SPECIFICATIONS FOR 3,000 GALLON HAWK QP TANKER/PUMPER DEMO UNIT #2
NEW ENGLAND FIRE EQUIPMENT & APPARATUS
10 STILLMAN RD
NORTH HAVEN, CT 06473
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2. WATER TANK

2.1 The **3,000 Gallon Tank** shall be round and constructed of ¼" 5454 polished aluminum wraps with 5/16" heads. There shall be an additional ¼" wrap on the underside of the tank to supply additional strength. The tank sub frame will be welded to this ½" thick area as well as the compartment sub frames. Y_x__ N__

The 5/16" heads shall be dished and flanged. The heads and seams shall be fully welded inside and out. A 15-minute, 10 psi pressure leak test will be conducted on the tank.

The interior shall have full baffles and 3 x 3 x ⅜ rolled angle reinforcing rings. The purpose of this construction is to reinforce the tank against the vacuum forces yet give a smooth external surface for easier cleaning and maintenance.

2.2 The interior of the tank shall contain two (2) nine-pound anode bars for electrolysis protection. Y_x__ N__

2.3 There shall be one (1) *Liquid Level Indicator* with four (4) five light legends mounted, one (1) on the Driver Side Pump Panel, one (1) on the Officer Side Valve House, one (1) on the Rear above the Dump/Fill Port, and one (1) mini in the cab. Y_x__ N__

2.4 There shall be one (1) *Primary Shut Off* in the hatch lid which extends inside the water tank to keep water out of Vacuum/Pressure Pump. It shall have a clamp on Buna Ball Seat, Stainless Steel Ball, and 4" Air Lines. Y_x__ N__

2.5 There shall be one (1) *Secondary Shut Off* outside the water tank as added protection. It shall provide centrifugal action and have an ¾" brass ball accessible valve for ease of drainage. It shall have a clamp on Buna Ball Seat, Stainless Steel Ball, and 4" Air Lines. Y_x__ N__

2.6 There shall be two (2) pressure relief valves measuring 1½" installed in the air system. One (1) 2" automatic pressure relief valve shall be installed in top hatch ring. Y_x__ N__

2.7 A glycerin filled Vacuum/Pressure Gauge shall be installed. The gauge shall be in the cab, plainly visible from the Driver Seat. Y_x__ N__

2.8 The Tank Baffles shall be designed specifically for fire service. They shall be symmetrically preformed, possessing angular surfaces that redirect unidirectional forces acting to produce balanced component forces acting in multiple directions. Their ratio of depth to diameter must be capable of reducing the destabilizing influence on the control of the vehicle while transporting water under emergency conditions. The ratio must be a minimum of 6.6 to 1. The baffles shall be placed antipodally to one another and so designed to reinforce the tank against the vacuum forces placed upon it. They shall be cross, longitudinal, and properly open so as not to restrict water flow rates. Flat reinforced baffles are not acceptable. Y_x__ N__

2.9 The Relief Vent System must be internal, concealed, and permit the closed tank to be adequately vented when being loaded from an auxiliary source. It shall allow the tank to fill completely. The vent discharge must be located so as not to interfere with fire operations. The vent system shall consist of a conduit originating inside and perpendicular to the top level of the tank with the uppermost edge being 2" higher than the upper edge of the tank which will act as an overflow weir and permit the tank to fill completely. The conduit then slopes permitting the second end of the overfill relief system to end perpendicular temper and protect from freezing any water within this conduit. A valve that is electrically controlled in the cab serves to permit drainage of water in the conduit and continuous venting when being loaded by external pressure sources. The valve is automatically opened when the fire pump is engaged. This system is to be capable of withstanding full vacuum and isolating the tank interior from the environment permitting a vacuum to be drawn during vacuum operations. Y_x__ N__

2.10 A 20" diameter "manway" access hatch shall be located on the top front of the tank. A rubber seal ring will provide a positive seal for the lid. It shall be capable of withstanding full vacuum. The hatch cover shall not extend above the tank surface more than 6". There shall be a support plate between the front seam of the tank and manway for additional strength and installation of the level indicator probe. The manway shall be for maintenance purposes only. The remainder of the vacuum system shall be designed to allow all operations to be to be performed from ground level. Y_x__ N__

There shall be a second hatch, a 12" Lo-Pro Primary, located forward of the 20" manway.

2.11 The Tank Sub-Frame shall be constructed of extruded aluminum to fit the contour of the tank and span a 7" wide area on each side of the tank corresponding to the chassis frame rails. They shall be welded to the tank head-to-head to reduce stress cracking. This design shall allow the tank to be "cradled" between these support rails extending the tank below the chassis frame thus providing a lower center of gravity. Y_x__ N__

The Sub-Frame will have an integral rubber insert in the bottom channel to fit between the tank and chassis frame to provide durability and cushion from road stress.

The cabinet and walkway sub frame will also be welded to this ½" thick area of the tank.

2.12 The Water Tank Frame shall be mounted to the chassis frame with two (2) "H" style mounting brackets and one (1) angle iron bracket on each side of the frame. These brackets shall be welded to the tank frame, bolted to the chassis frame, and bolted together with ¾" grade-8 bolts. The two front "H" brackets shall be spring loaded to allow 1½" vertical movement and eliminate undue stress on the water tank. Y_x__ N__

3. VACUUM/PRESSURE SYSTEM

3.1 One (1) *PTO Driven Series VIII Vacuum/Pressure Pump* shall be installed on a shelf in one of the larger lower compartments. It shall be placed so as to provide visibility and serviceability to oil and vane check points. The Vacuum/Pressure Pump produces 512 CFM, shall be shrouded and fan cooled with a continuous duty rating. There shall be a flush system to permit cleaning of the Vacuum Pump. The Vacuum/Pressure Pump shall have a factory preset, tamper proof lubrication pump inside the oil reservoir with no external drippers. It shall have metal oil lines to the front and rear bearings and pump housing so as to provide oil bath lubrication to main bearings and vanes. There shall be eight (8) phenolic, heat resistant vanes. There shall be an oil catch muffler designed to provide centrifugal flow. Y_x__ N__

The pump shall have a five (5) year warranty. The pump must be able to go from vacuum to pressure without having to vent the tank.

3.2 The PTO shall be a *"Clutch Shift"* and components shall have at least a 1.5-to-1 strength factor ratio. Y_x__ N__

3.3 The drive line shall be of 1¼" solid shaft with two (2) pillow block bearings. It shall have a 4-groove pulley with belts which drive a pulley on the Vacuum/Pressure Pump. This belt drive system provides a safety factor for the Vacuum/Pressure Pump. All drive line components shall have a 3-to-1 strength factor ratio. Y_x__ N__

3.4 An Over-Speed System shall be installed to protect against over speeding the Vacuum/Pressure Pump. It shall limit engagement RPM and shut down the Vacuum Pump if the pre-selected RPM is exceeded. Y_x__ N__

3.5 There shall be one (1) Centrifugal Action Oil Catch Muffler with a ½" Brass Ball Drain Valve installed in the Vacuum/Pressure System. Y_x__ N__

3.6 There shall be one (1) ¼" flush valve installed on the Vacuum/Pressure System for pump cleaning and maintenance. Y_x__ N__

3.7 The Vacuum/Pressure Pump shall be electrically controlled and indicated from the cab. ***Air Controls are NOT Acceptable.*** Y_x__ N__

3.8 In the unlikely event the Vacuum/Pressure Electric Actuator System fails, a means of disconnecting the system shall be incorporated so the Vacuum/Pressure Pump can be operated manually. Y_x__ N__

4. VACUUM/PRESSURE DUMP/FILL SYSTEM

4.1 There shall be one (1) 6" Center Rear Water Tank Dump/Fill Port with an air-operated 6" butterfly valve male with aluminum quick couple fitting and one (1) cap. It shall be controlled by a **switch located on the rear** of the apparatus and one in the cab. There shall be a position light indicator for the valve in the cab. Y_x__ N__

4.2 One (1) 8" Tee shall be welded to the lowest area of the center front head of the water tank to provide smooth water flow. The eccentric 6" extensions shall have an interior coat of Firokote™. There shall be two (2) 6" Side Dump/Fill Port with an air-operated 6" butterfly valve with aluminum male quick couple fitting, **which requires no wrenches**. One (1) shall be mounted near the Pump Panel Area on the Driver Side and one (1) opposite of it on the Officer Side. They shall have an Estep degree downward slant. Each shall be constructed as the valves above. Shall be controlled from a **switch at the valve and in the cab**. There shall be a position light indicator for the valve in the cab. Y_x__ N__

*****THERE IS NO CAP FOR SIDE EXTENSIONS*****

4.3 A ¾" valve shall be in each valve tube to relieve water pressure in the hose and provide easier release when disconnection the fittings. Y_x__ N__

4.4 Controls and indicators for the Vacuum System will be located **on a console in the cab** with the following: Y_x__ N__

- **1** - PTO Rocker Switch for Vacuum/Pressure Pump
- **1** - Over Speed Indicator Light
- **1** - Vacuum/Pressure Pump Control Switch with Indicator Lights:
  - Red - Pressure (Unload)
  - Yellow - Neutral
  - Green - Vacuum (Load)
- **1** - Switch for each Air Load/Unload Valve (Open/Closed) with position indicators
  - Green - Open
  - Red - Closed
- **1** - Tank Vent Control Switch with Indicator Light:
  - Green - Open
  - Red - Closed
- **1** - Siren Control with Backlit Switch
- **1** - IC Level Indicator Mini 4 Light

Controls shall be accessible to Driver or Officer. All Vacuum/Pressure Operations will be controlled from inside the cab. All Fire Pump Operations will be controlled from the Driver Side Pump Panel.

4.5 The Valve House Frame shall be constructed of 6061 high strength aluminum angle and box tubing extending to the height of the top of the cross lays. The Valve House Cover is .125 aluminum tread plate. Y_x__ N__

5. FIRE PUMP

5.1 The Fire Pump shall be a Waterous CXSK 1250 GPM, or equal, mid-ship mounted pump with **Heat Exchanger**. It shall include, but not be limited to, the **Trident (Automatic) Air Primer System** and pressure relief built into the Fire Pump and Master Drain with all related controls and accessories. The PTO shall be a *"Clutch Shift*" with pump shift control on the Pump Panel. It shall have *"Pump and Roll"* capabilities. The indicator lights shall be on the Pump Panel and in the cab along with an indicator light for the tank vent. Both lights must be lit before running the Fire Pump. The vent valve will automatically open when Fire Pump is placed in gear. Y_x__ N__

A 12-Port Master Drain located at the lowest point so all lines can be drained at the same time will be installed.

All electric for the Fire Pump is in a Weatherproof Control Box in the Pump Enclosure.

5.2 The Fire Pump shall be tested and certified by a third-party independent testing service to meet NFPA standards and for Insurance Service Office Credits. Y_x__ N__

5.3 There shall be a 6" Female NST to 6" Male Camlock to adapt Fire Pump Suction to Vacuum Hose (4080301). Y_x__ N__

6. FIRE PUMP PLUMBING

All Fire Pump Plumbing Shall be Stainless Steel.

6.1 All Fire Pump Plumbing shall be Schedule-10 Stainless Steel. There shall be one (1) 4" Tank-to-Pump Suction Inlet constructed of stainless-steel plumbing with a rubber flex coupling to allow for flex of stationary mounted pump and movement of tank. There shall be a 4" electric-air controlled butterfly valve with indicator light and control on Pump Panel. Y_x__ N__

6.2 The pump shall be equipped with a mechanical pressure relief. A single bronze variable pressure setting relief valve shall be provided and shall be of ample capacity to prevent an undue pressure rise as per NFPA. The relief valve shall be normally closed and shall open against pump pressure. It shall discharge to suction side of pump. The relief valve control and indicator light shall be mounted on the Driver Side pump panel. Y_x__ N__

6.3 The Pump-to-Tank Refill (*Recirculation*) line shall have stainless steel plumbing and/or flexible braided hose with NPT fittings as plumbing. It shall have a 2" valve with Push/Pull control. Y_x__ N__

6.4 One (1) **Inlet Relief Valve** shall be mounted on the Driver Side Suction-to-Atmosphere under the truck. Y_x__ N__

6.5 There shall be two (3) 2.5" Discharge Valves, two (2) on the Driver Side and one (1) on the Officer Side. There shall also be one (1) 3" Discharge Valve with Combination Storz **(Department to state size)** Fitting on the Officer Side. All such discharge valves shall be controlled by Push/Pull controls on the Pump Panel and have an individual drain for each. Y_x__ N__

6.6 There shall be one (1) 6" Suction with Screen and Cap on each side of the Pump Panel. (With Air-Operated Butterfly Valve) Y_x__ N__

7. PUMP PANEL

7.1 The following shall be furnished and installed on, thru, or behind the: Y_x__ N__

Driver Side Pump Panel:

Panel Lights with Aluminum Shield

Gauges:

- **1** - 4" Diameter Full Scale Master Vacuum
  (0 to -30, 0 to +300 PSI)
- **1** - 4" Diameter Full Scale Master Vacuum and Pressure Gauge
  (0 to -30 Vacuum and 0 to +300 PSI)
- **6** - 2.5" Diameter Pressure Gauges
  (One for each discharge, including Cross Lays)

Above Gauges are Liquid Filled

- **1** - Test Panel Plug

Engine Monitoring Panel with Audible and Visual Warning:

- Engine Oil Pressure Gauge
- Engine Water Temperature Gauge
- Electric Tachometer
- Voltmeter
- Throttle with Locking Style Control

Fire Pump Controls:

- **1** - Tank-to-Pump Suction Electric Switch
- **1** - Push/Pull for Tank Recirculation Line
- **1** - Relief Valve Rotary Wheel Control
- **1** - Master Drain Screw Type Control
- **1** - Trident Air Primer Switch
- **1** - Fire Pump PTO Switch

Discharges and Controls:

- **2** - 2.5" Akron Swing Out Valves with 2.5" NH Cap with Push/Pull controls
- **2** - Cross Lay Pre-Connect with Push/Pull control
- **2** - Officer Side discharges with Push/Pull control
- **1** - 2.5" Pump-to-Tank Refill/Recirculation Valve Push/Pull control

Indicators:

- **1** - Tank Vent Indicator Light (Green)
- **1** - Fire Pump PTO Shift Indicator Light (Green) separate selector switch

BOTH TANK VENT AND FIRE PUMP INDICATOR LIGHTS MUST BE LIT TO PUMP

- **1** - Tank-to-Pump Indicator Light
- **1** - Relief Valve Indicator Light
- **1** - IC Four Light Tank Level Indicator

1 - Trident Automatic Air Primer

1 - 6" NH Suction Inlet with Air Operated Butterfly Valve Screen and Long Handle Cap.

This panel shall be constructed of aluminum, with black coating in the gauge area, and hinged for easy access to pump area.

7.2 The following shall be furnished and installed on, thru, or behind the: Y_x__ N__

Officer Side Pump Panel:

Panel lights with aluminum shield

Discharges:

- **1** - 2.5" Akron Swing Out Valves with 2.5" NH Cap (same as Driver Side)
- **1** - 3" Discharge Valve with Combination Storz **(Department to state size)** Fitting

1 - 6" NH Suction Inlet with Air Operated Butterfly Valve Screen and Long Handle Cap.

This panel shall be constructed of aluminum, with black coating in the gauge area, and hinged for easy access to pump area.

7.3 There shall be polished aluminum trim rings around all pipe and/or fittings passing through the pump panel or any painted or tread plate surfaces. All valves, gauges, controls, etc. shall be color coded to NFPA specifications. Y_x__ N__

7.4 The Fire Pump Enclosure Frame shall be constructed of 1.5" 6061 high strength aluminum box tubing and bolted to the chassis frame rail. It shall rest on a ¾" rubber pad to absorb any harmonic vibrations and will be covered with a .125" aluminum diamond plate. Y_x__ N__

7.5 The Pump Enclosure Cover Panels shall be removable and there shall be a door to access the pump contents and wiring. The right and left side will be the Pump Panel Area. The gauge area will have a black cover to reduce glare. Y_x__ N__

7.6 There shall be a full width step along the bottom of the Fire Pump House Enclosure to assist in retrieval of hoses in the Cross Lays above the Fire Pump House. Y_x__ N__

8. CROSS LAYS

8.1 The Cross Lay area shall be between the cab and the water tank above the Pump Panel. It shall be constructed of .125 aluminum for the sides and the flooring shall be constructed out of 6" Gray All-Weather Plastic Wood decking that are spaced 5/8" apart so water can drain. Y_x__ N__

8.2 Two (2) Cross Lays for 1¾" hose shall have manually operated 2" Swing Out Valves installed on the Pump Manifold. They shall be controlled by Push/Pull levers terminating on the Driver Side Pump Panel. The position of the handles will indicate the position of the valves. The Cross Lays will be pre-connected and shall terminate with a 2" swivel with 1½" male NST threads. The Cross Lay piping will be 2" stainless steel and/or braided hose. There shall also be hose storage area in the Cross Lay area for 2½" hose. ***(Hose Not Included)*** Y_x__ N__

9. BODY AND CABINETS

9.1 The body shall be constructed of aluminum material. The exterior of the body shall be finished smoothly with symmetrically squared corners and edges presenting a modern aerodynamic appearance. Y_x__ N__

9.2 All parts of the body and attachments shall be fastened with stainless steel fasteners. Y_x__ N__

9.3 The body shall be so designed and assembled to allow for removal of a complete side in the event of major accidental damage. Y_x__ N__

9.4 The Hawk style body provides a total of **68.7 cubic feet** of storage available to the department. This is **in addition** to the vacuum pump, patented floating strainer, and interior suction hose storage areas already in use. Y_x__ N__

10. COMPARTMENTS

10.1 There shall be braces on each side of the apparatus. They shall be welded to the ½" area of the tank body and be the sub-frame for the compartments. The compartments shall be bolted to them. The purpose of this style construction is to eliminate load stress on the cabinets and doors from the flexing of the chassis frame. There shall be barrier taped used between all non-like metals. Y_x__ N__

10.2 Compartment walls and floors shall be constructed of aluminum material. They shall be of true modular design so in the event of major damage, either side can be replaced without requiring cutting from the tank or substructure. Y_x__ N__

10.3 One (1) Larger Compartment constructed of aluminum material shall be on each side/front of the apparatus. One side shall contain the Vacuum/Pressure Pump. This compartment will have an open back to allow sufficient air circulation and a fitted floor opening to access the Vacuum Pump. Y_x__ N__

10.4 One (1) Smaller Compartment constructed of aluminum material shall be on each side of the apparatus in front of the rear wheels. Y_x__ N__

10.5 There shall be one (1) Rear Compartment behind the rear wheels on each side. Y_x__ N__

10.6 There shall be a large capacity floating strainer at the rear of the apparatus between the rear compartments. This area will have a black vinyl cover.

10.7 One (1) Integral Hose Compartment for 15' Sections of 6" Suction Hose on each side of the tank shall be constructed of aluminum material with a vertical divider and shall be located directly on top of the lower compartments. They shall be of integral design and permit rear removal of hose. Y_x__ N__

These compartments shall be large enough to contain the hoses described in section 18.1

10.8 All compartments shall be vented and lighted. There is also an LED light inside the compartment to light the interior of compartment. The hose tray interiors will have a small, sealed LED light. Y_x__ N__

10.9 There shall be one (1) compartment in the wheel well area on each side to contain wheel chocks and department supplied SCBA bottle. Y_x__ N__

10.10 One (1) level decking constructed of .125" polished aluminum diamond plate (NFPA Compliant) with formed drip rail on the outside edge. They shall extend the length of the tank on each side on top of the hose compartment. Y_x__ N__

10.11 All side doors shall be *Gortite Roll Up Doors* constructed of aluminum extrusions with individually replaceable slats. The lift bar is stainless steel and seals are santoprene, or equal, material which has a high resistance to UVs and adjusts to both cold and hot temperatures. The 3" diameter take up roller minimizes header height and rib design minimizes equipment hang ups. They have a quiet idler roller. The magnetic door ajar switches allow operator to know instantly if door is not securely closed. Y_x__ N__

10.12 The Rear Hose Tray Doors shall have a trigger latch. The doors shall be of flat design and will not be spring loaded. The rear transverse door shall be a pan door as described but open out (not up) with a spring-loaded door check. Y_x__ N__

10.13 There shall be an anodized aluminum drip rail installed over the lower compartments. They shall be attached using 3-M double stick tape. There shall also be an aluminum rub rail on the outside bottom of the compartments on each side of the apparatus. Y_x__ N__

10.14 One (1) Short High Side Compartment above the Integral Suction Hose compartment shall be constructed on the Driver Side for additional storage (SCBA, Etc.). There shall be a section of Channel Board installed on the back wall of this compartment. This Channel Board is a durable polyethylene plastic mounting board that allows custom arrangement of brackets. Y_x__ N__

11. REAR TAILBOARD/BUMPER

11.1 The Rear Tailboard/Bumper shall be constructed of 4" ship & car channel, ½" wall thickness iron sub-frame. The sub-frame and two (2) rear tow hooks shall be welded to the ½" ship and car channel for added strength. The bumper shall extend past any part that projects from the apparatus but not to exceed 24" in depth. The step area shall be of aluminum grating and the back splash shall be covered with .160" smooth aluminum with a diamond plate kick panel. The tailboard/bumper and tow hooks are designed to support the towing weight of an empty truck. Y_x__ N__

12. HANDRAILS AND HELPER STEPS

12.1 Two (2) handrails of 1¼" diameter shall be mounted on the rear of the tank, one (1) on each side of the valve. Y_x__ N__

12.2 One (1) handrail of 1¼" diameter aluminum tube with grip inserts shall be mounted on each top/side of the tank and extend the length of the tank. Y_x__ N__

12.3 One (1) Lighted Folding Helper Step shall be mounted on each side of the rear of the apparatus to provide access to the top decking. The rear tailboard and open hose door shall also serve as steps. Y_x__ N__

13. ELECTRICAL AND AIR SYSTEM

13.1 All wiring for the apparatus body shall be cross link *SXL SAE J1128* wiring and placed within a temperature resistant loom. All wires in each loom will be color coded and numbered for positive identification. Y_x__ N__

13.2 The electrical system shall incorporate a master disconnect electrical switch. This switch shall be mounted separately or as a part of the master console. When in an off position, all electrical power to the apparatus shall be off. Y_x__ N__

13.3 All electrical items installed by the manufacturer must be protected by circuit breakers in the console of the cab. Y_x__ N__

13.4 All accessory/emergency lighting shall be controlled by a **Load Manager** and Control Panel in the cab, convenient to the Driver and/or Officer. All lighted rocker switches are to be heavy duty rated to service maximum imposed electrical load by the manufacturer. Y_x__ N__

13.5 Three (3) sealed waterproof electrical junction boxes shall contain all the wiring connections and shall be located, one (1) at the front and two (2) at the rear of the chassis. Y_x__ N__

14. EMERGENCY LIGHTING, SIREN, SPEAKER

14.1 One (1) NFPA *Whelen Justice LED* full light bar with Red Domes and two (2) Clear Center Domes for traffic clearing shall be mounted on the cab roof. Y_x__ N__

14.2 There shall be one (1) *Whelen Red and Amber LED Mini Justice* mounted on the rear. Y_x__ N__

14.3 The siren shall be *Whelen 295SLSA1*, or equal, with a *Whelen SA315A* speaker, or equal, mounted at grill or bumper level. Y_x__ N__

14.4 There shall be NFPA Compliant Lights: two (2) 3" by 7" Red LED alternating lights mounted in grill at automotive window height, three (3) on each side, and two (2) on the rear of the apparatus. ***(TOTAL of 10)*** Y_x__ N__

15. ICC, WORKING, PUMP, AND COMPARTMENT LIGHTS

15.1 All ICC Reflector and Clearance lights shall be installed and located according to DOT specifications. Y_x__ N__

15.2 Four (4) *Whelen LED Scene Lights* shall be mounted, one (1) on each side over the valves, and one (1) at the rear of the apparatus on each side of the light stanchion. These lights will illuminate the beaver tail and scene. They shall be controlled at the master console by a rocker switch and automatically operate when the truck is in reverse. Y_x__ N__

15.3 Four (4) LED adjustable scene lights shall be installed, one (1) on each top rear-side of the tank and one (1) on each side of the Valve House facing rearward. Y_x__ N__

15.4 Adequate LED lighting shall be in each door pan. They shall automatically activate when door is in an open or raised position to illuminate compartment and work area in front of the door. There shall also be adequate LED lighting installed on the vertical door jambs to light the interior of the compartment. They shall be controlled by the same automatic switches. Y_x__ N__

15.5 There shall be six (6) LED *Ground Lights*, one (1) under each cab step, one (1) under pump panel area on each side, and one (1) under rear bumper on each side. Each ground light is at **650 Lumens per light for a total of 3,900 Lumens**. The lights shall illuminate when parking brake is set. Y_x__ N__

15.6 There shall be one (1) of each; LED Red Stop/Tail, Turn and LED Back Up Light mounted on each side of the rear of the apparatus. Y_x__ N__

15.7 There shall be a Door Ajar flashing warning light and buzzer in cab to signal when any side or the center rear compartment door is open, or power bracket is not stowed. This system shall only operate when the parking brake is released. Y_x__ N__

16. COATINGS AND LETTERING

16.1 The interior of the tank shall be coated with Firokote™ coating. Y_x__ N__

16.2 A Four-Inch Wide Reflective Decal Stripe with 1" stripe above and below the 4" stripe with ½" space between shall be installed around the perimeter of the apparatus not over 60" above ground level. Y_x__ N__

*****Department to Specify Color*****

16.3 Alternating 6" Wide Red and Yellow Reflective Chevron Stripe shall be placed on the rear of the apparatus and interior cab doors per NFPA regulations. Y_x__ N__

16.4 The interior of the compartments shall not be painted. Y_x__ N__

16.5 The apparatus shall be undercoated. Y_x__ N__

17. SWING DOWN PORTABLE TANK BRACKET

17.1 One (1) **Firovac Electric Over Hydraulic Power Swing Down Portable Tank Bracket with Vinyl Cover** shall be mounted on the Officer Side of the apparatus. It shall be capable of containing two (2) Portable Tanks. Maximum lift shall be 31" to 34" ground to bracket. This shall easily allow two persons to load a Portable Tank. Y_x__ N__

It shall have warning lights on front and rear of the bracket with visual and audible warning in the cab which interlocks to the "DO NOT MOVE" light when bracket is not in stowed position.

There also shall be two (2) manual latches to secure each Portable Tank in the bracket when in the stowed position.

17.2 There shall be two (2) **3,500 Gallon Portable Tanks** with **Quick Dumps** in the above brackets. The tanks shall have aluminum frames and yellow reinforced vinyl liners, which shall have at least three (3) built in grab handles on the floor to facilitate emptying and preparing the liner for storage. Y_x__ N__

18. LOOSE GOODS

18.1 Four (4) 12' Sections of 6" Suction Hose with cast clamps, one (1) 6" aluminum quick couple female fitting, and one (1) 6" aluminum quick couple male fitting shall be placed in the hose compartment. Y_x__ N__

18.2 There shall be one (1) 6" PVC Dump Chute with a 45-degree elbow and 6" aluminum quick coupler for use in dumping into a Portable Tank from the rear valve. Y_x__ N__

18.3 There shall be one (1) 6" female aluminum quick coupler to 4½" NST female for adapting the suction hose to the Dry Hydrant. Y_x__ N__

******Department to notify if size change is necessary******

18.4 There shall be one (1) 6" quick couple fitting to 2½" NST reducer with 45-degree drop. Y_x__ N__

18.5 One (1) Large Capacity Aluminum Floating Strainer with *swivel* shall be contained in the Rear Strainer Storage Compartment. The strainer shall have a 6" aluminum quick couple fitting and expanded metal screen opening supplying 210 sq. inches of water flow rate to match vacuum's capabilities. It also has a detachable low-level pan. The strainer is used for loading the water tank from a variety of sources. Y_x__ N__

19. MISCELLANEOUS

19.1 Mud Flaps shall be installed behind the front and rear wheels. Y_x__ N__

19.2 There shall be one (1) set of SAC-44 Wheel Chocks contained in the SCBA/Wheel Chock compartment in the wheel well. Y_x__ N__

19.3 One (1) Kussmaul Automatic Battery Conditioner shall be installed. Y_x__ N__

19.4 One (1) Kussmaul Automatic Electric Eject shall be installed on the Driver Side. Y_x__ N__

19.5 One (1) Kussmaul Automatic Air Eject shall be installed on the Driver Side. Y_x__ N__

19.6 One (1) Color Monitor and two (2) cameras with night vision shall be installed. The Monitor shall be mounted in the cab visible to the Driver. The camera shall be mounted, one at the top rear of the Tank and one on the Officer Side above the side valve. The rear camera shall automatically turn on when chassis is placed in reverse. Y_x__ N__

19.7 There shall be one (1) 3" Manually Operated Direct Tank Fill Valve installed on the rear of the tank. The tank vent will automatically open when the 3" valve is engaged and will be indicated at the Direct Tank Fill, Driver Side Pump Panel, and in the Cab. Y_x__ N__

*****Department to specify fitting size*****

19.8 There shall be one (1) hose tray mounted on the Driver side above the Hard Suction Storage Compartment. This hose tray will be able to contain 300ft of 5" LDH. ***(LDH not supplied)*** Y_x__ N__

20. PERFORMANCE

20.1 Apparatus must be capable of delivering a sustained flow rate of 310 GPM when using one section of suction hose, driving a two-mile loop, and tested using ISO formula calculations. Y_x__ N__

20.2 Apparatus must have the ability to be loaded from external pressure source without over pressuring the water tank. Y_x__ N__

20.3 Apparatus must be able to "Nurse" to other sources and transfer water through LDH by using the Vacuum/Pressure Pump. Y_x__ N__

20.4 Apparatus must be classified as "Zero-Loss" by Insurance Service Office. It must not spill water when turning through intersections. Y_x__ N__

20.5 Apparatus must be able to be loaded **without** an external load source. Y_x__ N__

21. WARRANTY

A warranty is a promise perhaps the single most important promise a customer should expect. Y_x__ N__

Water tank must have a non-prorated warranty for 15 years against rust (corrosion) perforation and the cabinetry for 5 years against defects in workmanship. A copy of the warranty must be enclosed with this bid and must include all exclusions. It also must define "lifetime" in terms of years and include a (rust) corrosion warranty.

22. FORCE MAJEURE

The current world market, specifically as it relates to metal products, gasoline, supply and demand and various laws and requirements, necessitates the use of this Force Majeure clause: Y_x__ N__

Neither party shall be liable for any failure or delay in performance under this agreement, other than the delay in payment of money as outlined in the contract. To the extent said failures or delays are caused by causes beyond that party's reasonable control and occurring without its fault or negligence, including, without limitation, Acts of God, war, insurrection, failure of suppliers, subcontractors, and carriers, or party to substantially meet its performance obligations under this agreement, provided that, as a condition to the claim of nonliability, the party experiencing the difficulty shall give the other prompt written notice, with full details following the occurrence of the cause relied upon.

23. CHASSIS

The cab and chassis shall be supplied by New England Fire Equipment and Apparatus. Y_x__ N__
Cab and chassis to be delivered to Reberland Equipment Inc. 5963 Fountain Nook Rd.
Apple Creek, Ohio 44606

The cab and chassis shall be compatible with the mounting of the Firovac unit as specified above.

New England Fire Equipment and Apparatus or chassis dealership shall provide to Firovac-Reberland Equipment Inc. the complete chassis specifications, including codes, so we can check to be sure the Firovac unit will fit to the chassis frame.

NOTE: The first cross member should be located 36" behind the cab.