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Princeton Volunteer Fire and Rescue
Address
Princeton, Wisconsin

Proposal # 160873C
December 4, 2016

Attn: Ernest Pulvermacher
Truck Committee
Phone: 920-229-6911
Email: ep6911@gmail.com

Proposal to Build a Custom

3,000 Gallon Pumper/Tender

Warranty

STAINLESS & REPAIR, INC. warrants new tanks or equipment manufactured by us to be free from defects in material and workmanship under normal use and service for a period of one (1) year after shipment from the factory. Bumper to Bumper one (1) year warranty.

For breach of warranty of any kind, the measure of damages to be recoverable from STAINLESS & REPAIR, INC. shall be limited to repair or replacement of the part or equipment which examination discloses to the satisfaction of the seller to be defective, or the payment of the price of making such repair or replacement, at the option of the seller.

This warranty is expressly in lieu of all other warranties, expressed or implied, and all other obligations and liabilities on our part. Any warranty of merchantability is expressly excluded. We neither assume nor authorize any other persons to assume for us any liability in connection with the sale of our products, and no other warranty will be honored unless in writing and signed by an officer of the corporation. This warranty shall not apply to any product of our manufacture which has been repaired or altered outside our factory, or which in our opinion, has been subjected to misuse, negligence or accident. Seller will not assume any charges for repairs made during warranty by anyone other than STAINLESS & REPAIR, INC. Also, seller assumes no liability or responsibility for transportation to and from repair point, nor any loss of time due to repair. This warranty does not cover components of other manufacturers beyond such warranty as is made by such manufacturer.

Any action for breach of warranty shall be commenced within one (1) year of said breach or be forever barred.

Summary Of Warranties

Lettering
- Graphics and lettering warranty is 3 years.

Sub frame
- Stainless steel apparatus sub frame warranty is 30 years
- Painted steel apparatus sub frame warranty is 20 years
- Aluminum apparatus sub frame warranty is 10 years

Body
- Stainless steel apparatus body warranty is 30 years
- Aluminum apparatus body warranty is 15 years
- Copolypropylene apparatus body warranty is lifetime

Paint
- Apparatus paint warranty is 10 years

Water Tank

Copolypropylene tank warranty is lifetime

Stainless steel tank warranty is 30 years

Pump Plumbing

Stainless steel pump plumbing warranty is 15 years

Lettering Warranty

STAINLESS & REPAIR INC, warrants the lettering and striping to be free of defects for a period of three (3) years under normal use.

This is extended to the original user/purchaser from the date of delivery for the period stated above, and is not transferable to other parties. This warranty is intended for the apparatus when it is used in the fire service as its intended use.

STAINLESS & REPAIR, INC. (The COMPANY) obligation under this warranty is strictly limited to repairing, as the Company may elect, any apparatus when returned to the factory in Marshfield, Wisconsin.

Exceptions to the above statement include, but may not be limited to:

1. The induction of chemicals which may adversely react with the vinyl and graphics.

2. Loss of time or use of the apparatus, inconvenience or other incidental expenses.

3. Any apparatus vehicle which has been operated in a negligent, reckless, unlawful, or improper manner.

Apparatus Warranty

STAINLESS & REPAIR, INC., Marshfield, Wisconsin, warrants each new fire apparatus manufactured by us to be free from defects in materials and workmanship for a period of one (1) year after customer delivery.

Our obligation under this warranty is limited to the repair or the replacement, at the option of the Company, of those components which, upon examination by us, prove to be “defective” and not a product of misuse.

All components in question must be returned to our factory, freight prepaid, within the specified warranty period. Written approval from the Company is necessary prior to component return. Defective components will be replaced with charge to the original owner when valid claims are received within the stipulated warranty period.

This warranty does not apply to the following conditions:

1. Any component parts or trade accessories, such as chassis, engines, tires, pumps, valves, signaling devices, batteries, electric lights, bulbs, alternators, and all other installed equipment and accessories which are warranted separately by their respective manufacturers, or are subject to normal wear and tear.

2. Any normal maintenance services or adjustments which are required.

3. Failures resulting from the apparatus being operated in a manner, or for a purpose not recommended by STAINLESS & REPAIR, INC.

4. Loss of time or use of the apparatus, inconvenience or other incidental expenses.

5. Any apparatus which has been repaired or altered by other than factory authorized service stations in any way as in our judgment to affect it's stability, or intended design, or which has been subjected to misuse, negligence, or accident, or any vehicle manufactured by us which has been operated in excess of the factory-rated load capacity.

6. Any apparatus vehicle which has been operated in a negligent, reckless, unlawful, or improper manner.

7. Failures of the tank as a result of microbiological attack (stainless steel tanks). It is the user's responsibility to determine if harmful bacteria are present in the available water supply and treat the water in the tank as required to protect the tank from attack.

8. The induction into or onto tank of chemicals or chemical additives which may adversely react with the stainless tank or Copolypropylene material and cause tank pitting, corrosion and otherwise tank leaks. Some typical additives would be detergents, bleaches, etc.

9. Use of water that has chemical, mineral, or organic contents, such as halogenated ions, i.e. chlorides, bromides, fluorides, anaerobic bacteria, which will adversely affect the tank material or which will otherwise cause tank pitting, corrosion and otherwise tank leaks (stainless steel tanks). It is the user's responsibility to determine if the available water supply contains harmful contents and treat the water to prevent such attacks on the tank material.

This warranty is in lieu of all warranties, expressed, or implied, all other representations made to the purchaser, and all other obligations or liabilities, including liability for incidental or consequential damages on the part of the Company.

We neither assume nor authorize any other person to give or assume any other warranty, nor authorize any other person to give or assume any other warranty,

liability, or merchantability on the Company's behalf, unless made in writing by the Company.

STAINLESS & REPAIR, INC. makes no representation that the apparatus has the capacity or capability to perform any functions other than those for which the vehicle is designed, or which is contained in the Company's written literature, catalogs or specifications that may accompany delivery of the apparatus.

STAINLESS & REPAIR, INC. will not assume liability or responsibility for damage caused by:

- Overloads in commodity weights to exceed those shown on the weight distribution and nomenclature plate.

- Damage to tanks attributed to cargo incompatibility or to improper cleaning.

- Liability or responsibility for cargos transported other than those specified as legal and suitable in DOT Hazardous Materials' Regulations (Section 172.5) and other existing tariffs.

- Liability or responsibility for matching authorized cargo tanks with chemical commodities.

STAINLESS & REPAIR, INC. makes no representations that the tanks manufactured by the Company are for any other use than to store or transport water for fire-fighting purpose only.

No persons or affiliated company representatives are authorized to give any other warranties or to assume any other liability, or merchantability on behalf of STAINLESS & REPAIR, INC. in connection with the sales, servicing, or repair of any water tanks manufactured by the Company.

Nothing contained in this warranty shall make STAINLESS & REPAIR, INC. liable beyond the express limitations hereof, for loss, injury, or damage of any kind to any person or entity resulting from any defect or failures of any water tank.

Sub Frame

Painted Steel Sub Frame Extended Warranty (20yr)

STAINLESS & REPAIR, INC. warrants its steel sub frame for a period of twenty (20) years against defects in material or workmanship provided the apparatus is used in a normal and reasonable manner. This is extended to the original user/purchaser from the date of delivery for the period stated above, and is not transferable to other parties. This warranty is intended for the apparatus when it is used in the fire service as its intended use.

STAINLESS & REPAIR, INC. (The COMPANY) obligation under this warranty is strictly limited to repairing, as the Company may elect, any apparatus when returned to the factory in Marshfield, Wisconsin.

Exceptions to the above statement include, but may not be limited to:

1. The induction of chemicals which may adversely react with the stainless material and cause tank pitting, corrosion and otherwise sub frame fatigue.

2. Any sub frame alterations or repairs outside of the Company's factory which, in our opinion, affect the reliability or integrity of the apparatus.

3. Any normal maintenance services or adjustments which are required.

4. Failures resulting from the apparatus being operated in a manner, or for a purpose not recommended by STAINLESS & REPAIR, INC.

5. Loss of time or use of the apparatus, inconvenience or other incidental expenses.

6. Any apparatus vehicle which has been operated in a negligent, reckless, unlawful, or improper manner.

STAINLESS & REPAIR, INC. reserves the right to make design changes or improvements in its products without imposing any obligation upon itself to change or improve previously manufactured products.

Stainless Steel Sub Frame Extended Warranty (30yr)

STAINLESS & REPAIR, INC. warrants its steel sub frame for a period of thirty (30) years against defects in material or workmanship provided the apparatus is used in a normal and reasonable manner. This is extended to the original user/purchaser from the date of delivery for the period stated above, and is not transferable to other parties. This warranty is intended for the apparatus when it is used in the fire service as its intended use.

STAINLESS & REPAIR, INC. (The COMPANY) obligation under this warranty is strictly limited to repairing, as the Company may elect, any apparatus when returned to the factory in Marshfield, Wisconsin.

Exceptions to the above statement include, but may not be limited to:

1. The induction of chemicals which may adversely react with the stainless material and cause tank pitting, corrosion and otherwise sub frame fatigue.

2. Any sub frame alterations or repairs outside of the Company's factory which, in our opinion, affect the reliability or integrity of the apparatus.

3. Any normal maintenance services or adjustments which are required.

4. Failures resulting from the apparatus being operated in a manner, or for a purpose not recommended by STAINLESS & REPAIR, INC.

5. Loss of time or use of the apparatus, inconvenience or other incidental expenses.

6. Any apparatus vehicle which has been operated in a negligent, reckless, unlawful, or improper manner.

STAINLESS & REPAIR, INC. reserves the right to make design changes or improvements in its products without imposing any obligation upon itself to change or improve previously manufactured products.

Aluminum Sub Frame Extended Warranty (10yr)

STAINLESS & REPAIR, INC. warrants its Aluminum sub frame for a period of ten (10) years against defects in material or workmanship provided the apparatus is used in a normal and reasonable manner. This is extended to the original user/purchaser from the date of delivery for the period stated above, and is not transferable to other parties. This warranty is intended for the apparatus when it is used in the fire service as its intended use.

STAINLESS & REPAIR, INC. (The COMPANY) obligation under this warranty is strictly limited to repairing, as the Company may elect, any apparatus when returned to the factory in Marshfield, Wisconsin.

Exceptions to the above statement include, but may not be limited to:

1. The induction of chemicals which may adversely react with the stainless material and cause tank pitting, corrosion and otherwise sub frame fatigue.

2. Any sub frame alterations or repairs outside of the Company's factory which, in our opinion, affect the reliability or integrity of the apparatus.

3. Any normal maintenance services or adjustments which are required.

4. Failures resulting from the apparatus being operated in a manner, or for a purpose not recommended by STAINLESS & REPAIR, INC.

5. Loss of time or use of the apparatus, inconvenience or other incidental expenses.

6. Any apparatus vehicle which has been operated in a negligent, reckless, unlawful, or improper manner.

STAINLESS & REPAIR, INC. reserves the right to make design changes or improvements in its products without imposing any obligation upon itself to change or improve previously manufactured products.

Body

Stainless Steel Apparatus Body Extended Warranty (30 Yr)

STAINLESS & REPAIR, INC. warrants its stainless steel body for a period of thirty (30) years against defects in material or workmanship provided the apparatus is used in a normal and reasonable manner. This is extended to the original user/purchaser from the date of delivery for the period stated above, and is not transferable to other parties. This warranty is intended for the apparatus when it is used in the fire service as its intended use.

STAINLESS & REPAIR, INC. (The COMPANY) obligation under this warranty is strictly limited to repairing, as the Company may elect, any apparatus when returned to the factory in Marshfield, Wisconsin.

Exceptions to the above statement include, but may not be limited to:

1. The induction of chemicals which may adversely react with the stainless material and cause body pitting, corrosion and otherwise body fatigue.

2. Any alterations or repairs to the body outside of the Company's factory which, in our opinion, affect the reliability or integrity of the apparatus body.

3. Any normal maintenance services or adjustments which are required on the body.

4. Failures resulting from the apparatus being operated in a manner, or for a purpose not recommended by STAINLESS & REPAIR, INC.

5. Loss of time or use of the apparatus, inconvenience or other incidental expenses.

6. Any apparatus vehicle which has been operated in a negligent, reckless, unlawful, or improper manner.

Aluminum Apparatus Body Extended Warranty (15 Yr.)

STAINLESS & REPAIR, INC. warrants its aluminum body for a period of fifteen (15) years against defects in material or workmanship provided the apparatus is used in a normal and reasonable manner. This is extended to the original user/purchaser from the date of delivery for the period stated above, and is not transferable to other parties. This warranty is intended for the apparatus when it is used in the fire service as its intended use.

STAINLESS & REPAIR, INC. (The COMPANY) obligation under this warranty is strictly limited to repairing, as the Company may elect, any apparatus when returned to the factory in Marshfield, Wisconsin.

Exceptions to the above statement include, but may not be limited to:

1. The induction of chemicals which may adversely react with the stainless material and cause body pitting, corrosion and otherwise body fatigue.

2. Any alterations or repairs to the body outside of the Company's factory which, in our opinion, affect the reliability or integrity of the apparatus body.

3. Any normal maintenance services or adjustments which are required on the body.

4. Failures resulting from the apparatus being operated in a manner, or for a purpose not recommended by STAINLESS & REPAIR, INC.

5. Loss of time or use of the apparatus, inconvenience or other incidental expenses.

6. Any apparatus vehicle which has been operated in a negligent, reckless, unlawful, or improper manner.

Copolypropylene Body Extended Warranty

STAINLESS & REPAIR, INC. warrants its Copolypropylene body for a period of 10 years against defects in material or workmanship provided the apparatus is used in a normal and reasonable manner. This is extended to the original user/purchaser from the date of delivery for the period stated above, and is not transferable to other parties. This warranty is intended for the apparatus when it is used in the fire service as its intended use.

STAINLESS & REPAIR, INC. (The COMPANY) obligation under this warranty is strictly limited to repairing, as the Company may elect, any apparatus when returned to the factory in Marshfield, Wisconsin.

Exceptions to the above statement include, but may not be limited to:

1. The induction of chemicals which may adversely react with the stainless material and cause body pitting, corrosion and otherwise body fatigue.

2. Any alterations or repairs to the body outside of the Company's factory which, in our opinion, affect the reliability or integrity of the apparatus body.

3. Any normal maintenance services or adjustments which are required on the body.

4. Failures resulting from the apparatus being operated in a manner, or for a purpose not recommended by STAINLESS & REPAIR, INC.

5. Loss of time or use of the apparatus, inconvenience or other incidental expenses.

6. Any apparatus vehicle which has been operated in a negligent, reckless, unlawful, or improper manner.

Paint Warranty

Apparatus Paint Extended Warranty (10 Yr)

STAINLESS & REPAIR, INC. warrants its Aluminum, stainless steel and Copolypropylene body paint, through PPG, for a period of ten (10) years. This is extended to the original user/purchaser from the date of delivery for the period stated above, and is not transferable to other parties. This warranty is intended for the apparatus when it is used in the fire service as its intended use.

STAINLESS & REPAIR, INC. (The COMPANY) obligation under this warranty is strictly limited to repairing, as the Company may elect, any apparatus when returned to the factory in Marshfield, Wisconsin.

Included to the above statement:

1. Peeling or loss of topcoat and/or other layers of paint.

2. Cracking of the top coat and or other layers of paint, not including pliable joint seams.

3. Loss of gloss caused by cracking, checking or hazing.

4. Any paint failure caused by defective PPG products which are covered on the PPG certified product list. Please see attached PPG Commercial vehicle paint performance warranty certificate.

Water Tank Extended Warranty

Stainless Steel

Stainless and Repair warrants each stainless steel Tank, to be free from defects in material and workmanship for thirty (30) years of service life to the original vehicle (vehicle must be actively used in the emergency response of fire suppression).

Copolypropylene

The Tank manufacture warrants each Copolypropylene Tank, to be free from defects in material and workmanship for the service life of the original vehicle (vehicle must be actively used in the emergency response of fire suppression).

Warranty certificate available upon request or shall be provided in owners-manual.

Pump Plumbing Warranty

Stainless and Repair warrants the complete pump plumbing system, to be free from defects in material and workmanship for fifteen (15) years of service life to the original vehicle (vehicle must be actively used in the emergency response of fire suppression).

Warranty Service

STAINLESS AND REPAIR INC. has the ability and will provide technical trouble shooting by the phone and physical warranty service for all our apparatus, at the departments station, after shipment from the factory. If mobile service is deemed necessary by the manufacturer, technicians will be dispatched from the factory in a timely manner, usually 24-72 hours.

Pictures in Proposal

Note: all pictures listed in proposal are like pictures intended for reference only. Exact features shall be built as described in proposal.

Pre-Payment, Bond, or Progressive Payments

The apparatus being built shall be paid for in two payments.

The Chassis shall be paid for upon delivery and acceptance at truck dealer. Payment to the truck dealer must be made within 15 days of delivery to the dealer.

The completed apparatus (body and pump) will be paid for in full upon delivery.

An irrevocable letter of credit can be issued by the bank in lieu of a bid bond. The irrevocable letter of credit is a financial instrument that is accepted by FEMA when used on the AFG grants in place of bid bonds. (If applicable)

Delivery

The completed apparatus will be delivered to the department. Included with the delivery will be all chassis manuals and apparatus manuals.

Training

The completed apparatus will be delivered to the Fire Department and include a complete training seminar with the apparatus manufacturer and the chassis dealer if applicable.

Pre-Delivery Inspections

During construction, the Fire Department will receive regular updates, via electronic mailings, and will be allowed to view, at S & R, their apparatus while in construction. There is no limit to the number of inspection trips the department can schedule. S & R would like to see a minimum of two inspection trips.

Delivery Date:

The completed apparatus will be delivered, as per these specifications in no later than 12-18 months from the date of signing the completed contract.

Manufacturing Facility and Repair Facility:

The manufacturing facility and the repair facility is located in Marshfield WI.

S & R offers complete warranty service of the apparatus body. Pickup and delivery are included in the first year under the "bumper to bumper" warranty, as deemed necessary by the manufacturer. In house service technicians are also available by phone and road service as deemed necessary by the manufacturer.

CAD Drawings

Each apparatus, before construction, will include a complete set of CAD drawings for the department to approve. The drawings include all appropriate specified equipment.

The drawings will include a Center of Gravity Calculation (chassis specified should include Electronic Stability Control, meeting the NFPA recommendation 4.13.1.1 and 4.13.1.2), weight and balance calculations.

Operation and Maintenance, "Owner's Manual"

There will be two completed owner's manuals delivered with the completed apparatus. The manual will be comprised of a three ring binder with reference tabs for each individual section.

Each section shall contain:
All manufacturer books, instructions, safety procedures, and manuals
Warranty information of all apparatus major components
Wiring diagrams
Body drawings
Duplicate of all warning stickers and labels
All maintenance information for major components of the apparatus

The commercial chassis will also contain a set of operating manuals, per the manufacture.

Angle of Approach

The angle of the approach, shall be the minimum as recommended by NFPA.

Vehicle Stability

The apparatus shall meet one of the requirements, as stated by NFPA for vehicle stability.
The quoted chassis has the upgraded Enhanced Stability Control.

Slip Resistance Certification

A certification, as per NFPA, will be supplied upon delivery of the completed apparatus, stating all standing and walking surfaces meet that standard.

Apparatus Certification of Light System

The apparatus light system has been installed within all geometric parameters Specified by light manufacture, in reference to their NFPA compliant lights.

Weight and Balance Review

Included with the proposal and delivery of the apparatus will be a complete weight analysis of the apparatus. The apparatus shall meet all DOT and NFPA weight guidelines.

Electrolysis Corrosion Control

All dissimilar metals, fasteners, bracket will include appropriate barrier protection.

Low Voltage Electrical Specifications

The electrical system specified for this apparatus will be designed with all panels, electrical connections, wiring harnesses, and electrical components to be of latest Federal DOT standards and NFPA recommendations.

Safety Related Tags and Documents

With the apparatus will be all related safety tags and labels permanently attached to body's outer structure that will withstand the effects of extreme weather conditions, as per NFPA.

Tag Requirements In Chassis Cab For Quantity And Type Of Fluids

(If applicable)
Engine oil
Engine coolant
Chassis transmission fluid
Pump transmission lubrication fluid

Pump primer fluid
Drive axles lubrication fluid
Air conditioning refrigerant
Air conditioning lubrication oil
Power steering fluid
Transfer case fluid
Equipment rack fluid
Air compressor system lubricant
Front tire cold pressure
Rear drive tire cold pressure

Safety Stickers and Labels

Installed to center console will be a label for the red hazard light. Label shall say "HAZARD LIGHT: DO NOT MOVE APPARATUS WHEN LIGHT IS ON"

Installed into chassis cab will be a "MAXIMUM SEATING CAPACITY: ____" sign

Installed into chassis cab will be a "ALL OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION" sign

Installed at pump operators panel will be a label that states: "WARNING: DEATH OR SERIOUS INJURY MAY OCCUR IF PROPER OPERATING PROCEDUERES 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."

Mounted to dash of chassis will be a custom designed stainless steel dash plaque as per The Chiefs instructions.
Installed into chassis cab will be "OVERALL HEIGHT OF APPARATUS ____", OVERALL LENGTH OF APPARATUS_____ AND OVERALL THE GVWR ____TONS" sign.

Installed into chassis cab will be "DO NOT WEAR HELMET WHILE SEATED". Helmets must be stored in a NFPA compliant storage container or outside the chassis cab while the vehicle is in motion.

Installed at water tank man way cover will be "WATER FILL" (If applicable)

Installed at the foam tank fill tower will be "FOAM FILL" (If applicable)

Installed at the rear of the apparatus at the rear step platform will be "NO RIDERS" label. Label will include appropriate verbiage and picture to inform personnel that riding on the platform while the vehicle is in motion is prohibited.

Installed to chassis doors will be appropriate white reflective stripe when door is in “open position”.

Any applicable safety and warning labels not directly referenced in spec will be included and installed to apparatus.

Apparatus General Statement of Exceptions

As per NFPA 1901 Standard for Automotive Fire Apparatus 2009 Edition, Chapter 4, section 4.21.1, the fire department is responsible as per the recommendation by NFPA to make all stated necessary compliances to the delivered apparatus before the apparatus can achieve full compliance with this standard.

Apparatus General Requirement Testing

Vehicle Stability

When the fire apparatus is loaded to its maximum in service weight, the height of the vehicles center of gravity shall not exceed the chassis manufacturer’s limit.

Weight Distribution

When the fire apparatus is loaded to its maximum in service weight, the front to rear weight distribution of the fire apparatus 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

The fire apparatus complies with the gross axle weight ratings, overall gross vehicle weight rating and the chassis manufacturer’s load balance guidelines.
The fire apparatus 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.

Road-ability (With a Fully Loaded Apparatus)

From a standing start, the apparatus shall be able to attain a speed of 35 MPH within 25 seconds on a level road.

The apparatus shall be able to attain a minimum top speed of 50 MPH on a level road.

The apparatus shall be able to maintain a speed of at least 20 MPH on any grade up to and including 6 percent.

The apparatus, if equipped with an auxiliary brake, shall be road tested to confirm 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 a complete stop from an initial speed of 20 MPH, in a distance not exceeding 35' by actual measurement on a paved level dry surface road.

If the apparatus has a tank that exceeds 1250-gallons, the maximum top speed of the apparatus shall not exceed 60 MPH or the manufacturers maximum fire service speed rating for

Electrical Drawings

Each separate electrical function will include a complete set of drawings specific to that apparatus and that electrical function.

Low Voltage Electrical Specifications

The electrical system specified for this apparatus will be designed with all panels, electrical connections, wiring harnesses, and electrical components to be of latest Federal DOT standards and NFPA recommendations.

NFPA Recommended Electrical Testing and Documentation

Test # 1: Reserve Capacity Testing
Procedure: Record static battery voltage
Turn on the minimum continuous electrical load for ten minutes:
Turn off all electrical loads and restart engine

Test #2 Alternator Performance at Idle
Procedure: Turn on the minimum continuous electrical load.
Test the battery system for presence of battery discharge current.

Test #3 Alternator Performance at Full Load
Procedure: Run engine at manufacturer's governed speed, turn on the continuous
Electrical load. (Load management on if applicable)
Connect digital volt/ohm meter to battery terminals.
Run the engine for two hours under above conditions.

If the audio low voltage alarm activates, voltage across the batteries may not fall below 11.7 volts for a 12-volt system and 23.4 for a 24-volt system.

Test #4 Voltage Alarm
Procedure: Shut off engine and connect volt/ohm meter to battery terminals

Turn on the Total continuous load
When audio low voltage alarm activates, voltage across the batteries
May not fall below 11.7 volts for a 12-volt system and 23.4 for a 24 Volt System.
Voltage recorded.
Turn off all electrical loads and restart engine

Test #5 Minimum Continuous Electrical Load:
Nameplate rating of the alternator:
Minimum output of alternator, at idle, at 200 degrees F
Load Analysis of the following:
The propulsion engine and transmission.
All legally required clearance and marker lights, head lights and other electrical devices except windshield wipers and four-way hazard flashers.
The radios at a duty cycle of 10 percent transmit and 90 percent receive. (a default value of 5 A continuous).
The lighting necessary to illuminate all walking surfaces on the apparatus and on the ground at all egress points onto and off the apparatus and all controls and instrument panels.
The minimum optical warning systems required when the apparatus is blocking the right of way.
The continuous electrical current required to simultaneously operate any fire pumps, aerial devices and hydraulic pumps.
Any additional electrical loads that, when added to the minimum continuous electrical load, determine the total continuous electrical load.
Total Continuous Electrical Load

Exhaust System Modifications

Due to engine emission regulations no modification shall be made to the exhaust system.

Installed to the body will be appropriate stainless steel heat shields as needed.

Chassis TPI Provisions

Installed to chassis will be Tire Minder Max tire pressure monitoring system. System will include separate high visibility color indicators on each valve system. System is compliant with NFPA 1901 specifications.

Wheel Simulators

Installed to the front steer tires and to the rear drive tire rims will be a complete set of “Chrome Baby Moons” brand wheel dress-up kit.

Body Width

Body width will not exceed 102”.

Apparatus Center Console

All lighting controls and wiring will be mounted on or in a stainless steel center console. Center console will be mounted at or near the dash (department to decide at build date). Console will be constructed of stainless steel 16 gauge, #4 finish, type 304 materials. TIG welded with 308L wire and completely polished.

Console will contain top access door and stainless steel louvered vents.

All wiring fuses, relays and related equipment will be mounted to body side compartment for ease of service and ease of transferring the body from one chassis to another.

Chassis Master Disconnect System

Master disconnect will be provided by chassis manufacturer and be located under driver side seat, outboard.

Chassis Master Power Indicator Light

Installed in the chassis driver compartment per NFPA, will be a green indicator light to indicate the chassis master disconnect switch has been activated.

Low Voltage Alarm

Installed to the chassis, as per NFPA, will be an audible low voltage alarm.

Apparatus Air Horn

Installed by chassis manufacture shall be an emergency air horn mounted under deck (behind front bumper).

Chassis VDR and SBI Provisions

Installed to the chassis, by chassis manufacture will be a Vehicle Data Recorder system. The system will record, as required, engine RPM, throttle %, vehicle speed, ABS events, and transmission range information.

In conjunction with the VDR, a seat belt warning system with standard single visual display will be installed to chassis dash. Software will be made available to provide a formatted report from either Windows or Mac Operating Systems.

Included with the VDR and SBI from the chassis manufacturer will be all the Pre wire options needed.

Apparatus Tow Hooks

Mounted at the rear chassis frame will be two (2) ½"plate stainless steel tow hooks mounted directly to chassis frame with 5/8" grade 8 bolts. Tow hooks will be mounted directly to the chassis frame and extend through the back panel. Tow hooks will include a reinforcing cross member between them.

Sub Frame

Apparatus sub frame will be fabricated with all stainless steel 3/16" and ¼" tubular, channel and angle long members, cross members and cabinet supportive outriggers.

At rear of sub frame will be supporting outriggers for rear step platform.

Sub frame is incorporated into the Polyprene body structure and completely independent of the chassis frame.

Mounted in sub frame are corner angles and center mounts to mount tank to sub frame.

Sub frame welded with stainless steel 308L wire.

Sub frame will have a hard rubber strip between sub frame and tank to minimize tank to frame movement and damage in severe conditions.

Sub frame will include appropriate spring mounts, to truck chassis, for independent moving and flexing of body. Sub frame will also utilize stainless steel 3/16" side guides for extra body alignment onto the chassis frame.

Sub frame construction to be all stainless steel NO EXCEPTIONS.

Body \ Tank Construction

Body Construction

The complete outer body; including body skirts, cabinets, front panels, back panels and wheel skirts shall be fabricated using 14-gauge stainless steel. The wheel skirts will close in the space around the cabinets and wheels. Body shall be painted to match chassis.

Tank Construction

Tank Framework

Frame will be constructed from 1/4" Stainless Steel material. Frame rails will run full length of tank, frame will have “Z” rail design with 3/16" stainless steel material frame angle. Frame angle to aid in support of mounting “U” bolts, and create a boxed type frame. Frame will also have 3/16" steel cross members intricately placed, under each inner shell baffle and outer heads, to form a structurally sound frame. Frame will be attached to tank shell and will be skip welded front to back. Frame cross members will also be attached to tank in the same manner. All frame components attached to the tank will have a stainless steel pad installed for extra strength and support.

Tank Barrel

Tank to equal 3000 gallons, 53" x 78" elliptical head cross section with seam to seam measurement of 204". Inner shell to be fabricated from 12-gauge stainless steel type 304L. All inner shell welds to be chemically dye checked for any weld imperfections. Inner shell to have rear 12-gauge stainless steel 304 sump, to aid in completely draining inner shell. Sump will have stainless steel 12-gauge type 304 clad to aid in structural support. Sump will also be an intricate part of the dumping flange.

Front and rear shell heads to be stainless steel 12-gauge type 304L. Heads to be butt welded inside and outside with 308L TIG type welding. Outside finish will be ground to a #4 finish.

All tank shell heads to be hydro formed.

Tank to be a #4 (satin) finish, with all exterior welds ground and polished to a #4 seamed finish. All inner head baffle weld discoloration and distortion to be seamed polished to a #4 finish.

Tank will have an attached serial tag at driver’s side to certify the capacity.

Tank Baffles

Baffling shall be full head style 12-gauge type 304L stainless steel 2B finish material. Inner baffling will be compliant with NFPA standards including 5 full inner head baffles spaced equally apart and appropriate longitudinal baffles between heads. Inner shell baffling will be welded with MIG stainless steel type 308L wire. All welds will be chemically dye checked for imperfections. Baffling will have complete pass through so as not to detain water flow. Bottom pass through will have 90 degree clads for extra strength and support. Baffles to be completely welded on inner head flanges.

Tank Man Way

Tank will have a 20" Betts stainless steel man way, with 10” flip fill provision, placed on top of tank near the front of the tanker.

Dedicated Overflow

The tank will have, open to atmosphere, 10” dedicated overflow tube and venting system. Where tube exits inner shell there will be 12-gauge stainless steel type 304 MIG welded, with 308L wire, clad, welded to inner shell and to over flow tube for extra support. Water exiting the tanker will be diverted according to NFPA to the rear of the drive axle.

Upper Tank Walking Surface

Installed the length of the apparatus, directly on top will be appropriate walking surface material.

Outer Tank Catwalks

Stainless steel 10" wide, 14-gauge type 304 #4 finish catwalks installed at side of outer tanker shell. Catwalks will be fully TIG welded at the seams with 308L wire, including stainless steel 12-gauge type 304 #4 finish front panels. Catwalks to have stainless steel 12-gauge catwalk braces to attach to sub-frame outriggers. Welds to be of MIG type with appropriate wire.

Tank Back Panel

Mounted to the bottom edge of the tank rear head will be a stainless steel 10-gauge type 304, #4 finish rear back panel. The panel will be integrated into the rear head, catwalks, step platform and fill in the area between the frame rails.

Weld discoloration on front side of back panel will be polished to #4 finish.

All outer welds will be of TIG style with 308L wire, and polished to a seam style #4 finish.

Dumping System

Rear dump will consist of one (1) Newton square 10” Kwik-Dump valve, model 1070-34 electric stainless steel mounted on rear dump manifold exterior of tank, supporting three dump valves. Valve will include a flip down extension.

Side dumps will consist of Newton square 10” Kwik-Dump valves, model 1070-34 electric stainless steel dump valves with a fixed length, and include a flip down extension.

All extensions and dump valves will include appropriate pins and handles to override electronic operation, if it should fail. Handles for the dump valves will be mounted with stainless steel fasteners in the driver side cabinet.

All dump valves to be mounted with stainless steel flange bolts and rubber seal gaskets.

All dump valves will be electronically operated, and include two (2) sets of Innovative Control switches. Switches are weatherproof, ergonomically designed, back lighted, sun shielded, and eye appealing.

One set of switches will be located at rear driver side catwalk and one set at passenger side rear catwalk. The driver side switches will have two switches which will activate the driver side dump valve and rear dump valve. The passenger side switches will have two switches which will activate the passenger side dump valve and rear dump valve.

All switches shall be innovative rocker switches mounted in an Innovative housing.

Rear Fills

There shall be one (1) 4” rear tank fill line port. The 4” fill line shall be plumbed through the back panel and into the bottom of the tank located right side of back panel, lower than the dump valve.

The valve when installed into the bottom of the tank provides a lower connection point for the firefighter thus reducing risk of back injury along with less water splash on the firefighter. Mounting into the bottom of the tank removes stress from the tank back panel combined with support braces from tank frame makes this a superior tank fill option.

The valve shall be a 4" Fireman’s Friend, NFPA compliant. Fill line to include a ½” drain line to include a ¾” quarter turn valve. Valve will be appropriately labeled.

Valve will terminate with an approximate 30 degree angle and a 5” storz fitting with cap and chain.

Internal tank will have a fast fill diffuser installed as part of the valve.

Installed to the 5” storz rear fill will be a 2 ½” NHT by 5” storz adaptor.

Secondary Fill

Left side fill piping will be 2 ½” stainless steel type 304 to include a 2 ½" apparatus ball valve, with a 25-degree elbow with air bleeder. Fill line to be plumbed through the back panel and into the bottom of the tank.

Valve will terminate with 2 ½” NHT fitting to include cap and chain.

Water Level Gauges

An Innovative Controls SL Series Tank Level Monitor System shall be installed at the rear of the tanker. The system shall include an electronic display module in a bezel, with a pressure transducer-based sender units, and extension cable. The display module shall show the volume of water in the tank using 14 superbright easy-to-see LEDs for each. Tank level indication is enhanced by the use of green LEDs at the full level, amber LEDs at the ¾, ½ and ¼ tank levels, and red LEDs at the empty level. Wide-angle diffusion lenses in front of the LEDs create a 180° viewing angle.

The electronic display modules shall be waterproof and shock resistant being encapsulated in a urethane-based potting compound. The potted display modules shall be mounted to a chrome plated panel-mount bezel with a durable easy-to-read polycarbonate insert featuring blue and red graphics and water and foam icons.

All programming functions shall be accessed and performed from the front of the display module. The programming includes manual or self-calibration and networking capabilities to connect remote slave displays. Low tank level warnings shall include flashing red LEDs starting below the ¼ level, down-chasing LEDs when the tank is almost empty, and an output for an audible alarm.

The display modules shall each receive an input signal from a dedicated pressure transducer. These stainless steel sender units shall be installed on the outside of the water tank near the bottom. All wiring, cables and connectors shall be waterproof without the need for sealing grease.

Secondary Water Level Monitor

One (1) additional Innovative Controls SL Series Tank Level Monitor remote displays shall be installed. A full size display shall be installed at the pump operator panel.

The system shall include an electronic display module and an extension cable. The display module shall show the volume of water in the tank using 14 superbright easy-to-see LEDs. Tank level indication is enhanced by the use of green LEDs at the full level, amber LEDs at the ¾, ½ and ¼ tank levels, and red LEDs at the empty level. Wide-angle diffusion lenses in front of the LEDs create a 180° viewing angle. The electronic display module shall be waterproof and shock resistant being encapsulated in a urethane-based potting compound. The potted display module shall be mounted to a chrome plated panel-mount bezel with a durable easy-to-read polycarbonate insert featuring blue graphics and a water icon.

The remote slave display shall receive input data from an Innovative Controls SL Series master display unit and mirror its function. Low tank level warnings shall

include flashing red LEDs starting below the ¼ level, down-chasing LEDs when the tank is almost empty.

All wiring, cables and connectors shall be waterproof without the need for sealing grease.

Portable Tank Storage

A Zico “Quick Lift System” powered portable tank rack shall be mounted on passenger side catwalk with appropriate tank brackets. Rack will have full 1/8” aluminum diamond tread front cover. (option at no additional cost a stainless steel cover and vinyl decal of department logo) Rack will be powered by a 12volt 30-amp electrical system, with two (2) electric actuators.

Appropriate label will be affixed by pinch points to inform personnel of possible pinch area.

Rack will be equipped with two lights located at the farthest point of rack, to flash when pool is out of lock position. Rack system will include a weather proof switch located at front of catwalk, passenger side. Installed to rack will be appropriate custom white reflective stripe placed in an “eye appealing position”.

Tank rack will be sized and manufactured to fit a 3500 gallon Husky portable pool.

Mounted to the tank rack will be a switch that once tank rack is out a “travel” position, it will light a “HAZARD LIGHT” mounted to chassis console.

Rear Step Platform

Rear step platform will be approximately 24” in length and originate from rear sub-frame. Step frame work will be of painted steel tubular construction and be supported from rear sub frame and back panel. On top side of step platform frame work along edges will be embossed stainless steel tread plate and center area will be aluminum tiger tooth grip strut stepping surface.

Installed on left and right sides shall be LED lights to illuminate the stepping surface of the rear step platform.

Initial step is not to exceed 24" in height. Step platform will be completely independent of the truck frame.

(Complete painted steel structural construction)

Mounting

Apparatus Body will be mounted to chassis with all appropriate material including the following. There will be a 1" x 3" rubber sill between body sub-frame and truck frame. The sill will be held in place by 16-gauge stainless steel type 304 “keepers”.

Located at front and rear of tank, one each side will be U-bots with nuts, bolted to truck frame. Spring loads may be used to reduce the stress transferred from the chassis to the tank when applicable. Center portion of tank will be U-bolted to the truck frame with solid mounts minimum of 4 U-bolts per side.

At all four corners of the sub-frame, using truck components, will be 3/16" stainless steel tank side guides. Side guides will aid in control of tank/body in emergency stopping, and roll-over protection.

Tank/body can be easily removed from chassis by removing mounting supplies, and tow hooks. As per truck manufacturers there will be no welding to the truck frame.

Skirting

Mounted at the wheel will be full stainless steel wheel skirts. The skirts will be sized to fit tires and include appropriate bracing. The skirting will be manufactured using 14 gauge stainless steel and be painted to match the chassis.

Fenderettes

Installed to the outside of the stainless steel fender panel will be rubber Rub-A-Fender fenderettes. The fenderettes will be attached with stainless steel fasteners.

Apparatus Trim Package

Apparatus will have complete stainless type 304 diamond tread plate skirting trim, placed to the front of the body to deflect stone chips from the steer tires. The trim will be mounted from the top of the catwalk down, front facing with stainless steel fasteners. (No aluminum diamond plate trim will be acceptable)

Apparatus License Plate Holder

Mounted to the rear of the apparatus will be a stainless steel lighted license plate holder, mounted with stainless steel fasteners.

Compartments

Stainless steel compartments will be built in “low side” configuration.

The compartments will be constructed from stainless steel 12-gauge type 304 material. Cabinet floors will be of sweep out design and be left their stainless steel color with weld seams polished to #4 finish.

All compartments will contain appropriate stainless steel louvered vents.

All shelves and floors will have Turtle Tile material with tapered front as needed.

Driver Side Compartments

There shall be two compartments mounted to the driver side of apparatus as described below.

D1

Fabricated and mounted forward of drive wheels shall be one (1) stainless steel type 304 compartment, low side design. The compartment will be designed to house the pump controls and be constructed using 12-gauge stainless steel type 304 2B finish, with flush sweep out design. Compartment will have slight tip out for proper water drainage.

Cabinets will be mounted with stainless steel mounting brackets, attached directly to tank sub frame. Header will be TIG welded directly to stainless steel catwalks with 308L wire. Cabinets will have approximated outside dimensions of 65" wide by 45" high by 26" deep. (note tank will extend into upper portion of compartment)

D2

Fabricated and mounted forward of the drive wheels rearward of compartment D1 shall be one (1) stainless steel type 304 compartment, low side design, mounted to top of catwalk. Compartment will have 12-gauge stainless steel type 304 2B finish, with flush sweep out design. Compartment will have slight tip out for proper water drainage and include proper stainless steel vents.

Compartment will be mounted with stainless steel mounting brackets, attached directly to tank sub frame. Header will be TIG welded directly to stainless steel catwalks with 308L wire. Compartment will have approximated outside dimensions of 18" wide by 34.75" high by 26" deep. (low side, high compartment)

A complete uni-strut system shall be installed to the compartment designed to support vertical hose dividers. Mounted into the uni-strut system shall be five (5) adjustable dividers to facilitate storage of rolled hose.

Mounted above the hose storage shall be one (1) adjustable slide-out tray. The tray shall be mounted into uni-strut to be adjustable in height. The tray shall be fabricated using 3/16" aluminum and have minimum 2" high sides. It shall have full extension slides which will mount to the uni-strut "C" channel which is securely fastened to the compartment walls. The trays shall lock in the in and out positions.

Cabinets will each have (2) ROM LED track interior lights, mounted on the sides in the door tracking, per compartment. Lighting will exceed NFPA requirements. Lighting will be activated when master switch is on and the door is opened.

Passenger Side Compartments

There shall be two compartments mounted to the passenger side of apparatus as described below.

P1

Fabricated and mounted forward of drive wheels shall be one (1) stainless steel type 304 compartment, low side design. The compartment will be constructed using 12-gauge stainless steel type 304 2B finish, with flush sweep out design. Compartment will have slight tip out for proper water drainage.

Cabinets will be mounted with stainless steel mounting brackets, attached directly to tank sub frame. Header will be TIG welded directly to stainless steel catwalks with 308L wire. Cabinets will have approximated outside dimensions of 65" wide by 45" high by 26" deep. (note tank will extend into upper portion of compartment)

Cabinets will each have (2) ROM LED track interior lights, mounted on sides in the door tracking, per compartment. Lighting will exceed NFPA requirements. Lighting will be activated when master switch is on and the door is opened.

P2

Fabricated and mounted forward of the drive wheels rearward of compartment D1 shall be one (1) stainless steel type 304 compartment, low side design, mounted to top of catwalk. Compartment will have 12-gauge stainless steel type 304 2B finish, with flush sweep out design. Compartment will have slight tip out for proper water drainage and include proper stainless steel vents.

Compartment will be mounted with stainless steel mounting brackets, attached directly to tank sub frame. Header will be TIG welded directly to stainless steel catwalks with 308L wire. Compartment will have approximated outside dimensions of 18" wide by 34.75" high by 26" deep. (low side, high compartment)

Cabinets will each have (2) ROM LED track interior lights, mounted on the sides in the door tracking, per compartment. Lighting will exceed NFPA requirements. Lighting will be activated when master switch is on and the door is opened.

Hard Suction Hose Storage

Mounted to the driver side of the tank will be two (2) “V” style trays with brackets to attach 10’ x 4” suction hoses. Included with the brackets will be heavy duty hook and loop attaching straps.

Compartment LED Lighting

Cabinets will each have ROM V4 LED interior lights, full height, and mounted both side of door opening. Lighting will exceed NFPA requirements. Lighting will be activated when master switch is on and the door is opened.

Door Construction

ROM roll up compartment doors shall be manufactured and assembled in the United States. Doors shall be front roller design with an aluminum drip rail above each compartment door with seals on both sides. Door finish shall be brushed anodized aluminum finish.

The doors shall have a magnetic door ajar system integrated in the lift bar handle and a retainer block to signal an open door. (no mechanical switches or interior switches)

All door slats must have interlocking end shoes to prevent slat form moving side to side and binding the door. Between each slat will be a co-extruded PVC inner seal to prevent metal-to-metal contact and to repel moisture. The inner seal will not be visible. Slats will have interlocking joints with folding locking flange to provide security and prevent penetration by sharp objects. Slats to be double wall extrusion aluminum 1.366” high by .315” thick. Exterior surface shall be flat providing an eye appealing appearance and interior surface to be concave to prevent lodging of tools.

Latch system to be a full width one-piece lift bar operable by one hand. Two-inch wide finger pull integrated into the bottom rail extrusion for one hand opening and closing.

The clip system that connects the curtain slats to the operator drum will allow easy tension adjustment without tools.

Interior Compartment Finish

Compartment to be left natural color.

Shelf and Floor Material

All cabinet floors, trays and shelves will be equipped with black Turtle Tile as described in these specifications.

Lighting

Emergency Lights

Emergency Light Control and Siren

Siren control system will consist of a Whelen 295SLSA1 Siren Control, with microphone. The control is full function siren/amplifier with 17 scan lock siren tones.

Emergency lighting will be controlled through the use of a bank of lighted rocker switches. The switches shall be installed into the center console in a single row. The first switch in the bank shall be a master switch to control power to the other switches. All switches shall be labeled to indicate function.

Secondary Siren

Installed to the apparatus shall be a Federal Q2B mechanical siren. The siren shall be mounted to the front bumper, exact placement to be determined by chassis and chassis options.

The siren shall be controlled using foot controls, one mounted in driver floor space and one mounted in passenger floor space. A brake switch will be mounted in the center console to be accessible by the driver and passenger.

Speaker

Installed to the chassis front bumper will be a high output 100-watt speaker with stainless steel S and R high polish grille cover.

Light bar

Upper level truck light bar will consist of a Whelen Justice JE2NFPA all LED light bar. Light bar includes two center white modules and balance are all red Light bar is NFPA zone “A” compliant. White lights will deactivate when chassis is in park position. Light bar mounted to the top of the chassis roof with permanent mount kit.

Lower Front Warning Lights

Installed to the front grille area of the apparatus, forward facing, will be two (2), Whelen LINZ6 LED lights. Light has 69 Scan-Lock flash patterns for alternating/simultaneous flashing and steady burn.

Lights will be mounted one on each side of the grille and include chrome bezels. Lights measure 2” by 1 5/8”.

Each light will have a Deutsch Connector installed and have its own harness ran back to a junction point inside a water tight cabinet. There shall be no splices in electrical wiring outside body.

Intersection Warning Lights

Installed to the side front fenders of the apparatus will be 2) Whelen LINZ6 LED lights. Light has 69 Scan-Lock flash patterns for alternating/simultaneous flashing and steady burn.

Lights will be mounted one left side, one right side, side facing on the fenders and include chrome bezels. Lights measure 2” by 1 5/8”.

Each light will have a Deutsch Connector installed and have its own harness ran back to a junction point inside a water tight cabinet. There shall be no splices in electrical wiring outside body.

Mid Body Lower Warning Lights

Installed to the mid side of the apparatus mounted in the center will be two (2) Whelen LINZ6 LED lights. Light has 69 Scan-Lock flash patterns for alternating/simultaneous flashing and steady burn.

Lights will be mounted one on each side of the apparatus and include chrome bezels. Lights measure 2” by 1 5/8”.

Each light will have a Deutsch Connector installed and have its own harness ran back to a junction point inside a water tight cabinet. There shall be no splices in electrical wiring outside body.

Rear Lower Warning Lights Side Facing

Installed to the rear of the apparatus mounted in the low position will be two (2) Whelen LINZ6 LED lights. Light has 69 Scan-Lock flash patterns for alternating/simultaneous flashing and steady burn.

Lights will be mounted one on each side of the apparatus low and as rearward as possible. Lights measure 2” by 1 5/8”.

Each light will have a Deutsch Connector installed and have its own harness ran back to a junction point inside a water tight cabinet. There shall be no splices in electrical wiring outside body.

Rear Lower Warning Lights Rear Facing

Installed to the rear of the apparatus rear facing mounted in the low position will be two (2) Whelen LINZ6 LED lights. Light has 69 Scan-Lock flash patterns for alternating/simultaneous flashing and steady burn outside body.

Lights will be mounted one on each side of the apparatus, rear facing low and include chrome bezels. Lights measure 2” by 1 5/8”.

Each light will have a Deutsch Connector installed and have its own harness ran back to a junction point inside a water tight cabinet. There shall be no splices in electrical wiring outside body.

Rear Upper Warning Lights Side Facing

Installed to the sides of the apparatus mounted in the upper position will be two (2) one left side one right side, Whelen M6 Series, Super LED lights. Lights have 129 Scan-Lock flash patterns for alternating /simultaneous flashing and steady burn.

Lights will be mounted at the rear of the tank, side facing, and include chrome bezels. Lights are 4" high by 6 ¾" wide. Each light will have a Deutsch Connector installed and have its own harness ran back to a junction point inside a water tight cabinet. There shall be no splices in electrical wiring outside body.

Included with the lights shall be a new light boxes.

Rear Upper Warning Lights Rear Facing

Installed to the rear of the apparatus mounted in the upper position will be two (2) Whelen M6 Series, Super LED (Whelen's New M series light). Light has 129 Scan-Lock flash patterns for alternating /simultaneous flashing and steady burn.

Lights will be mounted to the rear of the tank, rear facing, and include chrome bezels. Lights are 4 5/16" high by 6 ¾" wide. Each light will have a Deutsch Connector installed and have its own harness ran back to a junction point inside a water tight cabinet. There shall be no splices in electrical wiring outside body.

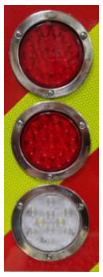
Traffic Advisor

Whelen Traffic Advisor™ model # TAL65 shall be provided. The traffic advisor shall incorporate a rectangular extruded black powder coated aluminum chassis with six amber 5mm series LED lights with waterproof connectors. The 5mm series lights shall be installed with an amber non-optic hard coated polycarbonate lens. The 5mm series lights shall incorporate 40 amber 5mm LEDs. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The encapsulated coated PC board and foam in place gasket shall provide shall provide additional protection against environmental elements. The 5mm lights are installed with waterproof connectors.

The solid state traffic advisor shall be vibration resistant. The TAL65 shall include model TACTLD1 control head that includes remote flash control. The TACTLD1 shall have four programmable directional sequence flash patterns of left, right, split, and flash. The LED display on the control head shall replicate the TAL65 directional sequence. The traffic advisor control head shall have a rear panel dip switch for the ability to set eight additional Scan-Lock™ flash patterns. The TACTLD1 shall contain a 10-amp external fuse for reverse polarity protection.

The TACTLD1 shall include a bail strap mounting kit. The TAL65 will contain a 9/C 18GA 15' interconnecting cable with quick disconnect feature. The TAL65 has the ability function as an auxiliary flash option when connecting the blue/white wire from the TACTLD1 installation kit. The LED modules are covered by a five-year factory warranty.

D.O.T. Lighting



All LED D.O.T. lighting; clearance/ marker/ identification lights and reflectors are done to adhere to the State and Federal transportation laws.

There shall be two (2) sets of D.O.T. lighting placed at rear of the apparatus, one left and one right side of the apparatus in the lower position. Lower DOT lighting shall be sealed L.E.D 4" round style lights. There will be a stop/ tail, turn, and one backup light each side. Lights will be recessed and mounted in a stainless steel trim ring.

Mounted in the upper position, in stainless steel boxes shall be two (2) (one left side, one right side) stop/tail/turn light. Lights shall be oblong LED sealed lights.

L.E.D. marker lights will be placed on side of body and to top rear side of body. There will be two marker lights per side, and 3 marker lights at rear.

All wiring harness for marker lights will be Truck-Lite brand, each light will be ran on its own harness, all leading into a plastic, sealed, compression fit junction box. Wiring harnesses are all rated for correct amp draw, and are insulated wire. All harnesses are directly attached to body, with correct grommets or wire loops.

Chassis Engine Compartment Lighting

Installed to engine compartment will be a single dome clear switched light. Light located in convenient location and mounted with stainless steel fasteners.

Apparatus Under Body Lighting

Placed by all stepping surfaces on the chassis and body, under compartments or as required by NFPA, will be clear LED underbody lights. The lights will be hooked into chassis park mode switch and activated when apparatus is parked and master switch is in the on position. Lighting is to comply with NFPA recommendations.

Lighting shall be placed at or near but not limited to, cab steps, pump panel, under compartments, rear step platform, and on top of rear step.

Scene Lights

There shall be a total of six (6) Whelen 9SC0ENZR scene lights installed to the apparatus.

There shall be four (4) scene lights mounted side facing, two (2) left and two (2) right side of the apparatus, mounted near front and rear of body as high as possible.

Installed to the rear, rear facing, of the apparatus shall be four (4) scene lights. The scene lights shall be mounted to the upper light box.

The lights shall be switched at the center console with three switches, Left, Right, and Rear lights.

Chassis Body Warning Light System

Mounted in the stainless steel center console will be a “Do not move apparatus/open door indicator light”. The light will be flashing red, labeled and in clear view of the driver.

The light will notify if there is a roll up compartment door, side skirt door or storage that is open.

Back Up Alarm

Installed to the rear of the apparatus will be a 97DBA back up alarm. The alarm will activate when chassis is in reverse mode.

Battery Maintainer

Installed in cab of truck will be a Kussmaul Model 091-56-12 single battery Auto Charge 1000 kit.

The battery charger will be for a single battery system, with 18 amps at 12 volts. The battery charger will have a built in 3 amp batter saver, no water boil off, rugged construction for vehicle mounting and 3 year warranty.

Kit includes 10 element waterproof bar graph mounted outside of driver side compartment in stainless steel bracket.

Electric Shoreline

Mounted outside of driver side compartment by the battery bar graph display will be a Kussmaul Super Manual Eject Power Line Disconnect, for department’s electrical line.

120V Shoreline Power Outlet

From shore line power will be one (1) power outlet mounted near the center console.

Air Shoreline

Mounted outside of driver side compartment by the battery bar graph display will be a Kussmaul Super Manual Eject Air Line Disconnect, for department's air-line.

Apparatus Paint Finish Process

The body of the apparatus shall be painted to match the chassis. The paint process will be a base coat clear coat application in accordance with paint manufacture. The water tank shall be left natural #4 stainless finish.

The compartment interiors shall be left their natural material color. The side skirts shall be painted

Undercoating

Sub frame is manufactured from all stainless steel and does not require undercoating.

Lettering and Custom Stripe Design

Custom lettering will be installed and adhere to or exceed the NFPA standards. Lettering will be vinyl decals specific to your departments' specifications.

Lettering on the door(s) will be approximately 3" in height. The door lettering will say "Vol." (Bowed on top) "FIRE DEPT." (Straight on bottom)

On rear of apparatus, will be "FD", lettered in gold colored vinyl with black outline, and approximately 4" in height.

On truck hood will be "Tender 1" on both sides.

Custom white reflective tape installed along full skirting, and front bumper. Reflective tape will follow body lines on chassis and on body.

Installed on body and chassis body only will be a gold stripe with black outline, included with the pin stripe will be custom scrolled designs. Scrolled designs will be placed on body to accent body contours.

Installed to the passenger side and driver side roll up doors will be departments custom designed graphic.

Installed to rear of apparatus will be a Chevron pattern reflective stripe which will cover a minimum of 50% of the rear facing body at a 45 degree angle from centerline. The alternating color will be red then green. Stripe will be 6" wide

Installed to the chassis doors, equipment racks, and cabinet slide out trays will be appropriate NFPA approved reflective stripe that will be visible when the chassis doors are open.

Lettering will adhere to the existing department lettering and to the department's instructions. Proof sheets will be sent for department approval prior to installation of lettering and decal work.

Chassis Rear Mud flaps

Mounted to the rear of the apparatus will be S and R rubber anti sail mud-flaps with Company logo or stainless steel emblem. Mud-flaps mounted with stainless steel fasteners.

Stainless Steel Hardware, Loose Equipment

Included with delivery will be a bag of miscellaneous stainless steel fasteners that was used in construction of the apparatus.

Rear Camera System

Installed to rear of the apparatus will be a Sony Voyager OBS713HD 7" Heavy Duty Rear Camera System. System includes an infrared camera with audio, Sony super HAD CCD 270K pixels and 420 TV lines, integrated microphone and water proof camera. Camera will be wired to a 7" high resolution touch screen display. System has auto activate reverse.

Chassis Antenna, Cable Provision and Radio Installation

Mounted to the chassis will be the antenna mounting base and customer supplied radio. The base should be mounted to the rear center of the cab roof. The cable shall be routed to the center console and customer supplied radio shall be installed as per department's instructions.

Folding Steps \ Apparatus Ladder

Mounted at left rear will be a stainless steel ladder to access top of tank for filling of foam cell. Ladder will be fabricated from stainless steel tubing with knurled ladder rungs, and fastened to the intermediate step with stainless steel fasteners.

Included at the ladder will be appropriate lighting which will be activated when chassis is in park mode.

Steps will be appropriately labeled as a falling hazard.

Grab Handles

Mounted at rear of apparatus, one left and one right will be two (2) aluminum 1 1/4" grab handles, mounted with stainless steel type 18-8 bolts, and rubber tight gasket. Grab handles shall also be mounted horizontal at the back up of the hose bed and one each side of the pump module. Handles will include rubber fluted material for ease of gripping. Appropriate labels will be affixed to rear of tank to warn personnel of potential fall risk and dump discharge.

All grab handles shall be sized to space being mounted within.

Wheel Chocks

Installed to driver side cabinet (inside or outside) will be a pair of standard aluminum wheel chocks with mounting brackets. Wheel chocks will be mounted to inside of driver side compartment.

Fire Fighter Helmet Storage

Department shall designate a specific area in the body for storage of all fire fighter helmets while riding apparatus.

Loose Equipment

Spanner Wrench Set

Two (2) double holder spanner wrench sets shall be provided and installed. They shall be equipped with two (2) universal spanner wrenches.

Spanner & Hydrant Wrench Set

One (1) triple holder hydrant & spanner wrench set shall be provided and installed. It shall be equipped with two (2) universal spanner wrenches and one (1) adjustable hydrant wrench.

Barrel Strainer – 4”

One (1) 4” NST barrel strainer shall be provided and connected to one 4” hard suction hose.

Suction Hose

Two (2) 4” x 10’ lengths of lightweight clear PVC hard suction hose with NST couplings shall be provided.

Floating Strainer

One (1) 4” NST floating strainer shall be provided and shipped loose.

Low Level Strainer

One (1) 4” NST low level strainer with jet siphon shall be provided and shipped loose.

Portable Tank

One (1) 3,500 gallon, 22 oz., red hypalon, Husky portable tank shall be supplied with the delivery of the apparatus. The portable tank shall have an aluminum framework.

Fire Pump and Plumbing

Pump

The pump shall be a Hale APS-500 GPM single stage, centrifugal, midship mounted PTO driven fire pump, capable of up to a 500 GPM rating. Pump configuration shall support pump and roll capabilities.

The pump shall be certified to meet the following deliveries:
500 GPM @ 150PSI
375 GPM @ 200 PSI
250 GPM @ 250 PSI

Power to drive the pump shall be provided by the same engine used to propel the apparatus. The pump shall be midship mounted and designed to operate through a PTO driveline.

Pump Seal

The pump seal shall be a mechanical seal.

Pump Anodes

The pump shall be supplied with two (2) anodes for corrosion protection. The anodes shall be mounted at a 3/4" tap location on the pump manifolds. One (1) anode shall be mounted on the suction side of the pump and one (1) anode on the discharge side of the pump.

Pump Test Port

A test port assembly shall be installed to the pump operator’s panel. The test port assembly will provide a connection point when conduction the annual pump test.

Pump Panel ID Plate

An identification plate, prepared by the fire pump manufacturer, shall be installed on the pump operator control panel to identify the fire pump serial number, model number, and performance.

Pump Shift

One PTO pump shift switch shall be installed in the cab center console as space allows. The shift shall engage the PTO.

The following indicator lights shall be included with pump shift.

A green indicator light labeled "PUMP ENGAGED" shall indicate pump shift has successfully been completed.

A green indicator light labeled "OK TO PUMP", shall indicate the chassis transmission is in pump gear and parking brake is engaged.

A green indicator light labeled "OK TO PUMP AND ROLL", shall indicate the chassis transmission is in pump gear and parking brake is not engaged.

Pump Pressure Governor

Apparatus shall be equipped with a Class1 “Total Pressure Governor Plus” (TPG+) that is connected to the Engine Control Module (ECM) mounted on the engine. The “TPG+” will operate as a pressure sensor (regulating) governor (PSG) utilizing the engine’s J1939 data for optimal resolution and response when supported by the engine manufacturer. If J-1939 engine control is not supported, then analog remote throttle control shall be provided by the “TPG+”. The “TPG+” shall function as a Master Pump Discharge and Intake Gauge.

The TPG+ shall utilize control algorithms that minimize pressure spikes during low or erratic water supply situations. The “TPG+” shall be backwards compatible to any engine that supplies J1939 RPM, Temperature and Oil Pressure information providing the ability to maintain a consistent fleet fire-fighting capability and reduce operator cross training and confusion.

The “TPG+” shall have the ability to use either a 300 PSI or a 600 PSI discharge pressure transducer and a 300 PSI intake pressure transducer. PSG system diagnostics shall be built in and accessible by technicians. Programmable presets for RPM and Pressure settings shall be easily configurable. The straightforward menu structure shall allow the “TPG+” configuration to match existing apparatus operation as closely as possible.

The “TPG+” shall also include indication of engine RPM, system voltage, engine oil pressure and engine/transmission temperature with audible alarm output for all. The “TPG+” uses the J1939 data bus for engine information, requiring no additional sensors to be installed. The TPG+ shall monitor and display pump and engine hours. The “TPG+” shall use J1939 broadcast warnings for the alarm as a standard and allow the “user” to select warning values if “SOP’s” dictate.

Pump Master Discharge Gauge

Installed in the cab of the apparatus viewable by the driver shall be a secondary discharge gauge. The gauge shall read from a minimum of 0 psi – 300 psi.

Pump Master Drain

One (1) rotary style master drain shall be installed on the lower portion of the side control panel. It shall be of brass construction and use a rotary screw mechanism against a rubber sealing surface. Each port shall be isolated. An "open and closed" label with arrows indicating direction shall be installed.

Primer and Controls

The priming pump shall be a positive displacement, oil-less rotary vane electric motor driven pump conforming to NFPA-1901 rated performance requirements. The pump body shall be manufactured of heat-treated anodized aluminum for wear and corrosion resistance.

The pump shall be capable of producing a minimum of 24 Hg vacuum at 2,000 feet (609.6m) above sea level. The electric motor shall be a 12 VDC totally enclosed unit.

The priming pump shall not require lubrication. The priming pump shall operate by a single pull control valve mounted on the pump operator's panel. The control valve shall be manufactured of bronze construction.

Pump Mounting

The fire pump shall be mounted in an underbody configuration with the operator controls in the left side compartment. The pump shall be bolted to a framework supported off the chassis frame rail system. There shall be no welding to chassis frame, all mounts to be bolted in assembly.

Heat Pans

Installed to the bottom of the pump module shall be a pair of removable heat pans. The heat pans shall be fabricated from 12 gauge stainless steel and installed in an easy removable system. There shall be one pan installed from the right side and one from the left side. When both heat pans are installed a full enclosure shall be created.

Pump Compartment Heater

Installed into the pump compartment is a full heater with blower. Located at pump panel will be a labeled switch control to provide power to a thermostat to control the heater. There will be a shut off valve located on the intake and discharge side of the heater to isolate the flow of antifreeze in the summer months.

Pump Operator Panel

The pump operator panel shall be installed to the left side of the apparatus in the lower position, behind the left roll up door. The panel shall be fabricated from 14 gauge stainless steel and be mounted with stainless steel screws. The operator panel shall contain all pump controls, valves and gauges installed in accordance to NFPA. All pump controls, valves and gauges will include appropriate labels as described in this proposal

Water Tank to Pump Line and Valve Control

One (1) manually controlled tank to pump line shall be provided for connection between a water tank and the fire pump. The line shall be a 3” stainless steel line. The valve shall be a 3" bronze, quarter turn ball type. The valve will be a 3” Elkhart Unibody valve, with polymer seats with self-locking ball. The valve shall include swing out waterway for easy maintenance.

The valve shall be controlled from the pump operator panel using Innovative controls push pull control with “Tee” handle. The innovative control has the following features: ergonomically shaped, chrome plating handle with recessed label plate, quarter turn locking mechanism for positive locking, and Teflon impregnated bushings.

Installed to the tank to pump line shall be a 4” check valve to provide adequate water flow. This check valve shall meet the water flow requirements and automatically open when drafting from the tank and close if the pump suction receives water pressure from an outside source.

The control handles will include NFPA recommended color coded name plates.

Off Board Intake Lines

4” Left Side Inlet

One (1) 4” ungated suction steamer inlet shall be provided, on the left side pump panel and terminate with 5” male NH threads. The inlet shall have a removable screen.

The inlet shall include a polished chrome cap with long handles.

Pump Discharge Plumbing

The discharge plumbing shall be stainless steel schedule 10 materials. The plumbing shall incorporate sweep elbows for maximum water flow. The plumbing shall be attached to the pump with a bolt on flange and gasket. The complete system will be pressure tested as per NFPA recommendations.

Water Tank Fill Line and Valve Control

One (1) manually controlled tank fill line shall be provided for connection between the fire pump and the water tank. The valve shall be a 2" bronze, quarter turn ball type. The valve will be a 2” Elkhart Unibody apparatus valve with polymer seats with self-locking ball. The valve shall include swing out waterway for easy maintenance.

The valve shall be controlled from the pump operator panel using Innovative controls push pull control with “Tee” handle. The innovative control has the following features: ergonomically shaped, chrome plating handle with recessed label plate, quarter turn locking mechanism for positive locking, and Teflon impregnated bushings.

2-1/2" Left Side Discharge

Two (2) 2-1/2" discharge outlet shall be installed to the left side pump panel area, with appropriate color identification.

The discharge shall each be piped with 2 ½" stainless steel pipe.

The valve shall be 2 ½" bronze, quarter turn ball type. The valve will be a 2 ½" Elkhart all brass body, Unibody apparatus valve with polymer seat, with self-locking ball. The valve shall include swing out waterway for easy maintenance. The valves shall be controlled from the pump operator panel using Innovative controls push pull control with "Tee" handle. The innovative controls have the following features: ergonomically shaped, chrome plating handle with recessed label plate, quarter turn locking mechanism for positive locking, and Teflon impregnated bushings.

One (1) 2-1/2" Noshok liquid filled gauges per discharge, each with a stainless steel bezel shall be provided, one for each discharge. The gauges shall be located on the pump operator's panel and be incorporated into the discharge control.

The controls and gauges will be one, color coded, complete unit, by Innovative Control per discharge.

The discharges shall be equipped with a drain valve and bleeder. The controls will be an Innovative Control, flip up flip down style, color coded, with label.

The discharges shall terminate with a 2-1/2" male NST, chrome cap and chain.

Hose Reel

Installed to the passenger side compartments towards the front shall be an electric rewind booster reel. Polished stainless steel rollers shall be provided to aide in guiding the hose in and out of the compartment. The reel will be equipped with a water lubricated, self-flushing, bronze swivel joint and an adjustable brake to allow freewheeling, adjust drag or full lock operation.

Installed to the reel shall be 200' of lightweight booster reel hose. The hose shall be designed to allow charging of the hose while coiled on the reel.

Foam System

Mounted to the pump shall be a Scotty around the pump foam inductor/mixer. Foam system will be complete with a control knob calibrated to induct foam concentrate ratios of .0% to 3.75% at flow rates of 15 to 125 GPM at 100psi.

Price Apparatus Body	$153,982.00

Chassis Price	$101,415.00
Total Price Apparatus Body and Chassis	**$255,397.00**

Proposal submitted by: Brian Hafermann

Proposal Accepted by: _____ Date_____
Proposal is valid for 30 Days

The purchaser will be responsible for all items and installation of such items recommended by NFPA guidelines 1901-2009 that are not outlined in this spec.

Options

USB Charger **$95.00**

Installed to the center console shall be a Kussmaul dual port USB charger. The charger shall be designed to charge cell phones and tablets when the master switch is in the on position.

Option Selected **YES** _____ **NO** _____ **Initials** _____

Clad Chassis Entrance Steps **$2985.00**

Installed to the commercial chassis entry steps will be NFPA compliant custom fabricated aluminum embossed diamond plate steps and cladding. The original commercial entry steps will be removed and replaced using original chassis bracketry if possible. The embossed diamond plate will enclose the existing fuel tank and battery box on driver side and passenger side of the chassis. The embossed diamond plate will be installed with stainless steel fasteners, brackets, and bracing. Included with the installation will be access to all service areas of the chassis equipment

Option Selected **YES** _____ **NO** _____ **Initials** _____

Dump Switches in Cab **$345.00**

One set of switches shall be installed to the center console to control the three (3) dump valves. There will be a total of three (3) switches to control Driver Side valve, Passenger side valve and Rear valve.

Option Selected **YES** _____ **NO** _____ **Initials** _____

Water Level Mini Display **$628.00**

Installed to the center console shall be an Innovative Controls SL mini display.

Option Selected	**YES**	**NO**	**Initials**
	_____	_____	_____