hose nozzle. The tower shall be located near the front of the tank, centered and be large enough for overhead filling. The tower shall have a removable polypropylene screen and a polypropylene hinged type cover.

The 6" diameter vent/overflow pipe shall run through the tank, from the fill tower and exit through the floor of the tank behind the rear axle. This location will not interfere with water flow during dump operations and will minimize traction loss of the rear wheels.

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The tank covers shall be constructed of high-impact copolymer polypropylene with a minimum thickness of 1/2". The tank cover shall incorporate a minimum of two (2) lifting lugs, for use with the tank empty only, consisting of 2" copolymer dowels. The dowels shall be drills and tapped to accommodate lifting eyes with a minimum security factor of 3 to 1. The lifting dowels shall be welded to the internal partitions and extend through the covers to assist in minimizing cover flex during normal operations.

There shall be one (1) sump included with the tank which shall incorporate an anti-swirl device. The sump shall be constructed of high-impact copolymer polypropylene and be located in the front quarter of the tank (unless otherwise specified by the purchaser under Special Provisions).

Tank connections will be provided to meet the purchaser's specifications. The tank clean-out/drain shall be a minimum 3" N.P.T. coupling in the sump floor; and the tank fill line(s) shall be as specified later in this document. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank. All auxiliary outlets and inlets must meet the current NFPA recommended guidelines in effect at the time of manufacture.

The tank shall incorporate mounting blocks welded into the floor. These blocks shall be engineered and positioned to restrain the tank in the subframe.

The tank shall be mounted to the truck chassis utilizing the structural tubular stainless steel body framework. Captive mounting brackets adequately sized for the tank shall be provided to attach the tank to the framework utilizing a cushioned isolator for positive and negative vertical retention. The sub frame will be separated from the chassis frame by a 1" x 3" solid sill cushion of 60 D (durometer) hardness rubber isolator, and attached to the chassis frame using a minimum of six (6) tie downs. The two front and rear tie downs will be "springer" assemblies and the center tie downs shall be firm (no exceptions). All tie down bolts shall be a minimum, 5/8" grade 8 bolts.

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ADDITIONAL 6" VENT/OVERFLOW

An additional 6" diameter vent/overflow pipe shall be provided and shall run through the tank, from the fill tower and exit through the floor of the tank behind the rear axle. This location will not interfere with water flow during dump operations and will minimize traction loss of the rear wheels. The additional vent/overflow system enhances tank fill and dump times for optimum operational functionality.

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REAR DUMP SYSTEM

Three (3) #1050-34 manually operated stainless steel 10" Newton quick dumps will be provided at the rear center of the water tank. The rear manifold assembly (fabricated from the same material as the tank) shall be sumped below the bottom edge of the tank assembly to provide 100% of water usage and enhance the flow of the water. One (1) dump valve will face rearward, one (1) to the left and one (1) to the right. The left and right dump valves will be equipped with a #4036-34, manually operated 36" stainless steel telescoping chutes while a 14" polished stainless steel flip chute will be provided for the center dump valve.

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REAR FILL (4-1/2")

One (1) 4" stainless steel fill line shall be installed at the rear of the unit. It will be located on the curbside of the tailboard and below the rear dump assembly. It shall be equipped with a South Park #BV78H-42AH, 4" NPTF (rigid) X 4-1/2" NSTM, 5" valve, black hand wheel, butterfly valve with individual 1/4-turn drain valve.

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APPARATUS BODY AND CONSTRUCTION

The entire body is designed to be independent of the chassis frame and water tank so it can be removed at some later date if required. A body sub-framework will be built and tied down to the chassis frame. The body sections will be welded to the sub-frame forming a single integrated unit that is engineered to withstand the demands of the Fire Service.

The body side panels and catwalks will be 14 gauge stainless steel attached to the subframe by stainless steel tig welding. The side panels will contour around the rear wheels in such a manner to give a pleasing appearance.

Wheel well liners of 3/16" thick vacuum formed ABS composite will be incorporated into the side panels. They will be full depth and height and form a complete seal with the outside skirting. They will be mounted by use of 1/4" stainless steel bolts with lock washers drilled and tapped into stainless steel mounting brackets.

The rear end panel will be welded to the side panels and bolted to the rear subframe cross member using stainless steel 3/8" bolts.

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FENDERETTES (STAINLESS STEEL)

Polished stainless steel fenderettes are to be installed around the wheel well openings using a black reinforced vinyl trim and 1/4" stainless steel bolts with lock washers drilled and tapped into the body.

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REAR PLATFORM

A 30" rear platform will be furnished and will be integral to the body construction. It will be equipped with open grip grating. It will have beavertail supports on the ends, of not less than 2" angle and cross bracing of 2" channel. Mirror finish stainless trim protectors will be provided on the rearmost edge of each beavertail support.

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REAR TAILBOARD HOSE TROUGH

A recessed hose trough shall be provided and installed in the rear tailboard assembly, next to the rear fill. The hose trough shall be large enough to accommodate a 5" X 25' section of soft suction hose. A velcro strap shall be provided to keep the hose in the trough while in transit.

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LADDER FOR TANK

A ladder will be installed at the rear of the apparatus (streetside) from the rear platform to allow access to the top of the tank.

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REAR MID-STEP

A step approximately 21" deep and full width of the tank will be fabricated and installed at the rear of the tank, above the rear dump system. Access to the step will be via a ladder from the rear tailboard platform.

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HOSE BED

A hose bed shall be provided above the water tank. It shall be smooth and free of all projections which might interfere with hose loading and unloading. The walls of the hose bed will be 13" high. The hose bed floor will consist of black poly strips, spaced to allow ventilation.

The exterior of the hose bed shall be painted the same color as the body assembly with the inside walls left a natural finish.

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NO HOSE BED DIVIDERS

The hose bed will be left as described above without any dividers.

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HOSE BED HANDRAIL

One (1) NFPA non-slip horizontal handrail shall be installed below the hose bed. The handrail will be secured against rotation in matching chrome-plated stanchions with a third stanchion installed at the center for additional stability. All three (3) stanchions shall be mounted on molded rubber gaskets and fastened to the apparatus with stainless steel bolts and nylon lock nuts.

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COMPARTMENTATION

Two (2) compartments of 16 gauge stainless steel will be installed, one (1) on each side of the body, in front of the rear wheels. The approximate inside dimensions will be 27" deep X 37-1/2" high X 60" wide.

The compartments will be "sweep out" design and assembled by use of stainless steel welding. They will be fully welded on the seams to assure a nice fit and to keep the elements from entering.

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Each compartment shall be properly vented.

COMPARTMENT SUPPORTS:

The compartments shall be supported on both ends and from underneath. Brackets from 2" X 2" stainless steel tubing will be fabricated and welded to the body framework. A 2" X 2" stainless steel tube crossmember will be welded between the brackets and bolted to the floor of the compartment. The front side will be fixed to the body frame by means of a tig welded bracket and the rear will be bolted to an extended frame crossmember.

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COMPARTMENT DOORS

All compartment doors will be ROM brand roll-up style. The exterior of the doors shall remain a flat anodized aluminum finish.

Roll-ups to include a double wall aluminum box section slats with integral hinge joint and recessed slate seal, reusable endshoes with snap-in securement, double wall aluminum reinforced bottom rail with a stainless steel lift bar, aluminum track with side frame, sill plate, and top gutter with non-marring top seal, side seals, bottom seal, with all wear component material to be type 6 nylon.

The aluminum box section shall have a flat interior surface to prevent equipment hang-up. A face depth of 1.0 inches and a wall thickness of 0.045 inches. Each slat shall incorporate a recessed slat seal as to weatherproof the compartment and reduce rattle between the slats.

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

The door shall glide on non-interlocked endshoes. Each endshoe shall be independent and positively secured by a snap-in device. Door slats shall be easily removed and replaced when required.

The stainless steel lift bar shall keep the door securely closed.

The ware components shall be constructed from type 6 nylon to provide maximum strength and durability. The type 6 nylon is a naturally lubricating material which provides exceptional temperature characteristics.

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ADJUSTABLE DIVIDERS

Six (6) 3/16" aluminum adjustable dividers shall be provided and installed, three (3) in the forward portion of the streetside compartment and three (3) in the forward portion of the curbside compartment to accommodate 50' of 1-1/2" rolled hose. The dividers shall be able to adjust from left to right. They shall be mounted to stainless steel uni-strut "C" channels which are securely fastened to the rear compartment wall and floor.

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COMPARTMENT DECKING

Black "Turtle Tile" decking shall be installed in each compartment.

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COMPARTMENT DECKING EDGE

The "Turtle Tile" decking shall have a 2" deep black tapered edge between the compartment door and the front edge of the decking. This will allow equipment to be easily removed and put back without catching the edge.

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HARD HOSE COMPARTMENTS

One (1) hard suction hose compartment shall be provided under each catwalk. Each compartment shall be of sufficient size to accommodate one (1) 6" X 10' section of hard suction hose. The compartments shall be integral of the body construction, shall be enclosed on all four (4) sides and so designed as to permit rear removal of the hose. Each hose compartment shall have a polished 12 gauge stainless steel door equipped with a raised trigger adjustable lever latch.

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BODY COSMETICS

The area above the storage compartments and body skirting will be clad with embossed aluminum NFPA diamond plate. The outer edge will be broke twice. Once at a downward angle of 90 degrees in order to protect the outer compartment edges, and then broke out at approximately 45 degrees to serve as a drip rail for the compartments.

The front outer face of the compartments shall be clad with polished aluminum diamond plate.

All tread plate used will be fastened with stainless steel screws and nylon washers.

A 1/4" X 2" #4 finished polished stainless steel rub rail shall be installed along the bottom of the compartments and skirting on both sides. The rub rail shall have chamfered edges for increased appeal, style, and cleanability. The rub rail shall have tapered ends at the front and rear of the apparatus body and at the wheel well openings. The rub rail shall be fastened with stainless steel bolts and held away from the body with rubber spacers. It shall be easily removable if replacement becomes necessary.

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FOLDING STEPS

One (1) lighted heavy-duty, folding helper step shall be provided on the front face of the driver's side and passenger side compartments. The steps shall have a minimum 42 square inch serrated stepping surface. The steps shall be fastened with stainless steel bolts with nylon lock nuts and reinforced with backing plates.

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ZICO PORTA-TANK RACK

One (1) Zico portable tank "Quick Lift System" shall be installed on the apparatus and shall be of the electric actuated tilt down style. It shall be mounted on top of the curbside skirting. The tank rack shall be sized to accept a "3000" gallon Fol-Da-Tank.

A weatherproof momentary contact switch control shall be mounted in a suitable location which shall provide the operator full travel view of the portable tank to and/or from, the stored position.

The Zico rack system shall be tied into the "hazard light" system to prevent the portable tank rack from deploying if an open door, side dump valve, etc., would create a conflict or hazard and to activate the "hazard light" warning system if the rack is in the "deployed" position and the parking brake is released.

Per NFPA standard #1901 recommendations, the portable tank rack shall be provided with front and rear mounted flashing warning lights that will flash when the rack is moving and in the "deployed" position. A reflective stripe shall be positioned at each end of the rack.

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ALUMINUM DIAMOND PLATE COVER

A .100" aluminum diamond plate cover shall be fabricated and installed on the outside of the Zico porta-tank rack.

Y__N__

LADDER RACK

A ladder rack using Cast Products ladder brackets will be provided above the skirting on the streetside of the apparatus. The ladder rack shall provide a means to securely retain a 24' 2-section extension ladder while in transit.

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PAINT PROCEDURE

All metal surfaces on the apparatus body shall be cleaned and prepared for painting. Every imperfection shall be removed or filled and then the entire surface(s) that are to be painted shall be etched and sanded smooth. All seams shall be sealed before painting.

To ensure proper adhesion of the coatings to the stainless steel it shall be chemically cleaned to remove all dirt, oil, grease and metal oxides.

A two (2) part epoxy primer/surfacer shall be applied to the cleaned metal surfaces to provide a strong corrosion resistant base coat and to smooth out the surface(s).

The primer coats shall be sanded to an extremely smooth finish before the sealer coat and paint are applied.

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Before painting, the entire area that is to be painted shall be tacked off to remove any and all dust particles. Acrylic urethane paint is then applied in multiple coats until uniform color coverage is achieved, followed by two (2) coats of urethane clear.

After drying, the entire painted surface(s) shall be wet sanded to remove any imperfections in clear coat and machine buffed for a smooth and pleasing appearance.

All removable items such as compartment doors, hinges, trim, bracketry, etc., shall be removed and painted separately to insure complete paint coverage behind all mounted items.

: Roll-up doors are not to be painted and shall remain a natural aluminum finish, unless called out in the roll-up door section.

All trim pieces mounted to the apparatus shall be de-burred to eliminate any sharp cutting edges.

The insides of the compartments, rear end panel and the tank shall not be painted, but the exterior of the apparatus body (sides) shall be painted the same color as the chassis (PPG #82757 Yellow). The interior of the cabinets and rear end panel will be a polished #4 satin finish.

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EXTERIOR FINISH

The four exterior sides of the tank will be painted according to the tank manufacturer's recommended procedure to match the body and cab. The top will be left as black polypropylene.

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TOUCH-UP PAINT & ASSORTED FASTENERS

A two (2) ounce container with applicator brush of touch-up paint shall be supplied for each color of the finished apparatus body color. This touch-up paint shall be delivered with the apparatus at the time of delivery and include the paint make and number for future reference.

A bag of assorted stainless steel fasteners used in the construction of the apparatus shall be provided to the purchaser at the time of delivery and acceptance of the completed apparatus.

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ANTI-CORROSION PROTECTION

The design of the apparatus body is such that the association of different metals is minimized. Where it is unavoidable an anti-corrosion coating is used between the two metals.

The anti-corrosion material is a dispersion of metallic zinc in a mobile vehicle designed to prevent corrosion caused by electrolysis between the two metals.

When stainless steel screws pass through aluminum they will be treated with the anti-corrosion coating to prevent the onset of electrolysis.

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N.F.P.A. STRIPING

In accordance with the guidelines of NFPA Pamphlet #1901-2009 edition, a retroreflective stripe(s) shall be affixed to at least 50% of the cab and body length on each side (excluding pump panel areas), and at least 25% of the width of the front of the apparatus.

The striping shall be 1/2"-4"-1/2" wide with no spacing between stripes. The 1/2" wide stripes shall be black reflective and the 4" stripe shall be white reflective.

Reflective striping shall also be applied on the inside of the chassis cab doors.

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CHEVRON STRIPING

Chevron striping shall be provided and installed at the rear of the apparatus, lower body panel only. Striping will be 6" wide red/fluorescent yellow green diamond grade reflective and installed in an inverted "V" pattern.

"2500 GALLONS" shall be provided on both the left and right telescoping chutes at the rear of the apparatus. The lettering shall be black reflective.

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LETTERING

The apparatus shall be lettered of a style and script comparable to the department's existing apparatus.

Cab Doors:

SILVER LAKE	(arc - 4" imitation gold leaf with black outline and shadow)
FIRE DEPT.	(straight - 3" imitation gold leaf with black outline and shadow)

Cab Fenders:

TANKER 1	(2" black reflective)
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Body Sides Behind Rear Wheels:

SERVING TOWNSHIP OF...	(1" black reflective)
* HALE	
* RICH VALLEY	
* HASSEN VALLEY	
* WINSTED	

REAR OF TANK:

S.L.F.D.	(8" black reflective)
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REAR DUMP CHUTES:

2500	(Left Dump Chute)
GALLONS	(Right Dump Chute)

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CHASSIS MODIFICATIONS

If chassis cab is equipped with an ignition key it shall be permanently attached to the chassis cab dash per N.F.P.A. codes.

All NFPA pamphlet #1901-2009 warning and information placards shall be provided and installed.

Y__N__

CHASSIS WHEELS

All wheels shall remain as supplied from the chassis manufacturer.

Y__N__

TIRE PRESSURE INDICATORS

There shall be a visual tire pressure indicator at each tire's valve stem on the vehicle that shall indicate if there is insufficient pressure in the specific tire.

Y__N__

VERTICAL EXHAUST MODIFICATIONS

The chassis vertical exhaust system shall have the stack adjusted to the highest point of the apparatus after manufacturing.

Y__N__

MUD FLAPS

Black rubber mud flaps, with Manufacturer's logo, shall be provided and installed behind the rear wheels.

Y__N__

FUEL TANK ENCLOSURE

The fuel tank and entrance steps shall be left as they came from the chassis manufacturer.

Y__N__

BATTERY BOX ENCLOSURE

The battery box enclosure and entrance steps shall be left as they came from the chassis manufacturer.

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TOW EYE

A 3/4" x 6" single painted rear tow eye will be installed at the rear of the unit, under the rear dump and attached directly to the chassis frame. It shall be surrounded by a rubber boot and trimmed with a 16 gauge stainless steel frame assembly.

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ELECTRICAL SYSTEM

Wiring harnesses shall be the automotive type, engineered specifically for the builder's apparatus, and shall meet the following criteria. Under no circumstances shall diodes, resistors, or fusible links be located within the wiring harness. All such components shall be located in an easy to access wiring junction box or the main circuit breaker area. All wiring shall meet white book, baseline advanced design transit coach specification and Society of Automotive Engineers recommended practices. It shall be stranded copper wire core with cross linked polyethylene insulation complying with SAE specification J1128. Each wire shall be hot stamp function coded every three inches starting one inch from the end and continuing throughout the entire harness. In addition to function coding, each wire shall be number, color, and gauge coded.

Wire harnesses shall be wrapped with a high abrasion and chemical resistant thermoplastic polyester elastomer coated polyester yarn for braiding constructions of electrical wiring systems. The braid yarn shall have a minimum tensile strength of 15 lbs. before breaking and have a maximum of 20% elongation before breaking. Temperature properties for the yarn shall range from a minimum 280°F (138°C) service temperature to a maximum -112°F (-80°C) brittleness temperature with a cold flex tolerance of at least -49°F (-45°C).

Harnesses shall be modular in design; a main harness system subdivided into several smaller sub-harnesses. The harness subsections shall be connected using Deutsch branded, heavy duty, environmentally sealed, connectors with silicone seals and a rear insertion/removal contact system. For isolation of electrical "zones" the harness subsections shall consist of a main harness, a pump harness with a separate pump gauge panel harness, a left body harness with a separate left compartment harness, a right body harness with a separate right compartment harness, and a rear body harness with two separate rear compartment harnesses.

The main harness and three body harnesses shall interconnect at a central, easy to reach location and their connectors shall not be obstructed by other harnesses or fuel/air lines. In addition, the main and body harness connectors shall be color coded for ease of identification with their respective colors noted on the accompanying electrical diagrams.

Where connectors are not provided by the electrical component manufacturer, all 12 volt lights and other electrical components (excluding rocker and toggle switches) shall connect to the harnesses using Deutsch brand connectors; butt connectors are considered unacceptable.

All Deutsch connectors shall meet the following criteria:

- All connectors shall have a minimum IP67 rating.
- Temperature range from -67°F (-55°C) to 257°F (125°C) continuous at rated current.
- Only solid contacts will be used. Stamped and formed contacts are unacceptable.
- All contacts shall be soldered unless a crimping tool or machine is used that gives an even

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- and precise pressure for the terminal being used.
- All contacts shall be pull-tested to insure their integrity.

V-MUX ELECTRICAL MANAGEMENT SYSTEM

The apparatus shall be equipped with a V-MUX Multiplex System. There are several key benefits to multiplexing, one is to reduce the number of connections in a vehicles electrical system, because of this it is important to limit the amount of modules that control certain functions of the vehicle.

Outputs:

The outputs shall perform all the following items without added modules to perform any of the tasks:

1. Load Shedding: The System shall have the capability to Load Shed with 8 levels any output. This means you can specify which outputs (barring NFPA restrictions) you would like Load Shed. Level 1 12.9v, Level 2 12.5V, Level 3 - 12.1V, Level 4 - 11.7V, Level 5 11.3V, Level 6 10.9V, Level 7 10.5, Level 8 10.1. Unlike conventional load shedding devices you can assign a level to any or all outputs. No add-on modules shall be acceptable; the module with the outputs must perform this function.
2. Load Sequencing: The System shall be able to sequence from 0 8 levels any output. With 0 being no delay and 1 being a 1 second delay, 2 being a 2 second delay and so on. Sequencing reduces the amount of voltage spikes and drops on your vehicle, and can help limit damage to your charging system. No add-on modules shall be acceptable; the module with the outputs must perform this function.
3. Output Device: The System shall have solid-state output devices. Each solid-state output shall be a MOS-FET (Metal Oxide Semiconductor - Field Effect Transistors); MOS-FETs are solid-state devices with no moving parts to wear out. A typical relay when loaded to spec has a life of 100,000 cycles. The life of a FET is more than 100 times that of a relay. No add-on modules shall be acceptable; the module with the outputs must perform this function.
4. Flashing Outputs: The System shall be able to flash any output in either A or B phase, and logic is used to shut down needed outputs in park, or any one of several combined interlocks. The flash rate can be selected at either 80, or 160 FPM. This means any light can be specified with a multiplex truck with no need to add flashers. Flashing outputs can also be used to warn of problems. No add-on modules shall be acceptable; the module with the outputs must perform this function.
5. PWM: The modules shall have the ability to PWM at some outputs so that a Headlight PWM module is not needed. No add-on modules shall be acceptable; the module with the outputs must perform this function.
6. Diagnostics: An output shall be able to detect either a short or open circuit.

Inputs:

1. The inputs shall have the ability to switch by a ground or battery signal.
2. The inputs shall be filtered for noise suppression via hardware and software so that RF or dirty power will not trick an input into changing its status.

System Network:

The Multiplex system shall contain a Peer-to-Peer network. A Master Slave Type network is not suitable for the Fire/Rescue industry. A Peer-to-Peer network means that all the modules are equal on the network; a Master is not needed to tell other nodes when to talk.

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System Reliability:

The Multiplex system shall be able to perform in extreme temperature conditions, from -40° to +85° C (-40° to +185° F.) The system shall be sealed against the environment, moisture, humidity, salt or fluids such as diesel fuel, motor oil or brake fluid. The enclosures shall be rugged to withstand being mounted in various locations or compartments around the vehicle. The modules shall be protected from over voltage and reverse polarity.

The electrical system will incorporate a master disconnect switch which will be mounted separately from the switch panel (next to the driver's seat). A green battery indicator light will be provided in the chassis cab visible to the driver to indicate when it is in the "on" position. When "off" the batteries will remain connected to the starter but all the power will be off to the rest of the unit.

All electrical and electronic components shall be selected and installed to minimize electrical loads and comply with NFPA #1901 (2009 revision) standards along with testing procedures as described below:

The following tests shall be performed in this order. Before each test, the batteries shall be fully charged until the voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for 10 minutes.

TEST #1. RESERVE CAPACITY TEST:

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged.

The engine shall be shut off and the minimum continuous electrical load shall be activated for 10 minutes.

All electrical loads shall be turned off prior to attempting to restart the engine.

The battery system shall then be capable of restarting the engine.

Failure to restart the engine shall be considered a test failure.

TEST #2. ALTERNATOR PERFORMANCE TEST AT IDLE:

The minimum continuous electrical load shall be activated with the engine running at idle speed.

The engine temperature shall be stabilized at normal operating temperature.

The battery system shall be tested to detect the presence of a battery discharge current.

The detection of battery discharge current shall be considered a test failure.

TEST #3. ALTERNATOR PERFORMANCE TEST AT FULL LOAD:

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed.

The test duration shall be a minimum of 2 hours.

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Activation of the load management system shall be permitted during this test.

An alarm sounded by excessive battery discharge, as detected by the system, or a system voltage of less than 11.8 V dc for a 12 V nominal system or 23.6 V dc for a 24 V nominal system, for more than 120 seconds, shall be considered a test failure.

TEST #4. LOW VOLTAGE ALARM TEST:

Following completion of the above tests, the engine shall be shut off.

With the engine shut off, the total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates.

The battery voltage shall be measured at the battery terminals.

The test shall be considered a failure if the alarm has not yet sounded 140 seconds after voltage drops to 11.7 V for a 12 V nominal system or 23.4 V for a 24 V nominal system.

The battery system shall then be able to restart the engine.

Failure to restart the engine shall be considered a test failure.

At the time of delivery, documentation shall be provided with the following information:

- (1) Documentation of the electrical system performance tests.
- (2) A written load analysis, including the following:
 - (a) The nameplate rating of the alternator
 - (b) The alternator rating under the conditions specified in NFPA 13.3.2
 - (c) Each of the component loads specified in 13.3.3 that make up the minimum continuous electrical load
 - (d) Additional electrical loads that, when added to the minimum continuous electrical load, determine the total continuous electrical load
 - (e) Each individual intermittent electrical load

Y__N__

VEHICLE DATA RECORDER

The apparatus shall be equipped with a Weldon, Vehicle Data Recorder (VDR) that collects essential data for department training needs.

PRODUCT FEATURES:

- 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.
- Password Protected by the customer
- Six (6) seat position inputs for occupied and belts buckled. Additional six (6) seat expansion module available (p/n 6020-0000-00)

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- Easily interfaces with traditional wiring, V-MUX™ or other multiplexing systems
- Data is extracted by a standard, mini USB cable
- Use in conjunction with the Occupant Restraint Indicator or V-MUX™ multiplex system

Y__N__

SEAT BELT WARNING SYSTEM

The apparatus shall be equipped with a Weldon, Occupant Restraint Indicator system to alert driver and officer where restraints of occupied seats are properly fastened keeping personnel safe.

PRODUCT FEATURES:

- Low profile, compact size
- Supports commercial and custom cab seating layouts; up to 12 seats
- Dimming feature adjusts indicator intensity to synchronize with dash lights
- Built-in audible alarm
- Standard 4 year warranty
- Use in conjunction with Vehicle Data Recorder (VDR)

Y__N__

CAB DASH

The rocker switch panels, electronic siren and required N.F.P.A. warning lights shall all be located within the chassis cab dash area, placed where applicable.

Y__N__

ELECTRICAL OUTLET

One (1) 120v electrical outlet shall be provided and installed in the chassis cab, under the bench seat.

Y__N__

ELECTRICAL SYSTEM SCHEMATICS

Two (2) complete electrical system schematics diagramming each individual circuit shall be provided upon delivery of the apparatus.

Y__N__

POWER STRIP

A Furman Sound 5-place 120v Pluglock power strip shall be provided and mounted under the passenger seat.

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Y__N__

EMI/RFI PROTECTION

Apparatus design and construction shall incorporate the latest designs in incorporating Electromagnetic Interference Suppression, which is required to satisfy the radiation limits specified in SAE (Standard for Automotive Excellence) J551, "Performance Levels and Methods of Measurement of Electromagnetic Radiation from vehicles and devices (30-1000 MHz), and of which has been adopted by NFPA 1901. System design and components used shall insure that radiated and conducted electromagnetic interference (EMI) and radio frequency interference (RFI) emissions are suppressed at the source.

The apparatus proposed shall have the ability to operate in the electromagnetic environment typically found in fire ground operations.

EMI/RFI susceptibility shall be controlled by applying immune circuit designs, shielding, twisted pair wiring, and filtering. The electrical system shall be designed for full compatibility with low level control signals and high powered two (2) way radio communication systems. Harness and cable routing shall be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

In order to fully prevent radio frequency interference (RFI), the purchaser shall provide a listing of the type, power output, and frequencies of all radio and bio medical equipment that is proposed to be used on the apparatus.

Y__N__

POWER AND GROUND STUDS

A 100 amp battery direct stud shall be provided under the passenger seat.

A 100 amp ignition on battery stud shall be provided under the passenger seat.

One (1) body / battery ground stud shall be provided under the passenger seat.

Y__N__

ANTENNA INSTALLATION

Install department supplied antenna mount on the chassis cab roof. The coax shall run from the antenna mount to beneath the passenger seat.

Y__N__

WARNING SYSTEMS

Clearance/Marker/Identification lights and reflectors will be installed according to DOT regulations.

At the rear of the apparatus three (3) mini red LED lights will be installed on the rear with one on the center line and lights spaced 6"-12" apart. Two (2) additional mini red LED lights will be installed as far apart as possible to show the overall width of the apparatus.

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Red combination LED reflector/marker lights will be surface mounted in the lower rear side body section.

Red reflectors will be installed on the rear tailboard as far apart as possible. The front (amber) reflectors will be incorporated in the turn signals and midpoint amber reflectors will be installed on each side of the body.

Y__N__

STOP/TURN/BACK-UP LIGHTS

Stop-Tail Light(s):

Two (2) Whelen #600 series, red LED stop-tail lights shall be mounted, one (1) each side at the rear of the apparatus.

Directional Light(s):

Two (2) Whelen #600 series, amber LED directional lights shall be mounted, one (1) each side at the rear of the apparatus.

Back-Up Light(s):

Two (2) Whelen #600 series, clear LED back-up lights shall be mounted, one (1) each side at the rear of the apparatus and wired to the reverse gear.

The above lights shall be housed in Whelen #PLAST4V, chrome plated housings.

Y__N__

BACK-UP ALARM

One (1) back-up alarm shall be installed and wired to the reverse gear. It shall meet the Type D (87 db) minimum requirements of SAE J994 and NFPA 1901.

Y__N__

HAZARD LIGHT

A red flashing LED light, located in the driving compartment, shall be illuminated automatically whenever the apparatus's parking brake is not fully engaged and any of the following conditions exist:

- (1) Any passenger or equipment compartment door is open.
- (2) Any ladder or equipment rack is not in the stowed position.
- (3) Powered light tower is extended (if applicable).
- (4) Any other device is opened, extended, or deployed that creates a hazard or is likely to cause damage to the apparatus if the apparatus is moved.

The light shall be marked "**DO NOT MOVE APPARATUS WHEN LIGHT IS ON**".

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Y__N__

MID-POINT DIRECTIONAL LIGHTS

Two (2) Sound Off Signal amber LED directional/running lights shall be provided midway along the apparatus, one (1) each side, at approximately running board height.

Y__N__

LICENSE PLATE HOLDER

A Cast Products #LP0005-1-A, surface mount LED lighted license plate holder shall be provided at the rear of the apparatus. The holder shall be of cast aluminum construction with bright finish edges.

Y__N__

ELECTRONIC SIREN

A Whelen #295SLSA1, electronic siren shall be provided and located in a location convenient to the driver and officer. The siren shall include Radio Rebroadcast, Public Address, Manual, Wail, Yelp, Air horn and Piercer Tones. A pre-wired noise cancelling microphone shall be supplied on the siren head.

Y__N__

SPEAKER

One (1) Whelen #SA315P, 100 watt speaker shall be provided and installed at the front of the apparatus, in the front bumper assembly.

Y__N__

REAR SCENE LIGHTS

Two (2) FRC #SPA900-Q70, LED scene lights will be mounted one (1) each side, at the rear of the apparatus. They will be wired to the reverse gear and be used with the back-up lights. There will be an override switch located on the rocker switch panel in the cab to activate the rear scene lights when the unit is not in the reverse gear.

Y__N__

SIDE SCENE LIGHTS (CENTER)

Two (2) FRC #SPA900-Q70, LED scene lights mounted one (1) each side of the hose bed (centered) will be provided and controlled individually from the master console in the cab.

Y__N__

GROUND/STEP LIGHTS

Four (4) clear LED underbody lights shall be supplied to provide illumination on the ground in areas designed for personnel to climb onto the apparatus. The lights will be controlled automatically by use of the chassis parking brake.

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The lights shall be positioned as follows:

- : Two (2) lights will be installed under the side compartments, one (1) each side.
- : Two (2) lights will be installed under the rear tailboard assembly, one (1) each side.

All of these lights shall be mounted so as to be fully enclosed and not to expose any wiring.

Y__N__

REAR PLATFORM WORK LIGHTS

Two (2) 4" clear LED lights will be mounted in the rear beaver tail assembly pointing towards the center over the rear tailboard area as "work lights". The lights will be activated when the parking brake is set.

Y__N__

CAB ENTRY/EXIT LIGHTING

One (1) clear LED light shall be mounted beneath each door step. These lights shall be mounted on an approximate 30 degree angle to provide illumination on areas under the driver and crew riding area exits. All cab entry/exit lights will automatically activate when any of the chassis doors are opened.

Y__N__

COMPARTMENT LIGHTING (ROM-LED)

The compartment lighting will be an integral part of the door track on each side of the door. Each compartment door will have LED lights spaced apart evenly to distribute light throughout the compartments. The lights will illuminate when the door is opened.

Y__N__

ENGINE COMPARTMENT LIGHT

One (1) switched LED light shall be provided and installed inside the engine compartment. This is to provide lighting for vehicle maintenance.

Y__N__

AIR HORNS

One (1) pair of Air Horns of Texas #FTH, emergency tone air horns shall be supplied and installed one (1) each side of the chassis cab hood assembly. The air horns shall be mounted with the manufacturer supplied mounting brackets.

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Y__N__

AIR HORN - LANYARD CONTROL

The air horns shall be controlled by a "Y-chain" lanyard, conveniently located for both the driver and officer.

Y__N__

AIR PROTECTION VALVE

An air pressure protection valve shall be installed which prevents the use of air horns or other air operated accessories when the brake system air pressure drops below 80 psi, per NFPA standards.

Y__N__

AIR COMPRESSOR / BATTERY CHARGER

A Kussmaul #091-53-12-REMOTE-B1-S-KIT, 120v air compressor / battery charger equipped with a remote LED display repeating the charger readout will be installed to maintain the apparatus's batteries and air tanks while the truck is not in use. A 20 amp super auto eject receptacle shall be included to release the plug automatically upon energizing of the starter solenoid. The receptacle shall be installed beneath the driver's door and be protected by a weatherproof spring loaded cover plate.

Y__N__

TRAFFIC ADVISOR

One (1) Whelen #TAL65, 36" LED light traffic advisor shall be provided and installed at the rear of the apparatus. The unit shall be controlled from a control unit which is to be mounted in the chassis cab.

Y__N__

BACK-UP CAMERA

A Zone Defense, rear vision camera system will be provided to allow the driver to visually see the rear of the apparatus while in the cab. The system will include a 7" color LCD monitor mounted adjacent to the driver and a camera that will be mounted at the rear of the apparatus. The system shall be connected to the reverse gear of the vehicle and shall turn on when the vehicle is put in reverse. An integral microphone and speaker system will permit voice communication to the driver from the back-up advisor.

Y__N__

WATER LEVEL GAUGE - FRC (REAR)

A Fire Research, TANKVISION water level gauge, shall monitor the water tank level and shall be mounted at the rear of the apparatus. It shall be equipped with ultra bright LEDs for sunlight readability and uses 2 sophisticatedly designed wide-viewing lens for 180 degrees of clear viewing. When the water level reaches less than 25%, the LEDs begins to flash to indicate refill. This unit is equipped with a self-calibration feature which allows the gauge to be used with any tank configuration or material.

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Y__N__

WATER LEVEL GAUGE - FRC (PUMP PANEL)

An additional FRC, TANKVISION gauge shall be provided and mounted on the pump operator's panel, to monitor the water tank level.

Y__N__

NFPA CERTIFIED LIGHTING REQUIREMENTS

The optical warning system on the fire apparatus shall be capable of two (2) separate signaling modes during emergency operations. The first mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is **CALLING** for the "Right-Of-Way". The second mode shall signal that the apparatus is stopped and is **BLOCKING** the "Right-Of-Way".

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

Y__N__

WHELEN - NFPA CERTIFIED LED LIGHTING PACKAGE

ZONE A UPPER

One (1) Whelen #F4N2VLED, 55" NFPA Edge Freedom IV LED light bar is to be mounted on the cab roof. As required by N.F.P.A. Pamphlet #1901, the clear sections will automatically turn off when the blocking right-of-way mode.

ZONE A LOWER

Two (2) Whelen #60R02FCR, 600 series, red with clear lenses Super-LED warning lights with chrome flanges shall be mounted in the chassis grill, one (1) each side. They shall be installed with stainless steel backing plates.

ZONE B UPPER

Two (2) Whelen #90R02FCR, 900 series, red with clear lenses Super-LED warning lights with chrome flanges shall be mounted on the upper hose bed {one (1) forward and one (1) rearward}.

ZONE B LOWER

Three (3) Whelen #60R02FCR, 600 series, red with clear lenses Super-LED warning lights with chrome flanges shall be affixed, one (1) between the front wheel and the front of the vehicle, one (1) in front of the rear wheels (mid-body area) and one (1) to the side body panels, behind the rear wheels.

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ZONE C UPPER

Two (2) Whelen #B6LED series, combination Super-LED beacon and 700 series Super-LED warning lights shall be provided on light pedestals, one (1) each side, at the upper rear sides of the apparatus. The light pedestals will be fully enclosed so as not to expose wiring.

The beacon lights shall be red with clear lenses. The left side 700 LED warning light shall be red with clear lens and the right side 700 LED warning light shall be blue with clear lens.

ZONE C LOWER

Two (2) Whelen #60R02FCR, 600 series, red with clear lenses Super-LED warning lights shall be affixed, one (1) each side, to the rear of the apparatus.

ZONE D UPPER

Two (2) Whelen #90R02FCR, 900 series, red with clear lenses Super-LED warning lights with chrome flanges shall be mounted on the upper hose bed {one (1) forward and one (1) rearward}.

ZONE D LOWER

Three (3) Whelen #60R02FCR, 600 series, red with clear lenses Super-LED warning lights with chrome flanges shall be affixed, one (1) between the front wheel and the front of the vehicle, one (1) in front of the rear wheels (mid-body area) and one (1) to the side body panels, behind the rear wheels.

Y__N__

PORTABLE PUMP

A Darley model 1-1/2AGE 21H, high pressure, low volume, gear driven, engine mounted portable pump shall be provided in the streetside compartment.

ENGINE

Honda GX 630: 4 cycle, 21 HP, V-twin, OHV, replaceable oil filter, 38.5 cu. in. displacement, 12-volt starter, 20 amp regulated alternator, 6 gal. fuel tank, hose and adapter.

FEATURES

- Aluminum alloy casing
- Discharge valve
- Sulfuric anodized aluminum alloy gear case and engine adapter
- Bronze impeller and wear ring
- Mechanical seal
- Built-in discharge check valve
- Adjustable discharge valve
- Exhaust primer
- 2" NPT suction
- 2-1½" NPT discharge

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DIMENSIONS:

24" L x 24" W x 23" H, 145 lbs.

Y__N__

PORTABLE PUMP INSTALLATION

The pump will be permanently mounted in the streetside compartment in such a manner to allow easy removal and service. Engine exhaust, engine oil and pump drain shall be routed through the compartment floor or wall(s). The fuel tank will be mounted in a location selected for convenience and safety.

A 12 volt electric fan shall be installed in the streetside compartment to help exhaust engine heat. The fan shall operate automatically when the compartment door is opened.

The electric starter on the pump shall be connected to the chassis electric system, heavy duty cables and grounding will be used.

One (1) tank to pump line shall be provided and equipped with a 3" air operated butterfly valve. The butterfly valve shall be actuated by a switch located in the pump compartment (L1). It shall have two (2) indicator lights that show when the butterfly valve is in either the open or closed position. The piping will be a combination of stainless steel and reinforced rubber hose to reduce vibration. A drain valve shall be installed at the lowest point of the piping.

Y__N__

FUEL TANK

A 6 gallon fuel tank shall be provided and mounted in the curbside compartment (R1). It shall be equipped with a hand bulb type primer near the portable pump in streetside compartment (L1).

Y__N__

PORTABLE PUMP DISCHARGES

One (1) 1-1/2" discharge shall be provided in the streetside compartment (L1). The discharge valve shall be an Akron 1-1/2", 1/4 turn, full-flow, drop-out, self-locking type. The 1-1/2" outlet shall be equipped with chrome plated 1-1/2" NSTM end with cap and chain.

One (1) 1-1/2" discharge shall be provided in the curbside compartment (R1). The discharge valve shall be an Akron 1-1/2", 1/4 turn, full-flow, drop-out, self-locking type. The 1-1/2" outlet shall be equipped with chrome plated 1-1/2" NSTM end with cap and chain.

Y__N__

PUMP PIPING

All piping for the pump assembly will be heavy duty stainless steel or Class 1 reinforced rubber hose.

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In order to minimize friction loss only sweep type elbows will be used. Where vibration or chassis flexing may cause damage or loosen piping, victaulic or rubber couplings will be utilized to eliminate this possibility.

Wherever threaded joints are used the sealing compound will be of the non-hardening type to insure ease of removal for repair or replacement of couplings.

All lines will drain through either the master drain valve or will be equipped with individual drain valves. One (1) individual drain valve will be installed for each gated suction or discharge 2-1/2" or larger in size.

The entire pump assembly, including all valves, piping and suction lines will be subjected to a hydrostatic test consisting of both a pressure and a vacuum test. The vacuum test consists of developing a vacuum of 22 in. HG (74.5 kPa) and holding for 5 minutes without losing more than 10 in. of vacuum.

Y__N__

PUMP RECIRCULATING LINE

A constant 3/8" recirculating line shall be provided. It shall be equipped with a spring loaded check valve at the tank so the line can be drained in winter. With the check valve a shut off valve is not needed so if the pump turns it will circulate water.

Y__N__

2-1/2" PRESSURE GAUGE

One (1) 2-1/2", 0-400 psi, pressure gauge shall be provided on the pump discharge. The gauge shall be equipped with a white face and black lettering.

Y__N__

MASTER DRAIN

All drainage shall be through one (1) master drain.

Y__N__

COLOR CODED IDENTIFICATION PLATES

Each control valve, gauge and discharge outlet shall be labeled with a color coded identification plate. For standardization, color coding shall be in accordance with the recommendations of NFPA Pamphlet #1901.

Y__N__

N.F.P.A. TAG REQUIREMENTS

A permanent plate in the driving compartment specifying the quantity and type of the following fluids (when applicable) used in the vehicle:

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- (1) Engine oil
- (2) Engine coolant
- (3) Chassis transmission fluid
- (4) Pump transmission lubrication fluid
- (5) Pump priming system fluid, if applicable
- (6) Drive axle(s) lubrication fluid
- (7) Air conditioning refrigerant
- (8) Air conditioning lubrication oil
- (9) Power steering fluid
- (10) Cab tilt mechanism fluid
- (11) Transfer case fluid
- (12) Equipment rack fluid
- (13) CAFS air compressor system lubricant
- (14) Generator system lubricant
- (15) Front tire cold pressure
- (16) Rear tire cold pressure
- (17) Maximum tire speed ratings

An accident prevention sign that states "**OVERALL HEIGHT ____**" **AND LENGTH OF APPARATUS ____**" shall be provided and located in the chassis cab area that is visible to the driver.

An accident prevention sign that states "**GVWR**" shall be provided and located in the chassis cab area that is visible to the driver.

An accident prevention sign that states "**MAXIMUM SEATING CAPACITY "___**" shall be provided and located in the chassis cab in an area that is visible to the driver.

An accident prevention sign that states "**OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION**" shall be provided and located in the chassis cab in an area that is visible to each seated position.

An accident prevention sign that states "**DO NOT WEAR HELMET WHILE SEATED**" shall be provided and located in the chassis cab in an area that is visible from each seated position.

One "Final Stage Label" shall be attached to the driver's side door jam. The label shall certify that the complete vehicle conforms to the federal motor vehicle safety standards, which have been previously fully certified by the incomplete vehicle manufacture or by the intermediate vehicle manufacture and have not been affected by the final stage manufacture.

A warning label that states "**WARNING: DEATH OR SERIOUS INJURY MAY OCCUR if proper operating procedures are not followed. The pump operator and all individuals connecting supply or discharge hoses must be familiar with operator manual, water hydraulics hazards, and component limitations.**" shall be provided and located on the pump operator's panel.

Two (2) accident prevention signs that states "**DANGER: DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION DEATH OR SERIOUS INJURY MAY RESULT**" shall be provided and installed one (1) each side at the rear of the apparatus.

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Y___N___

NFPA 1901-2009 COMPLIANCE TESTS

VEHICLE STABILITY:

When the fire apparatus is loaded to its estimated in-service weight, the height of the vehicle's center of gravity (CG) shall not exceed 80 percent of the rear axle track width or the vehicle will be equipped with electronic stability control (ESC).

WEIGHT DISTRIBUTION:

When the fire apparatus is loaded to its estimated in-service weight, the front-to-rear weight distribution of the apparatus as defined in Section 12.1 shall be within the limits set by the chassis manufacturer.

The front axle loads shall not be less than the minimum axle loads specified by the chassis manufacturer under full load and all other loading conditions.

LOAD DISTRIBUTION:

Using the information supplied by the purchaser, the apparatus manufacturer shall calculate the load distribution for the apparatus.

The manufacturer shall engineer the fire apparatus to comply with the gross axle weight ratings (GAWR), the overall gross vehicle weight rating (GVWR), and the chassis manufacturer's load balance guidelines.

The fire apparatus, as supplied by the manufacturer, shall have a side-to-side tire load variation of no more than 7 percent of the total tire load for that axle or the limits allowed by the axle or component manufacturer.

Each tire shall be equipped with a visual indicator or monitoring system that indicates tire pressure.

APPARATUS PERFORMANCE:

The apparatus shall meet the requirements of this standard at elevations of 2000 ft (600 m) above sea level.

The apparatus shall meet all the requirements of this standard while stationary on a grade of 6 percent in any direction.

The apparatus shall meet requirements of this standard in ambient temperature conditions between 32 degrees F (0 degrees C) and 110 degrees F (43 degrees C).

ROADABILITY:

The apparatus, when fully equipped and loaded as defined in Section 12.1, shall be capable of the following performance while on dry, paved roads in good condition:

- (3) From a standing start, the apparatus shall be able to attain a speed of 35 mph (55 km/hr) within 25 seconds on a level road.

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- (4) The apparatus shall be able to attain a minimum top speed of 50 mph (80 km/hr) on a level road.
- (5) The apparatus shall be able to maintain a speed of at least 20 mph (30 km/hr) on any grade up to and including 6 percent.

If the combined water tank and foam agent tank capacities exceed 1250 gallons the maximum top speed of the apparatus shall not exceed 60 mph.

SERVICEABILITY:

The apparatus shall be designed so that all the manufacturer's recommended routine maintenance checks of lubricant and fluid levels can be performed by the operator without lifting the cab of a tilt-cab apparatus or without the need for hand tools.

Where special tools are required for routine service on any component of the apparatus, such tools shall be provided with the apparatus.

Apparatus components that interfere with repair or removal of other major components shall be attached with fasteners, such as cap screws and nuts, so that the components can be removed and installed with ordinary hand tools. These components shall not be welded or otherwise permanently secured into place.

ROAD TESTS:

Road tests shall be conducted in accordance with Section 4.17 to verify that the completed apparatus is capable of compliance with Section 4.15.

The tests shall be conducted at a location and in a manner that does not violate local, state or provincial, or federal traffic laws.

The tests shall be conducted on dry, level, paved roads that are in good condition.

The apparatus shall be fully equipped and loaded as required in Section 12.1.

The engine shall not be operated in excess of the maximum governed speed.

Acceleration tests shall consist of two runs in opposite directions over the same route.

The fire apparatus shall attain a speed of 35 mph (55 km/hr) from a standing start within 25 seconds.

The fire apparatus shall attain a minimum top speed of 50 mph (80 km/hr).

If the apparatus is equipped with an auxiliary braking system, the manufacturer shall road test the system to confirm that the system is functioning as intended by the auxiliary braking system manufacturer.

If the apparatus is equipped with an air brake system, the service brakes shall bring the apparatus, when loaded to its maximum in service weight, to a complete stop from an initial speed of 20 mph

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(32.2 km/hr), in a distance not exceeding 35 ft (10.7 m) by actual measurement on a paved, level, dry surface road that is free of loose material, oil, or grease.

Y__N__

ADDITIONAL EQUIPMENT - TO BE SUPPLIED

Y__N__

WHEEL CHOCKS (COLLAPSIBLE)

One (1) pair of Zico #SAC-44 collapsible wheel chocks shall be supplied and installed in front of the streetside wheels (under the compartment assembly) complete with mounting brackets.

Y__N__

SPANNER WRENCH SETS

One (1) double holder spanner wrench set shall be provided and installed at the rear of the apparatus.

One (1) double holder storz spanner wrench set shall be provided and installed at the rear of the apparatus.

Y__N__

AXE (PICK HEAD)

One (1) 6 lb pick head axe with a fiberglass handle and mounting brackets shall be provided and mounted to the ceiling of compartment R1.

Y__N__

24' EXTENSION LADDER

One (1) Duo-Safety #900-A, 24' aluminum 2-section, extension ladder shall be provided.

Y__N__

FOL-DA-TANK

One (1) 3000 gallon, 22 oz., yellow HPR, Fol-Da-Tank shall be supplied with the delivery of the apparatus. It shall come equipped with an aluminum frame, two (2) drain sleeves and inside lifting handles.

Two (2) sets of quick tank connectors shall be provided.

Y__N__

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DEALER SUPPLIED LOOSE EQUIPMENT

Y__N__

1. Four (4) 50ft Long 1 3/4" single wall all rubber Fire hose with 1 1/2" NH connections
Two Red and Two Yellow in color.

Y__N__

2. Two (2) 25ft Long 1 3/4" single wall all rubber Fire hose with 1 1/2" NH connections
One Red and one Yellow in color.

Y__N__

3. Two (2) Akron Turbo Jet 1 1/2" Pistol Grip Nozzles with adjustable GPM from 30 to 60
to 90 to 120 GPM.