

# *Wilder Rural Fire Protection District, ID*

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One (1)

Y\_\_N\_\_

### **INFORMATION FOR CONTRACTORS**

Sealed proposals are desired from reputable makers of automobile fire apparatus in accordance with these specifications and with the advertisement for the piece of apparatus listed as follows:

One (1) 3000 Gallon Water Tender on a Commercial Chassis, midship mounted fire pump, apparatus body, booster tank, and all other equipment in accordance with the following;

One (1)

Y\_\_N\_\_

### **GENERAL REQUIREMENTS**

Each bid must be accompanied by bidder's accurate written specifications covering the apparatus and equipment, which it is proposing to furnish and to which the apparatus furnished under the Contract must conform.

It is the intent of these specifications to cover the furnishing and delivery to the purchaser, complete apparatus equipped as specified. All specifications herein contained are considered as minimum. Some items have been specified by brand name or model number. These have been carefully selected because of their reliability, compatibility with present equipment, and local availability of parts.

No exceptions will be allowed relating to the make and model of fire pump, valves and plumbing, gauge and types of materials, size of compartments, methods of construction, and overall design features of the apparatus.

Exceptions taken in areas other than listed above must be listed on a separate page and marked "Exceptions To The Specifications". Every exception taken shall be listed as to page number and paragraph. Failure to provide the required exception list with the bid proposal will be cause for rejection of that proposal.

Such details and other construction features not specifically covered herein shall conform with all State and Federal requirements, and the NFPA Pamphlet No. 1901 "Standard for Automotive Fire Apparatus" in effect at the time the contract is signed.

Any test equipment required or expense incurred for the ULI pump test shall be borne by the contractor supplying this equipment.

One (1)

Y\_\_N\_\_

### **RELIABILITY OF CONTRACTOR**

Contractor shall furnish satisfactory evidence that he has the ability to construct the apparatus specified, and shall state in the bid proposal the location of the factory where the apparatus is to be built, and also where future service work will be performed.

Proposals will only be considered which are submitted by full time fire apparatus manufacturers who are current members of the Fire Apparatus Manufacturers

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Association (FAMA). FAMA is a nonprofit organization designed to keep fire truck manufacturers abreast with latest technologies and governing standards, and to act as a liaison to the IAFC and NFPA. Bidder must have the ability to show evidence of their affiliation to the FAMA in the bid proposal.

All bidders shall provide with their proposal, pictures of similar apparatus as that being specified, and the names of ten cities where similar apparatus have been furnished

One (1)

Y\_\_N\_\_

### **SUBMISSION OF PROPOSALS**

Each proposal shall be submitted in sequence with the attached specifications for ease of checking compliance of bids with bidder's specifications.

All proposals shall be submitted on company letterhead.

Each bid proposal shall be signed by an authorized representative of the manufacturing company being bid.

Any proposal which is not signed by a representative of the manufacturing company being bid or not submitted on company letterhead will be immediately rejected.

One (1)

Y\_\_N\_\_

### **PROPOSAL GUARANTEE**

Each proposal must be accompanied by a Bidder's Bond or Cash in the amount of 10% of the bid submitted a proposal guarantee, which it is agreed by the contractor will be forfeited in the event this proposal is accepted and the contract is not executed.

Bid bond shall be signed by an Officer of the manufacturing company being bid.

Personal or Company checks are not acceptable as a Bonding medium.

All bidders must have the ability to provide the requested Bidder's Bond and Performance Bonds when called for in these specifications. Companies who are only able to provide Supply Bonds in lieu of Performance Bonds will not be considered.

One (1)

Y\_\_N\_\_

### **INSURANCE REQUIREMENTS**

Each bidder must submit with their bid proposal a Certificate of Insurance listing the proposed manufacturer's product liability insurance coverage. Liability insurance shall be a minimum amount of twelve (12) million dollars with coverage attained with a minimum of \$2,000,000.00 general insurance and \$10,000,000.00 umbrella coverage. Submitted Certificate shall name the apparatus manufacturer, insurance company, policy number, and effective dates of the insurance policy. Bids submitted without the required Certificate, or for Certificates listing less than two (2) million dollars of general coverage, plus the ten (10) million dollar umbrella coverage, will be considered non responsive and automatically rejected. No exceptions are allowed

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to the minimum insurance coverage requirement.

The manufacturer shall maintain full insurance coverage on the purchaser's cab and chassis from time of first possession by the manufacturer until the apparatus is delivered and accepted by the purchaser. No exceptions. Purchaser reserves the right to require proof of insurance from the manufacturer's insurance carrier prior to entering into a contract for the apparatus.

One (1)

Y\_\_N\_\_

### **DELIVERY AND OPENING OF PROPOSAL**

Each proposal and all papers bound and attached thereto, together with the proposal guarantee, shall be placed in an envelope and securely sealed therein. The envelope shall be marked "Bid On Fire Equipment".

Proposals will be received at or prior to the time set for the opening of bids. Proposals received after the "Bid Opening" will be returned unopened.

The bids will be opened publicly and read aloud at the time and date stated on the advertisement for bids.

One (1)

Y\_\_N\_\_

### **DRAWINGS**

A CAD produced line drawing of the exact apparatus being proposed must be furnished with the bid. Since the blueprint drawing is required of all bidders, any bid submitted without a drawing as specified will be considered non-responsive and automatically rejected. Drawing must include the left side with chassis cab, right, and rear views of the vehicle. Drawing must be a minimum of 11" x 17", and shall be a drawing of the exact apparatus as proposed, not a drawing of another similar unit. All submitted drawings will become a part of the bid proposal.

One (1)

Y\_\_N\_\_

### **REJECTION OF PROPOSALS**

The right is reserved to reject any or all proposals or to accept such proposal as is in the best interest of the purchaser.

All bid requirements and specifications as written are considered minimum.

Bids will be rejected which substitute less substantial materials and/or methods of body construction than those specified. Since all manufacturers have the ability to purchase the materials described as well as to shear, fabricate and assemble body panels as specified, these areas are considered a strict requirement of the specification.

Purchaser does not, in any way, obligate itself to accept the lowest Bid.

Proposals may be rejected for any alteration, erasures, or penciled entries. No bidder may withdraw his proposal for at least 30 days after the scheduled closing time for the receipt of bids.

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Bidders taking "total exception" to these specifications are hereby advised that any such statement will result in immediate rejection of the bid proposal.

One (1)

Y\_\_N\_\_

### **COMPLETION DATE**

Bidders shall indicate in their proposals the number of working days for delivery of the completed apparatus, from the date of bid acceptance by the Manufacturer.

One (1)

Y\_\_N\_\_

### **CARRYING CAPACITY**

The GAWR and GCWR or GVWR of the chassis shall be adequate to carry the fully equipped apparatus including full water and other tanks, the specified hose load, unequipped personnel weight, ground ladders, and a miscellaneous equipment allowance of 2000 pounds.

A permanent placard shall be affixed and visible to the driver, which states the maximum number of personnel the vehicle is designed to carry.

The height of the fully loaded vehicle's center of gravity shall not exceed the chassis manufacturer's maximum limit.

One (1)

Y\_\_N\_\_

### **WARRANTY**

As a condition of the acceptance of the apparatus, the contractor shall furnish the following warranty:

We the manufacturing company, warrant each new piece of fire apparatus manufactured by us to be free from defects in material and workmanship under normal use and service. Our obligation under this warranty is limited to repair or replacing, as the Company may elect, any part or parts thereof which shall be returned to us with transportation charges prepaid and as to which examination shall disclose to the company's satisfaction to have been defective, provided that such part or parts thereof shall be returned to us not later than one year after delivery of said vehicle. Such defective part or parts will be returned or replaced free of charge and without charge for reinstallation, to the original purchaser.

This warranty will not apply:

1. To normal maintenance, service or adjustments.
2. To any vehicle which has been repaired or altered outside of our factory in any way so as in our judgment, to affect its stability, which has been subject to misuse, negligence, or accident, which has been operated at a speed exceeding the factory rated speed, or which has been loaded beyond the factory rated load capacity.
3. To the truck chassis and associated equipment furnished with the chassis, including, but not limited to; engine transmission, axles, frame rails, alternator,

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batteries, or other trade accessories in as much as they are warranted separately by their respective manufacturers.

This Warranty is in lieu of all other warranties expressed or implied and of all other obligations or liabilities on our part and we neither assume nor authorize any other person to assume for us any liability in connection with the sale of our apparatus.

One (1)

Y\_\_N\_\_

### **DESIGN REQUIREMENTS**

Specified design features of the apparatus have been carefully selected because of their safety, integrity and consistency with existing apparatus. It is expected that all bidders will adhere to the compartmentation layout, etc., since these features can be produced by all fire apparatus manufacturers.

All aspects of the vehicle shall be properly engineered with priority given to firefighter safety, as well as ease of operation and maintenance of the apparatus. The vehicle shall be free from hazardous protrusions, angles or sharp corners that might bring injury to a firefighter or equipment. Previously delivered units will be judged for compliance to these factors.

All water, air, fuel, hydraulic and/or oil lines on the chassis and apparatus shall be properly located, and securely tie wrapped to prevent scuffing or abrasion. Durable type grommets or loom material shall be used to protect the lines wherever a line passes through the apparatus body or frame rail sections.

All grease fittings, bleeders, filler plugs, drains and check points shall be located so as to be easily accessible. No special tools shall be required to access these components for normal service or maintenance of the vehicle.

All parts and components on the vehicle shall be positioned for ease of inspection, and recognition of wear or failure. Easily removable access or cover plates shall be provided for all items requiring periodic service or adjustment. Access panels shall be of the hinged or quick disconnect design-allowing ease of access.

Design of the apparatus shall be such that no disassembly of the body or any of its parts is required for normal maintenance.

All components of the chassis and apparatus shall be protected against rain, snow or other adverse weather conditions.

One (1)

Y\_\_N\_\_

### **CONTRACT AWARD**

Contract will be awarded to the most "responsible bidder", provided that bid is in the best interest of the purchaser.

When analyzing the bid proposals, and in recommending a successful bidder, superior design, workmanship, materials, operating costs, location of factory, past experience, length of incorporation and compliance to specifications will be taken

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into consideration.

Purchaser reserves the right to waive any formality in the bids received once such waiver is in the best interest of the purchaser and, also, to accept any item in the Bid found to be of superior quality or otherwise preferred by the Purchaser.

One (1)

Y\_\_N\_\_

### **ACCEPTANCE TESTS AND REQUIREMENTS**

Acceptance tests on behalf of the purchaser shall be prescribed and conducted prior to delivery or within 10 days after delivery, by the manufacturer's representative in the presence of such person or persons as the purchaser may designate in the requirements for delivery.

The apparatus, loaded with a full complement of hose and men, a full water tank, and equipment as specified in "Carrying Capacity" on this page, shall meet the tests on paved roads, dry and in good condition. Tests shall be on the basis of two runs, in opposite directions over the same route, the engine not operating in excess of the manufacturer's maximum rpm.

From a standing start, through the gears, the vehicle shall attain a true speed of 35-mph within 25 seconds. From a steady speed of 15-mph the vehicle shall accelerate to a true speed of 35-mph within 30 seconds.

The vehicle shall 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.

Manufacturers pump test and Certification tests shall be conducted by the manufacturer in accordance with requirements of NFPA #1901. Certificate of testing shall be furnished to the purchaser.

### **NOTE:**

Responsibility for the apparatus and all equipment shall remain with the contractor until the apparatus and equipment is delivered to the purchaser.

One (1)

Y\_\_N\_\_

### **FAILURE TO MEET TESTS**

In the event the apparatus fails to meet the test requirements on first trial, a second trial may be made at the option of the Contractor within thirty days of the date of the first trial. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to make such changes as the Chief of the Fire Department and/or the purchaser may consider necessary to conform to any clause of the specifications within thirty days after notice is given to the Contractor to make such changes shall also be cause for rejection of the apparatus.

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One (1)

Y\_\_N\_\_

### **DOCUMENTATION**

The manufacturer must supply at time of delivery, at least one copy of:

1. Engine manufacturer's certified brake horsepower curve showing the maximum no load governed speed.
2. Manufacturer's record of pumper construction details.
3. Pump manufacturer's certification of suction capability.
4. Pump manufacturer's certification of hydrostatic test.
5. If specified certification of inspection and testing by the Underwriter's Laboratories Incorporated.
6. A copy of the apparatus manufacturer's approval for stationary pumping applications.
7. Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall vehicle (with water tank full but without personnel, equipment, or hose).
8. At least two copies of the complete operation and maintenance manual covering the completed apparatus as delivered, including the pump and firefighting equipment delivered with the apparatus.

**NO EXCEPTIONS WILL BE ALLOWED TO ANY OF THE DOCUMENTATION REQUIREMENTS.**

A test data plate shall be provided at the pump operator's position that gives the rated discharges and pressures together with the speed of the engine as determined by the manufacturer's test for this unit. Plate must comply with requirements of NFPA #1901.

A permanent data plate shall be affixed in the drivers compartment specifying and quantity and type of the following fluids used in the vehicle.

1. Engine Oil
2. Engine Coolant
3. Chassis Transmission Fluid
4. Pump Transmission Lubrication Fluid
5. Pump Primer Fluid
6. Drive Axle Lubrication Fluid
7. Air Conditioning refrigerant
8. Air Conditioning lubrication oil
9. Power steering fluid

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- 10. Cab tilt mechanism fluid
- 11. Transfer case fluid
- 12. Equipment rack fluid
- 13. Air compressor system lubricant
- 14. Generator system lubricant

Permanent placards shall be affixed and visible to all seated occupants instructing the occupants to wear their seat belts.

A permanent placard shall be affixed to the rear step area to instruct that riding on the rear step is prohibited.

One (1)

Y\_\_N\_\_

### **PAYMENT**

Final payment for the apparatus shall be made at time of delivery of the completed vehicle. Due to insurance liability, the apparatus will not be left at the purchaser's location without full acceptance and payment or prior agreement between the Purchaser and Bidder.

The purchaser may consider payment for the chassis at the time it is delivered to the successful bidder's factory. Please state below the discount the purchaser will receive if pre-payment of the chassis is approved by the purchaser.

Chassis Price: \$\_\_\_\_\_

Pre-Payment Discount: \$\_\_\_\_\_

Final delivery price shall not include any Local, State, or Federal taxes. The Bidder shall not be liable for any State or Federal mandated tax or program after sale or delivery of the apparatus.

One (1)

Y\_\_N\_\_

### **PERFORMANCE BOND**

A 100% Performance Bond, which guarantees delivery AND performance may be required by the purchaser. If required, the performance bond must be supplied by the successful bidder within 20 days of award of the contract. Supply Bonds will not be accepted in place of the requested Performance Bond. Bond must be supplied by the manufacturer of the apparatus. Bonds furnished by salesman or other agents will not be accepted. If required, please state below the additional cost to provide the performance bond. Please do not include the cost of the performance bond in the proposal price.

If a 100% performance bond is required by the purchaser, please add

\$\_\_\_\_\_ (not including sales tax) to the proposal price.

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One (1)

Y\_\_N\_\_

**PRE-CONSTRUCTION CONFERENCE (AT FIRE DEPARTMENT)**

A pre-construction conference shall be conducted at the Fire Department Headquarters, at which time all final designs and equipment mounting locations will be approved, prior to any sheet metal being cut. A factory-trained representative shall be present during the pre-construction conference to answer any design questions relating to the layout of the apparatus. All expenses for travel, meals, and lodging shall be included. **BIDDER SHALL INDICATE INTENTION TO PROVIDE THE REQUIRED PRE-CONSTRUCTION CONFERENCE IN THE PROPOSAL PACKET.**

One (1)

Y\_\_N\_\_

**INSPECTION TRIPS**

Inspection trip(s) for Fire Department personnel may be required by the purchaser and shall be made to the facility during the course of construction of the apparatus. Successful bidder shall consult with Fire Department committee chairperson as to the proper timing of the inspection trip(s). Air travel (for distances over 250 miles), meals, and lodging expenses shall be included. If required, please state below the additional cost of each factory inspection trip. Please do not include the costs for inspection trips in the proposal price.

If required by the purchaser, the cost of each inspection trip per each person required will be:

\$ \_\_\_\_\_ per trip/per person.

One (1)

Y\_\_N\_\_

**DELIVERED UNITS**

The vehicle manufacturer shall provide a listing of ten (10) recently delivered units of similar design. The list shall include a contact person and phone number who represents the purchaser.

One (1)

Y\_\_N\_\_

**DEMONSTRATION**

Fire Department personnel shall be properly instructed as to the proper use of the entire apparatus including, but not limited to, chassis, fire pump system, the apparatus and all equipment. The demonstration shall be made by a factory trained Specialist who shall be responsible for complete instruction as to operation and maintenance of the chassis, and the completed vehicle.

A demonstration specialist shall remain at the Fire Department for a sufficient amount of time to provide thorough instruction to all personnel, or as instructed by Chief of the Department. All meals, motel and travel costs shall be the responsibility of the successful bidder.

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One (1)

Y\_\_N\_\_

### **DELIVERY**

The apparatus shall be delivered complete and ready for operation. The apparatus, to insure proper break-in of all components, shall be delivered under its own power - rail or truck freight is not acceptable. Please state the delivery cost as a separate line item on the proposal form.

One (1)

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### **"ON-LINE" SERVICE MANUAL SUPPORT**

As part of the standard delivery manual, the manufacturer shall give a password-protected link to the end user, allowing access to the manufacturers' database on service parts. The internet-based system shall allow the end user to access the major component supplier's service parts listing such as Hale, Waterous, Akron, etc. This shall be accomplished with simplistic point and click features on the manufacturer line item within the "stripper" or "line sheet". This will include, automatic updates, printable schematics, and manufacturer's web links and is available in a commercially available format of Adobe Acrobat Reader to access these documents. The manufacturer shall submit with the bid proposal, a sample set of on line Adobe formatted material that has been printed from the manufacturer's website. Failure to do so will result in rejection of the proposal. Reference to "on delivery" or "at pre-build" submission is not an acceptable response for the bid document.

#### Parts Listings within Manuals

The manuals will include cross-reference part numbers from the apparatus manufacturers' part number to the vendor parts. Example: Brand X Fire Apparatus, Hydraulic Ladder Rack, Part #WW-MN-0302 cross-referenced to Ziamatic Corporation Part 098-MN2345. This will allow for reference between individual parts and complete installation assemblies as completed by the body builder. The manuals will list all components of the vehicle that includes a vendor part utilized in a complete installation via the manufacturers "line item sheet" or "stripper" utilized to manufacture the completed vehicle. These are "As Built" and proposals with "typical" or "generic" manuals will be rejected.

#### Illustrative Schematics within Manuals

The manufacturer shall include installation diagrams and drawings of all major sub assemblies. This will include components such as hydraulic ladder rack assemblies, pump panels, tanks, fire pumps, etc. The drawings shall be linked via an Internet based service program, in an electronic format from the manufacturers "stripper" (line item listing) of the manufacturing document. The manufacturer shall submit, with the bid proposal, a sample schematic. Failure to do so will result in rejection of the proposal. Reference to "on delivery" or "at pre-build" submission is not an acceptable response for the bid document.

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### Digital Images within Manuals

In addition to two and three-dimensional installation drawings, the manufacturer shall make accessible, via an internet based link, the actual photos of the installed components listed within the "stripper" or line sheet. This will include, but not limited to Wiring terminals, main body distribution strips, fire pump shifting, auxiliary components, etc. The manufacturer shall submit a sample of these with the bid submission. Failure to submit the digital images with the bid will result in rejection of the proposal. Reference to "on delivery" or "at pre-build" submission is not an acceptable response for the bid document.

### Installation Instructions within Manuals

The manufacturers "work instructions" or "installation instructions" shall be included with the service manuals. These documents shall be accessible via a web-based link to the individual vehicle manufactured. The work instructions shall give systematic instructions of the installation process. The manufacturer shall submit, with the bid proposal, a sample set of instructions. Failure to do so will result in rejection of the proposal. Reference to "on delivery" or "at pre-build" submission is not an acceptable response for the bid document.

### Automatic Updates of Manuals and Parts Listings

The online manuals will include automatic updates that are accessible via the web link. When clicking on the part within the manufacturer's stripper or line sheet, it will allow the end user to access the component manufacturer website for updated information. This will allow for latest parts and service components from the individual part manufacturer or vendor.

### Electrical Schematics

To maintain the vehicles electrical systems, the manufacturer shall provide to the purchaser the instructional manuals, complete electrical information and schematics on the vehicle. The electrical information shall be provided as follows:

#### Wiring Systems 12 and 120 Volt:

1. Graphic symbols for electrical diagrams.
2. Wire labeling, imprinting codes and index.
3. Computer generated electrical schematics indicating the circuit number, wire size, switches, circuit breaker and terminals on the vehicle.

The manufacturer shall submit, with the bid proposal, a sample set of diagrams. Failure to do so will result in rejection of the proposal. Reference to "on delivery" or "at pre-build" submission is not an acceptable response for the bid document.

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### "ON-LINE" WARRANTY TRACKING SYSTEM

The manufacturer shall provide an online warranty tracking system shall be used to track all service and warranty issues.

The tracking system will show real time information on all warranty and service requests.

A user will be able to create or track the status of their service or warranty requests 24 hours a day, 7 days a week from anywhere with an internet connection.

The warranty / service tracking system shall be capable of tracking all department service issues via truck VIN or job number.

The system must provide user with instant confirmation of receipt of warranty or service request and must not require user to purchase or use proprietary software.

One (1)

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### FINANCIAL STABILITY SPECIFICATIONS

Ensuring the financial stability of the proposed body builder is a paramount consideration to this department. Financial strength directly relates to the body builders ability to successfully produce an apparatus without jeopardizing fire department funds. In addition, financial strength is vital to this department to insure a body builder will be able to provide warranty service along with replacement parts and service for the life of the apparatus. Failure to be able to provide these lifelong services may cause future increases in maintenance expenses and create undue burden on the department's budget and tax base. This is a situation that this department is unwilling to risk. The body builder, therefore, shall meet certain minimum financial ratios in order to qualify for a bid award. The financial ratios presented shall be that of the consolidated entity; not the consolidated entities parent company; for the body builder.

The financial ratios required to be met shall be derived from the most recent audited financial statements of the body builder proposed.

The three (3) critical financial indicators to be met are as follows:

**Debt-to-Equity Ratio:** The debt-to-equity ratio of the entity must not exceed a 2.0 rating. A debt-to-equity ratio is defined as that of total liabilities divided by total owner's equity. In laymen's terms, a low debt-to-equity ratio means the company itself owns a greater share of its assets, as opposed to banks, creditors and other financial institutions. Conversely, companies with high debt-to-equity ratios are those that are generally financing their growth by carrying additional debt. The cost of this debt-financing may outweigh the return that the company generates on the debt through business activities and become too much for the company to manage. This can lead to bankruptcy, which is of grave concern to this purchaser.

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**Debt Coverage Ratio:** The debt coverage ratio of the entity must exceed a 100.0 rating. A debt coverage ratio is defined as annual net income divided by the current portion of long-term debt. A high debt coverage ratio means the company can easily meet its payment obligations with its banks and other creditors. A low debt coverage ratio clearly infers the company may struggle to meet these obligations, which could ultimately delay or cancel production of apparatus.

**Equity Ratio:** The equity ratio of the body builder must exceed a .30 rating. An equity ratio is defined as total owners equity divided by total assets. The equity ratio is another good indicator of the level of leverage (or financing) used by a company. The equity ratio measures the proportion of the total assets that are financed by owners and not creditors. A high equity ratio provides the company with flexibility in financing growth and other needs.

Financial reports may be required to be submitted to the purchaser for evaluation prior to awarding the contract. All financial indicators required by this section must be verified by Dun and Bradstreet, the nationally-recognized, independent financial analysis company. Bids furnished without the financial information, if required, shall render the bid non-responsive and the bidder dismissed from further consideration.

**NO EXCEPTIONS.**

One (1)

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### **TILT TESTING FACILITIES AND REQUIREMENTS**

The apparatus, prior to acceptance, will be required to meet the performance tests of the applicable NFPA Automotive Fire Apparatus Standard. As such, each bidder shall have the facilities to perform these tests at the manufacturing site. These tests shall include, but not limited to, acceleration, braking and tilt table testing for stability, all specified pump tests, a brake hold test with break away percentages documented, and turn radius tests.

The bidder shall own the facilities to perform any of the above tests, and shall not contract with an outside agency to have these tests performed on this apparatus.

The final and completed vehicle shall be tilt-tested and photographed to ensure that this procedure and certification is verified.

One (1)

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### **OVERALL DIMENSIONAL REQUIRMENTS**

Overall height requirements of the vehicle shall be approximately 9' 9.00".

Overall length requirements of the vehicle shall be approximately 31' 11.00" excluding rear dump chute overhang.

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One (1)

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### **CHASSIS SPECIFICATIONS**

#### **Model**

##### **Kenworth T4 Series Conventional Cab**

Elastomer bushed front spring pins and heavy duty shock absorber brackets, 16mm fasteners from rear cab support to end-of-frame except tractor taper cross member. Vinyl inside sunvisors driver side includes strap & mirror, driver side includes strap, Under-dash center console with 2 cup holders, 2 12V outlets & a storage compartment, Glove box door with locking latch.

##### **T470 Conventional**

**CARB Idle emissions Reduction Feature for Cummins engines.** Low Nox idle compliant. Includes sticker on driver's side of chassis exterior.

##### **U.S. Domestic Registry, 50-State**

#### **Engine & Equipment**

##### **ISL 365HP Fire Rating**

Cruise Control Auto Resume  
Gear Down Protection  
64 MPH Max Vehicle Speed in Top Gear  
64 MPH Max Cruise Control Speed  
1400 Max PTO Speed

**Air Compressor – Cummins 18.7 CFM, ISC, ISL & ISX, PX-6 and PX-8 Teflon discharge line.**

##### **Engine Mounted Air Cleaner**

##### **Ember Separator**

##### **Cooling module 1000 sq. in.**

**Exhaust Single Vertical tailpipe up RH side of cab.** RH under Muffler/Single DPF mounted in Cab Access Assembly with exhaust shield. No toolbox, battery box, fuel tank or any other right hand under options are available.

##### **Tailpipe – Single 28 in. curved vertical polished**

**Fleetguard Filter/water separator FS1003** with WIF (Water In Filter) sensor PX-8/ISC/ISL.

##### **Kenworth fuel cooler for single fuel tanks 2007**

**Retarder – Jacobs for ISL with 2-way switch.** On the PX-8 replaces the standard turbo brake.

##### **Alternator – Leece Neville 270 AMP long brush**

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**Batteries – 3 PACCAR GP31 threaded post (700). 2100 CCA dual purpose.**

**PACCAR starter 12-volt Electrical system with** centralized power distribution incorporating plug-in style relays. Circuit protection for serviceability, 12-volt light system w/circuit protection circuits number & color coded.

**Multi-function engine connector for body builder interface.**

### **Transmission & Clutch**

**Allison 3000 EVS 5spd**

**Driveline 3 medium duty – 2 center bearing**

**Torque converter included with Allison transmission.**

**Auto neutral for Allison**

### **Front Axle & Equipment**

**Front Axle 20,000 lbs. Dana Spicer D2000. Standard tracks.**

**Front Brakes 16-1/2 x 6 in. 22,000 lbs. Bendix ES S-Cam.**

**Dustshields: all front axles**

**Front Brake Drums 16-1/2 x 6 in. 22,000 lbs. Cast**

**Front Hubs Aluminum hub pilot 20,000 lbs. 10 Bolt 11-1/4 in. bolt circle.**

**Front low maintenance hub package. Dana Spicer. Includes Timken adjustment free half tolerance bearings.**

**Front vented hubcaps**

**Front automatic slack adjusters**

**Front Springs Taperleaf 16K w/shock absorbers with maintenance-free elastomer spring pin bushings.**

**Single power steering gear 16K TRW TAS85**

**Radiator mounted air to oil power steering cooler 2007 engines only.**

### **Rear Axle & Equipment**

**Dual Rear Axle 44,000 lbs. Dana Spicer DSH44P**

**Rear Axle Ratio – 5.29**

**Dual Rear Brakes 16-1/2 x 7 in to 46,000 lbs. Bendix ES-extended service S-cam.**

**Dual Rear Brake Drums Cast**

**Dual Rear Hubs Aluminum hub pilot 46,000 lbs 46,000 lbs. 11-1/4 in. BC**

**Dual rear low maintenance hub package. Dana Spicer. Includes Timken adjustment free half tolerance bearings.**

**Dual Rear axle automatic slack adjusters**

**Spring Brake 3030 – high output Dual**

**Dustshields: all rear axles**

**Wheel Differential Lock For Dana Spicer Axles. Forward axle and rear rear.**

**Bendix 4S/4M anti-lock brake system**

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**Rear suspension tandem Hendrickson RT463.** 46K & 54 in. axle space with 6.0 in saddle height & barpin bushing.

### **Tires & Wheels**

**FR Bridgestone R294 315/80R22.5 18PR.** 42.5 in. diameter. 19.9 in SLR.

**RR Bridgestone M726EL 11R22.5 14PR.** Highway or P & D drive tire. 19.6 in SLR

**Rear Tire Quantity: 8**

**FR wheel: Alcoa 88560 22.5 x 8.25** aluminum, hub pilot mount. 8000 lb. max rating. 5-hand hold

**RR wheel: Accuride 50487PW 22.5 x 8.25** steel white e-coat, hub pilot mount. 7400 lb max rating, 5-hand hold

**Rear Wheel/Rim Quantity: 8**

### **Frame & Equipment**

**Frame rails 10-3/4 x 3-1/2 x 3/8 in. steel 337 in** to 416 in. Truck frame weight is 3.48 lb in. per pair of rails. Section modulus is 17.80, RBM is 2,132,000 in-lbs per rail.

**Locate partial frame inserts under cab to EOF**

**Partial steel insert 10-5/8 in or 10-3/4 in steel** to 10 ft. or partial 2<sup>nd</sup> insert for 11-5/8 in steel rail.

**Bumper tapered aluminum channel, natural finish.**

**50.5 in bumper setting. Requires a bumper code.**

**Two rams horn front tow hooks.**

**Front mudflaps**

**Battery box cantilever aluminum BOC with fiberglass cover**

**Battery box location left hand side**

**Short Non-polished 2007 DPF cover. Cab access right hand under**

**Rear mudflap arms Betts B-25 standard duty, straight**

**Rear mudflap shields white plastic antisail with KW logo**

**Square end-of-frame with cross member, non-towing.**

### **Fuel Tanks & Equipment**

**Fuel tank 56 US GAL, 22 in aluminum.** Class 8 fuel tank includes an anti-siphon device on the filler neck.

**6 in wide lower fuel tank step, for one 22 in. or 24.5 in tank LH**

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**Location: 56 gal fuel tank LH under cab**

### **Cab & Equipment**

**Cab: Curved Glass Conventional.** C500 includes heavy duty reinforcements. Cab includes aluminum & fiberglass fully hucked cab with all aluminum bulkhead doors & continuous stainless steel piano-style hinged door hinges. Single electric horn.

**T470 Sloped Hood for Straight Rail, Includes** radiator mounted grille.

**Cab heater with integral defrosters & AC.** 45,000 btu cab heater. No sleeper heater/AC.

**18 in. 4-spoke steering wheel**

**Adjustable telescoping tilt steering column.**

**Multi-Function Highline Display.** Includes fuel economy, RPM display, ignition timer, trip information, truck information, diagnostics, gear display, alarm clock.

**Instrument package.** Includes speedometer, tachometer, fuel gauge, engine coolant temperature gauge, engine oil pressure, voltmeter. Class 8 also includes primary and secondary air reservoir gauges and an air application gauge. Hour meter is included on all models except T20000. Primary read out will be MPH.

**Large flat panel on dash** for customer-installed controls. Reduces gauge count by 6.

**Warning light for parking brake.** Illuminated when parking brake is applied. Dash mounted.

**Vinyl cab interior – T470 only**

**Interior color Slate Gray with trim Dark Slate Gray**

**DR seat KW Air Cushion Plus HB Cloth with dual armrests.**

**RD Seat KW toolbox Plus HB Cloth with dual armrests.**

**NFPA Compliance Kit**

**Seat color Dark Slate Gray**

**RED SEAT BELTS**

**KW radio AM/FM/weather band with L.E.D. lighting**

**Under dash center console.** Includes one cup holder and two 12V outlets. For use with Autoshift, Ultrashift, and Allison Gen IV only.

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**Non-self cancelling turn signal with** column-mounted headlight dimmer switch & intermittent wiper control.

**Electric LH & RH door locks**

**Cab access contoured grab handles, LH/RH**  
**Grab handle LH inside door frame above dash**

**Grab handle RH inside door frame above dash**

**Daylite doors. Includes RH peeper window**

**Single air horn under cab**

**Single convex mirror 8-1/2 in x 4-7/16 in located on rider side**

**Dual Kenworth aerodynamic heated mirrors 7 in x 13 in painted cab color**, mirror arms black. LH/RH convex mirrors 5 in x 7 in heated. Mirror brackets set for 8-1/2 ft. load width. Switch located on door pad.

**Rear cab stationary window 17 in x 36 in.**

**Manual LH & Electric-powered RH door window lifts.** Switch located on door

**One-piece windshield, with curved glass**

**Exterior aerodynamic sun visor with integral marker lights**

**Link Cabmate suspension**

### **Lights & Instruments**

**Dual headlight, low beam dual complex reflector high beam halogen**

**Five marker lights aerodynamic mounted in sun visor**

**Fender-mounted turn signal lights**

**Combination stop, tail, turn & backup lights RH & LH**

**Interrupter switch for marker lights**

**Circuit Breakers replacing fuses.** Does not apply to any 5-amp fuse box position. Breakers include Stop/Brake/Turn, Tail Lamp, High & Low Beams, Marker/Clearance Lamps, Horn, Fuel Heat, Gauges, Wipers, Air Dryer, HVAC Controls, Panel Lamps.

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### **Air Equipment**

**Air Dryer Bendix AD-IS heated**

**Moisture Ejection Valve Two Bendix DV-2 drain valves** on service tanks use with AD-IS only.  
Heated.

**Nylon air tubing in frame & cab, excluding hoses** subject to excessive heat or flexing

### **Extended Warranty**

**Medium Duty Warranty – T470 only**  
1 year / unlimited mileage

### **Paint**

**Paint Color Number**  
**N97020 A – N0235EA Candy Apple Red**  
**N97400 SUNVISOR N0235EA Candy Apple Red**  
**N97200 FRAME N0001EA Black**

**Imron solid 1 color non-sleeper**  
**Single Stage Paint replaces Standard**

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### **CHASSIS ADDITIONS, MODIFICATIONS AND OTHER REQUIREMENTS**

One (1) Y\_\_N\_\_

#### **FLUID DATA PLAQUE**

One (1) fluid data plaque containing required information shall be provided based on the applicable components for this apparatus, compliant with NFPA Standards:

1. Engine oil
2. Engine coolant
3. Chassis transmission fluid
4. Drive axle lubricant
5. Power steering fluid
6. Pump transmission lubrication fluid
7. Paint manufacturer and color numbers
8. Other NFPA applicable fluid levels or data as required

Location shall be in the driver's compartment or on driver's door.

One (1) Y\_\_N\_\_

#### **APPARATUS DIMENSION DATA**

One (1) highly visible label indicating the overall height, length, width and weight of the vehicle shall be installed in the cab dash area.

One (1) Y\_\_N\_\_

#### **NO RIDE LABEL**

One (1) "NO RIDERS" label shall be applied on the vehicle at the rear step area or other applicable areas. The label shall warn personnel that riding in or on these areas, while the vehicle is in motion is prohibited.

One (1) Y\_\_N\_\_

#### **CAB SEATING POSITION LIMITS**

One (1) label shall be installed in the cab to indicate seating positions for firefighters. A weight allowance of 250 pounds for each shall be factored into the gross vehicle weight rating of the chassis.

One (1) Y\_\_N\_\_

#### **HELMET WARNING TAG**

One (1) label shall be installed in the cab, visible from each seating position. The label shall read "DO NOT STORE HELMETS IN CAB WHILE VEHICLE IS IN MOTION." Helmets must be stored in a body compartment.

One (1) Y\_\_N\_\_

#### **REAR TOWING PROVISIONS**

There shall be two tow eyes furnished under the rear of the body and attached directly to each chassis frame rail. There shall be a reinforcement spreader bar

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- One (1) connecting the two tow eyes. Tow eyes are to be constructed of 3/8" plate steel with a 4" I.D. hole, large enough for passing through a tow chain end hook. Y\_\_N\_\_
- TOW PLATE PAINTING**
- One (1) The tow plates shall be painted black. Y\_\_N\_\_
- TIRE PRESSURE INDICATOR**
- One (1) There shall be a tire pressure indicator at each tire's valve stem on the vehicle that shall indicate if there is insufficient pressure in the specific tire. Y\_\_N\_\_
- EXHAUST SYSTEM**
- One (1) The chassis exhaust shall be modified and redirected to the right side of the apparatus and will exit ahead of the rear wheel. Y\_\_N\_\_
- REAR MUD FLAPS**
- One (1) One (1) pair of black mud flaps shall be installed behind the rear wheels. Y\_\_N\_\_
- CAB STEPS**
- One (1) The driver's side cab step area on the 2 door chassis shall be covered with slip resistant aluminum tread plate for compliance to applicable NFPA standards. Y\_\_N\_\_
- RIGHT SIDE CAB STEP**
- One (1) The right side chassis fuel tank and step area of the commercial chassis shall be covered with aluminum tread plate with a slip resistant step surface in compliance to applicable NFPA standards. Y\_\_N\_\_
- AIR SHORELINE CONNECTION**
- One (1) compressed air inlet fitting shall be provided for connection to an external air source to maintain the air brake pressure. The female quick connect fitting shall have a check valve installed to prevent air from escaping from the air storage tanks on the chassis.
- The air inlet fitting shall be located in the driver's side step or door area.

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### **PUMP, PLUMBING AND ADDITIONAL REQUIREMENTS**

One (1)

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#### **WATEROUS CXPA SINGLE STAGE PUMP**

A Waterous model CXPA fire pump shall be midship mounted, single-stage centrifugal type and shall meet the requirements of the NFPA 1901 standard. The pump must be tested by the pump manufacturer for 10 minutes hydrostatically at a pressure of 350 psig. Certification by the pump manufacturer must be provided.

#### **Impeller**

The bronze impeller shall be specifically designed for the fire service. The impeller shall be accurately balanced, both mechanically and hydraulically, for vibration free operation. The impeller shaft shall be stainless steel heat-treated and precisely ground to size and supported on both ends by oil or grease lubricated ball bearings.

The wear rings shall be replaceable, bronze, reverse-flow, labyrinth-type. The fire pump shall have deep groove ball bearings located outside the pump to give rugged support and proper alignment to the impeller shaft. Bearings shall be oil or grease lubricated. All pump bearings shall be completely separated from the water being pumped.

#### **Pump Transmission**

Fire pump shall incorporate high strength involute tooth form Morse HV chain drive transmission. Benefits of the chain drive include quiet, noiseless operation at high shaft speeds, and improved power-transmitting capabilities due to the fact that the chain wraps itself halfway around the gear distributing a very uniform pattern of tooth engagement.

#### **Pump Mounting**

The pump shall be bolted to steel angles in pump module, using grade 8 bolts.

#### **Drive Line**

Fire pump shall be driven by a heavy duty 10 bolt PTO capable of enough torque to operate the fire pump at rated capacity for continuous duty. The PTO shall be of a "Hot Shift" style.

Hollow-tube drivelines and universals shall be properly matched to the engine and transmission output torque ratings.

One (1)

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#### **1000 GPM FIRE PUMP SPECIFICATIONS**

The centrifugal type fire pump shall be a Waterous model CXPA with a rated capacity of 1000 GPM. The pump shall meet NFPA 1901 requirements.

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The pump shall be certified to meet the following deliveries:

- 1000 GPM @ 150 PSI
- 1000 GPM @ 165 PSI
- 700 GPM @ 200 PSI
- 500 GPM @ 250 PSI

One (1)

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### **LEFT SIDE -- 5" UNGATED INTAKE**

One (1) 5" un gated suction intake shall be installed on the left side pump panel to supply the fire pump from an external water supply. The threads shall be 5" NST male. The intake shall be provided with a removable screen.

One (1)

Y\_\_N\_\_

### **4" STORZ ADAPTER**

One (1) Kochek or equal color coded 30 degree adapter shall be provided. Threads shall be: 4" Storz with lugs with manual locks x 5" swivel female NST.

One (1)

Y\_\_N\_\_

One (1) Kochek or equal color coded 4" Storz cap shall be provided. A chain or cable attachment shall be also supplied.

One (1)

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### **RIGHT SIDE -- 5" UNGATED INTAKE**

One (1) 5" un gated suction intake shall be installed on the right side pump panel to supply the fire pump from an external water supply. The intake shall be provided with a removable screen.

One (1)

Y\_\_N\_\_

### **4" STORZ ADAPTER**

One (1) Kochek or equal color coded 30 degree adapter shall be provided. Threads shall be: 4" Storz with lugs with manual locks x 5" swivel female NST.

One (1)

Y\_\_N\_\_

One (1) Kochek or equal color coded 4" Storz cap shall be provided. A chain or cable attachment shall be also supplied.

One (1)

Y\_\_N\_\_

### **FIRE PUMP MECHANICAL SHAFT SEAL**

The Waterous fire pump shall be equipped with self-adjusting, maintenance free, 'mechanical shaft seal' which is designed to be functional in the unlikely event of a seal failure.

One (1)

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### **IMPELLER HUBS**

The Waterous fire pump impeller hubs shall be standard bronze type.

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One (1)

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### **PTO PUMP SHIFT SPECIFICATIONS -- PUMP AND ROLL**

An electric powered PTO pump shift shall be installed in the cab driver's area where not subject to accidental engagement. The pump shift system shall permit "pump and roll" operations, as well as stationary pumping operations.

The following indicator lights shall be included with pump shift.

1. A green indicator light, labeled "PUMP ENGAGED" shall indicate pump shift has successfully been completed.
2. A green indicator light, labeled "OK TO PUMP" shall indicate the chassis transmission is in proper gear and parking brake is engaged.
3. Pump shift and interlocks shall comply with applicable sections of the NFPA standards.
4. The pump shift shall have an instruction label and nameplate to indicate proper pump shift instructions.

One (1)

Y\_\_N\_\_

One (1) 2-1/2" pressure gauge rated at 0-400 PSI shall be provided in the cab for pump and roll operations. The face of the gauge shall have a white dial with black letters.

One (1)

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### **FIRE PUMP PRIMING SYSTEM**

A Waterous model number VPO electrically driven, positive displacement, rotary vane type 'oil less' priming pump shall be installed. The system shall be activated with a push button type control.

The pump shall be capable of taking suction and discharging water with a lift of 10 feet in not more than 30 seconds with the pump dry, through 20 feet of suction hose of appropriate size. The priming system shall comply to applicable sections of the NFPA standards.

One (1)

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### **ENGINE/PUMP GOVERNOR**

Apparatus shall be equipped with a Class1 "Total Pressure Governor" (TPG) that is connected to the Electronic Control Module (ECM) mounted on the engine. The "TPG" will operate as a pressure sensor (regulating) governor (PSG) utilizing the engines 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 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

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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 transducer for best operation. 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 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 use J1939 broadcast warnings for the alarm as a standard and allow the “user” to select warning values if “SOPs” dictate.

One (1)

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### **PUMP ANODES**

One (1) pair of replaceable corrosion-protection anodes shall be provided, one (1) on the discharge and one (1) on the intake side of the pump.

One (1)

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### **PUMP PLUMBING SYSTEM**

The fire pump plumbing system shall be of rigid or flexible piping with stainless steel fittings. Mechanical grooved couplings shall be installed to permit flexing of the plumbing system and allow for quick removal of piping or valves for service. Flexible hose couplings shall be threaded stainless steel or mechanical grooved coupling connections.

The fire pump and plumbing shall be hydrostatically tested in compliance to applicable sections of NFPA standards. The test results shall be included in the delivery documentation.

One (1)

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### **FIRE PUMP MASTER DRAIN**

The fire pump plumbing system and fire pump shall be piped to a single pump panel mounted push-pull type master pump drain assembly.

### **ADDITIONAL LOW POINT DRAINS**

The plumbing system shall be equipped with additional low point manually operated drain valves to allow total draining of the fire pump plumbing system. These valves shall be accessible from the side of the vehicle and labeled.

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One (1)

Y\_\_N\_\_

### **STAINLESS STEEL INTAKE MANIFOLD**

The suction manifold assembly shall be fabricated with Schedule #10 type 304 stainless steel. All threaded fittings shall be a minimum of Schedule 10 stainless steel. The suction manifold assembly shall have radiused sweep elbows to minimize water turbulence into the suction volute. The suction manifold shall be welded and pressure tested prior to installation. The stainless steel manifold assembly shall be attached to the pump intake volute with a heavy-duty, flexible Victaulic coupling.

The stainless steel manifold assembly shall have a ten (10) year warranty.

One (1)

Y\_\_N\_\_

### **STAINLESS STEEL DISCHARGE MANIFOLD**

The discharge manifold assembly shall be fabricated with Schedule #10 type 304 stainless steel. All threaded fittings shall be a minimum of Schedule 10 stainless steel. The discharge manifold assembly shall have radiused sweep elbows to minimize water turbulence into the discharge header. The manifold shall be welded and pressure tested prior to installation. The stainless steel manifold assembly shall be attached to the pump intake volute with a heavy-duty, flexible Victaulic coupling.

The stainless steel manifold assembly shall have a ten (10) year warranty.

One (1)

Y\_\_N\_\_

### **FIRE PUMP & PLUMBING SYSTEM PAINTING**

The fire pump and plumbing system shall be painted by the fire apparatus manufacturer. The fire pump and the plumbing shall be painted metallic silver.

One (1)

Y\_\_N\_\_

### **HOSE THREADS**

The hose threads shall be National Standard Thread (NST) on all base threads on the apparatus intakes and discharges.

One (1)

Y\_\_N\_\_

### **WATER TANK TO PUMP LINE**

One (1) 3" water tank to fire pump line shall be provided with a full flow quarter turn ball valve, 4" piping, and with flex hose and stainless steel hose clamps. The tank to pump line shall be equipped with a check valve to prevent pressurization of the water tank.

The line shall be flow tested during the fire pump testing and shall meet applicable requirements of NFPA standards.

One (1)

Y\_\_N\_\_

The specified valve shall be an Akron 8800 Series three-inch (3") valve with a stainless ball.

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- One (1) One (1) Akron valve equipped with a manually operated pull rod, with quarter turn locking feature and a manual slow close device shall be provided on the specified discharge. The handle shall be equipped with color coded engraved type name plate. Y\_\_N\_\_
- One (1) **FIRE PUMP TO WATER TANK FILL LINE** Y\_\_N\_\_
- One (1) One (1) 1-1/2" fire pump to water tank refill and pump bypass cooler line shall be provided. The valve shall be a full flow quarter turn ball valve with 1-1/2" piping and flex hose to tank. The valve control handle shall have a nameplate located near the valve control. Y\_\_N\_\_
- One (1) The specified valve shall be an Akron 8800 Series one and one half-inch (1-1/2") valve with a stainless ball. Y\_\_N\_\_
- One (1) For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation. Y\_\_N\_\_
- One (1) The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label. Y\_\_N\_\_
- One (1) **MIDSHIP FIRE PUMP DRIVESHAFTS AND INSTALLATION** Y\_\_N\_\_
- One (1) The midship PTO fire pump shall be installed and shall include installation of the fire pump, modification and/or fabrication of new drivelines and all pump-mounting brackets. The PTO drive shaft(s) shall be spin balanced prior to final installation. Y\_\_N\_\_
- One (1) **UNDERWRITERS LABORATORIES FIRE PUMP TEST** Y\_\_N\_\_
- One (1) The pump shall undergo an Underwriters Laboratories Incorporated test per applicable sections of NFPA standards, prior to delivery of the completed apparatus. Y\_\_N\_\_
- One (1) The UL acceptance certificate shall be furnished with the apparatus on delivery. Y\_\_N\_\_
- One (1) **FIRE PUMP TEST LABEL** Y\_\_N\_\_
- One (1) A fire pump performance and rating label shall be installed on the fire apparatus pump panel. The label shall denote levels of pump performance and testing completed at factory. These shall include GPM at net pump pressure, RPM at such level, and other pertinent data as required by applicable NFPA standards. In addition, the pressure control device, tank to pump flow tests, and other required testing shall be completed.

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In addition, the entire pump, suction and discharge passages shall be hydrostatically tested to a pressure as required by applicable NFPA standards. The pump shall be fully tested at the pump manufacturer's factory to the performance specifications as outlined by applicable NFPA standards. Pump shall be free from objectionable pulsation and vibration.

If applicable, the fire pump shall be tested and rated as follows:

- 100% of rated capacity at 150 pounds net pressure.
- 70% of rated capacity at 200 pounds net pressure.
- 50% of rated capacity at 250 pounds net pressure.
- 100% or rated capacity at 165 pounds net pressure.

One (1)

Y\_\_N\_\_

### **INTAKE RELIEF/DUMP VALVE**

One (1) Elkhart Model 40, 2-1/2" intake relief/dump valve preset at 125 psi shall be permanently installed on the suction side of the fire pump. The valve shall have an adjustment range of 75 psi to 250 psi, and shall be designed to automatically self-restore to a non-relieving position when excessive pressure is no longer present.

Discharge side of the intake relief valve shall be plumbed to the side the apparatus, away from the pump operator, and shall terminate with a 2-1/2" NST male thread. The outlet shall be marked with an engraved tag "Intake pressure relief outlet - Do Not Cap".

One (1)

Y\_\_N\_\_

### **FIRE PUMP COOLING**

The fire pump shall be equipped with 3/8" cooling line from the pump to the water tank. This re-circulation line shall be controlled by a pump panel control valve with nameplate label noting it as the "fire pump bypass cooler". There shall be a check valve installed in the pump cooler line to prevent tank water from back flowing into the pump when it is not in use.

One (1)

Y\_\_N\_\_

### **CHASSIS ENGINE HEAT EXCHANGER COOLING SYSTEM**

The apparatus shall be equipped with a heat exchanger for supplementary chassis engine cooling during fire pump operations. A manually opened valve, mounted at the operator's panel, shall direct water from the fire pump to the heat exchanger that is mounted in the engine radiator cooling hose. The system shall provide cooling water from the fire pump to circulate around the engine radiator coolant without mixing or coming in direct contact with the engine coolant. The unit shall be installed by the chassis manufacturer and connected to the plumbing system by the fire apparatus manufacturer.

A nameplate label shall be installed on the pump panel noting "engine cooling system" with "on-off" opening directions noted.

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- One (1) Y\_\_N\_\_  
**LEFT SIDE -- 2-1/2" GATED INTAKE**
- One (1) 2-1/2" gated suction intake shall be installed on left side pump panel to supply the fire pump from an external water supply. The control valve shall be a quarter turn ball valve and shall have 2-1/2" NST female thread of chrome plated brass.
- The intake shall be equipped with a 3/4" drain and bleeder valve. A nameplate label and removable screen shall be installed.
- One (1) Y\_\_N\_\_
- One (1) 2-1/2" chrome plated plug shall be provided. The threads shall be NST and the plug shall be equipped rocker lugs and chain or cable securement.
- One (1) Y\_\_N\_\_
- The specified valve shall be an Akron 8800 Series two and one half-inch (2-1/2") valve with a stainless ball.
- One (1) Y\_\_N\_\_
- The specified intake valve shall be equipped with one (1) manually operated swing type manual control located adjacent the intake. The valve shall be equipped with a color coded engraved type name plate.
- One (1) Y\_\_N\_\_
- 2-1/2" DISCHARGE -- FRONT RIGHT SIDE BUMPER**
- 2-1/2" quarter turn ball valve discharge shall be installed at right side front bumper area with a 2-1/2" NST chrome plated adapter with male threads extending through the front bumper. The discharge shall have a chrome plated cap. The valve control shall be on pump panel and an engraved nameplate label provided at valve control area.
- One (1) Y\_\_N\_\_
- 3/4" quarter turn bleeder valves shall be installed on gated intakes and discharges larger than 1-1/2" in size.
- One (1) Y\_\_N\_\_
- The specified valve shall be an Akron 8800 Series two and one half-inch (2-1/2") valve with a stainless ball.
- One (1) Y\_\_N\_\_
- For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.
- The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

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One (1) Y\_\_N\_\_  
One (1) 2-1/2" pressure gauge rated at 0-400 PSI shall be provided. The gauge shall include a color coded label and be installed on the pump instrument panel. The face of the gauge shall have a white dial with black letters.

One (1) Y\_\_N\_\_  
**LEFT SIDE PUMP PANEL -- 2-1/2" DISCHARGE**

One (1) 2-1/2" discharge shall be installed on the left side pump panel area and shall be controlled by a quarter turn ball valve. The discharge shall have 2-1/2" NST male hose threads and a chrome plated elbow with rocker lugs with 2-1/2" NST swivel female x 2-1/2" NST male hose threads. A color coded nameplate label shall be provided adjacent the control handle.

One (1) Y\_\_N\_\_  
3/4" quarter turn bleeder valves shall be installed on gated intakes and discharges larger than 1-1/2" in size.

One (1) Y\_\_N\_\_  
One (1) chrome plated elbow with rocker lugs shall be provided with 2-1/2" NST swivel female x 2-1/2" NST male hose threads.

One (1) Y\_\_N\_\_  
One (1) 2-1/2" NST rocker lug chrome plated vented cap and cable or chain securement shall be provided.

One (1) Y\_\_N\_\_  
The specified valve shall be an Akron 8800 Series two and one half-inch (2-1/2") valve with a stainless ball.

One (1) Y\_\_N\_\_  
For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.

One (1) Y\_\_N\_\_  
The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

One (1) Y\_\_N\_\_  
One (1) 2-1/2" pressure gauge rated at 0-400 PSI shall be provided. The gauge shall include a color coded label and be installed on the pump instrument panel. The face of the gauge shall have a white dial with black letters.

One (1) Y\_\_N\_\_  
**RIGHT SIDE PUMP PANEL -- 2-1/2" DISCHARGE**

One (1) 2-1/2" discharge shall be installed on the right side pump panel area and shall be controlled by a quarter turn ball valve. The discharge shall have 2-1/2" NST male hose threads and a chrome plated elbow with rocker lugs with 2-1/2" NST swivel female x 2-1/2" NST male hose threads. A color coded nameplate label shall be provided adjacent the control handle.

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|---------|--|--------|
| One (1) | 3/4" quarter turn bleeder valves shall be installed on gated intakes and discharges larger than 1-1/2" in size.  | Y__N__ |
| One (1) | One (1) chrome plated elbow with rocker lugs shall be provided with 2-1/2" NST swivel female x 2-1/2" NST male hose threads.   | Y__N__ |
| One (1) | One (1) 2-1/2" NST rocker lug chrome plated vented cap and cable or chain securement shall be provided.  | Y__N__ |
| One (1) | The specified valve shall be an Akron 8800 Series two and one half-inch (2-1/2") valve with a stainless ball.  | Y__N__ |
| One (1) | For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.<br><br>The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label. | Y__N__ |
| One (1) | One (1) 2-1/2" pressure gauge rated at 0-400 PSI shall be provided. The gauge shall include a color coded label and be installed on the pump instrument panel. The face of the gauge shall have a white dial with black letters.   | Y__N__ |
| One (1) | <b><u>REAR LEFT SIDE -- 2-1/2" DISCHARGE</u></b>   | Y__N__ |
| One (1) | One (1) 2-1/2" discharge shall be installed on the left side rear panel of the apparatus body and shall be controlled by a quarter turn ball valve on the pump panel. The discharge shall have 2-1/2" NPT x 2-1/2" NST male hose threads adapter with 30 degree slant. The outlet shall be equipped with an engraved nameplate label shall be installed adjacent the valve control handle.   | Y__N__ |
| One (1) | 3/4" quarter turn bleeder valves shall be installed on gated intakes and discharges larger than 1-1/2" in size.  | Y__N__ |
| One (1) | One (1) chrome plated elbow with rocker lugs shall be provided with 2-1/2" NST swivel female x 2-1/2" NST male hose threads.   | Y__N__ |
| One (1) | One (1) 2-1/2" NST rocker lug chrome plated vented cap and cable or chain securement shall be provided.  | Y__N__ |
| One (1) | The specified valve shall be an Akron 8800 Series two and one half-inch (2-1/2") valve with a stainless ball.  | Y__N__ |

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- One (1) Y\_\_N\_\_  
For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.
- The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.
- One (1) Y\_\_N\_\_  
One (1) 2-1/2" pressure gauge rated at 0-400 PSI shall be provided. The gauge shall include a color coded label and be installed on the pump instrument panel. The face of the gauge shall have a white dial with black letters.
- One (1) Y\_\_N\_\_  
**ELECTRIC REWIND HOSE REEL – LEFT SIDE**
- One (1) Hannay painted steel hose reel with leak proof ball bearing swing joint, adjustable friction brake, electric and crank rewind shall be installed.. The reel shall be plumbed with wire reinforced, high-pressure hose coupled. The reel shall be bolted to a mounting system for easy service or removal.
- The hose reel is to be mounted in the left side area above the pump.
- One (1) Y\_\_N\_\_  
**HOSE REEL REWIND SWITCH**
- A push button hose reel rewind switch shall be installed to control the electric rewind hose reel. The exact location shall be determined at construction.
- One (1) Y\_\_N\_\_  
**1" HOSE REEL DISCHARGE**
- One (1) 1" discharge shall be provided and piped from the fire pump to the hose reel with flexible high pressure hose. The quarter turn ball valve shall be controlled on pump panel. A color coded engraved nameplate label shall be provided near the valve control handle.
- One (1) Y\_\_N\_\_  
3/4" quarter turn bleeder valves shall be installed.
- One (1) Y\_\_N\_\_  
**HOSE REEL DISCHARGE**
- The specified hose reel shall be piped to the normal pressure side of the fire pump.
- One (1) Y\_\_N\_\_  
One (1) Akron 8800 Series one-inch (1") valve with a stainless ball shall be supplied.
- One (1) Y\_\_N\_\_  
For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-

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control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.

The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

One (1)

Y\_\_N\_\_

One (1) 2-1/2" pressure gauge rated at 0-400 PSI shall be provided. The gauge shall include a color coded label and be installed on the pump instrument panel. The face of the gauge shall have a white dial with black letters.

One (1)

Y\_\_N\_\_

### **HOSE FOR REEL**

Two (2) 100' foot lengths of 1" water hose (200') with pin lug couplings and 800 PSI working pressure shall be provided and mounted on the specified hose reel.

One (1)

Y\_\_N\_\_

### **HOSE ROLLER**

One (1) stainless steel roller assembly shall be provided on the left side hose reel.

One (1)

Y\_\_N\_\_

### **ELECTRIC REWIND HOSE REEL – RIGHT SIDE**

One (1) Hannay painted steel hose reel with leak proof ball bearing swing joint, adjustable friction brake, electric and crank rewind shall be installed.. The reel shall be plumbed with wire reinforced, high-pressure hose coupled. The reel shall be bolted to a mounting system for easy service or removal.

The hose reel is to be mounted in the right side area above the pump.

One (1)

Y\_\_N\_\_

### **HOSE REEL REWIND SWITCH**

A push button hose reel rewind switch shall be installed to control the electric rewind hose reel. The exact location shall be determined at construction.

One (1)

Y\_\_N\_\_

### **1" HOSE REEL DISCHARGE**

One (1) 1" discharge shall be provided and piped from the fire pump to the hose reel with flexible high pressure hose. The quarter turn ball valve shall be controlled on pump panel. A color coded engraved nameplate label shall be provided near the valve control handle.

One (1)

Y\_\_N\_\_

3/4" quarter turn bleeder valves shall be installed.

One (1)

Y\_\_N\_\_

### **HOSE REEL DISCHARGE**

The specified hose reel shall be piped to the normal pressure side of the fire pump.

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|---------|---|--------|
| One (1) |   | Y__N__ |
| One (1) | One (1) Akron 8800 Series one-inch (1") valve with a stainless ball shall be supplied.  | Y__N__ |
|         | For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation. |        |
|         | The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.   |        |
| One (1) |   | Y__N__ |
|         | One (1) 2-1/2" pressure gauge rated at 0-400 PSI shall be provided. The gauge shall include a color coded label and be installed on the pump instrument panel. The face of the gauge shall have a white dial with black letters.  |        |
| One (1) |   | Y__N__ |
|         | <b><u>HOSE FOR REEL</u></b>   |        |
|         | Two (2) 100' foot lengths of 1" water hose (200') with pin lug couplings and 800 PSI working pressure shall be provided and mounted on the specified hose reel.   |        |
| One (1) |   | Y__N__ |
|         | <b><u>HOSE ROLLER</u></b>   |        |
|         | One (1) stainless steel roller assembly shall be provided on the right side hose reel.  |        |
| Two (2) |   | Y__N__ |
|         | <b><u>HOSE REEL PAINTING</u></b>  |        |
|         | The hose reel(s) shall be painted silver grey.  |        |
| One (1) |   | Y__N__ |
|         | <b><u>SIDE MOUNT PUMP ENCLOSURE</u></b>   |        |
|         | The side mount pump enclosure shall be removable and supported from the chassis frame rails. This enclosure will allow independent flexing of the pump enclosure from the body and allow for quick removal. The support structure shall be constructed of extruded aluminum tubing and angle.   |        |
|         | All pump suction and discharge controls are to be mounted on the driver side pump operator's panel so as to permit operation of the pump from a central location. The fire pump, valves and controls shall be accessible for service and maintenance as required by applicable sections of NFPA standards.  |        |
|         | The "master" gauges shall be suitably enclosed and mounted on a full pump compartment width "hinged" gauge panel constructed of the same material as the pump operators control panel, allowing access to the backside of all gauges and gauge lines. The individual gauges shall be mounted inline with the control handle or adjacent to the control handle. Panel is to include a stainless steel piano hinge, flush   |        |

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mounted chrome plated trigger latch, and stainless steel cable end stops. Electrical wiring and all gauge lines shall be properly tie wrapped to prevent kinking or cutting of the lines when the panel is opened.

The following controls and equipment shall be provided on the pump panel or within the pump enclosure:

- 1) Electric primer.
- 2) Pump and plumbing area service lights.
- 3) Pressure control device and throttle control.
- 4) Fire pump and engine instruments.
- 5) Pump intakes and discharge controls.
- 6) Master intake and discharge gauges.
- 7) Tank fill control.
- 8) Tank suction control.
- 9) Water tank level gauge.
- 10) Pump panel lights.

### Crosslay Installation

The area atop the pump enclosure shall be notched for the installation of a crosslay hose bed. The hose bed shall have smooth sides and a perforated floor to allow for drainage. Provisions shall be provided to secure hose and equipment per requirements of applicable NFPA standards.

One (1)

Y\_\_N\_\_

### **OPEN DUNNAGE COMPARTMENT -- OVER PUMP ENCLOSURE**

One (1) open compartment shall be located on the top of the pump module. The compartment will be constructed as large as space permits with removable slip resistance floor material or decking in the base of the compartment.

One (1)

Y\_\_N\_\_

### **LEFT SIDE RUNNING BOARD -- SIDE MOUNT PANEL**

The left side mount pump panel shall be equipped with side running board. The running board will extend along the width of the pump enclosure from the forward end of the body module to behind the chassis cab.

The running board shall be constructed of aluminum tread plate, bolted in place with stainless steel fasteners. The step surfaces shall be in compliance to applicable sections of NFPA requirements.

One (1)

Y\_\_N\_\_

### **RIGHT SIDE RUNNING BOARD -- SIDE MOUNT PANEL**

The right side mount pump panel shall be equipped with side running board. The running board will extend along the width of the pump enclosure from the forward end of the body module to behind the chassis cab.

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The running board shall be constructed of aluminum tread plate, bolted in place with stainless steel fasteners. The step surfaces shall be in compliance to applicable sections of NFPA requirements.

One (1)

Y\_\_N\_\_

### **PUMP ENCLOSURE ACCESS DOOR -- RIGHT SIDE UPPER**

A pump panel access door shall be provided on the upper right side of the side mount pump enclosure. The access door shall be approximately 18" high and as wide as possible. The door shall be constructed of 14 gauge #304 brushed stainless steel with push button type latches.

One (1)

Y\_\_N\_\_

### **PUMP PANELS -- SIDE MOUNT**

The pump operator's panel, along with the lower left hand and right hand pump panels shall be constructed of 14 gauge #304 brushed stainless steel and be fastened to the pump enclosure with 1/4" stainless steel bolts and nutserts.

The instrument area shall have a stainless steel continuous hinge that shall swing for easy access to gauges.

One (1)

Y\_\_N\_\_

### **LEFT SIDE PUMP PANEL -- BOLTED**

The pump panel installed on the left hand side of the pump enclosure shall be fastened to the pump enclosure with 1/4" stainless steel bolts and nutserts.

One (1)

Y\_\_N\_\_

### **HINGED PUMP PANEL -- RIGHT SIDE**

The pump panel installed on the on the right hand side of the pump enclosure shall be hinged with push-button latches.

One (1)

Y\_\_N\_\_

### **PUMP PANEL STAINLESS STEEL TRIM PANELS**

Stainless steel intake and discharge trim rings shall be installed to the apparatus with mounting bolts. These assemblies will be used to identify intake and discharge ports with color and verbiage, using separate identification tags protected by chrome plated bezels. These trim rings are designed and manufactured to withstand the environment and shall be backed by a warranty equal to that of the exterior paint and finish. All labels shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

One (1)

Y\_\_N\_\_

### **LABELS**

Safety, information, data, and instruction labels for apparatus shall be provided and installed at the operator's instrument panel.

The labels shall include rated capacities, pressure ratings, and engine speeds as determined by the certification tests. The no-load governed speed of the engine, as stated by the engine manufacturer, shall also be included.

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- One (1) The labels shall be provided with all information and be attached to the apparatus prior to delivery. Y\_\_N\_\_
- COLOR CODED PUMP PANEL LABELING AND NAMEPLATES**
- Discharge and intake valve controls shall be color coded in compliance to guidelines of applicable sections of NFPA standards.
- One (1) Permanent type nameplates and instruction panels shall be installed on the pump panel for safe operation of the pumping equipment and controls. Y\_\_N\_\_
- MIDSHIP PUMP PANEL LIGHTS -- LEFT SIDE**
- One (1) Three (3) Weldon #2025 or equal lights with clear lenses shall be installed under an instrument panel light hood on the left side pump panel. The lights shall be controlled by a switch located on the operators instrument panel. Y\_\_N\_\_
- MIDSHIP PUMP PANEL LIGHTS -- RIGHT SIDE**
- One (1) Two (2) Weldon #2025 or equal lights with clear lenses shall be installed under an instrument panel light hood on the right side pump panel. The lights shall be controlled by a switch located on the operator's instrument panel. Y\_\_N\_\_
- PUMP PANEL LIGHTS**
- One (1) One (1) pump panel light shall be illuminated at the time the fire pump is engaged into operation. The remaining lights shall be controlled by a switch located on the operator's instrument panel. Y\_\_N\_\_
- MASTER DISCHARGE AND INTAKE GAUGES**
- One (1) Two (2) 4-1/2" diameter discharge pressure and intake gauges (30-0-600 PSI) with engraved, color coded labels, shall be provided on the pump instrument panel. Y\_\_N\_\_
- TEST TAPS**
- One (1) Test taps for pump intake and pump pressure shall be provided on the pump instrument panel and be properly labeled. Y\_\_N\_\_
- WATER TANK LEVEL GAUGE - PUMP PANEL**
- The apparatus shall be equipped with one (1) Innovative Controls SL Series Tank Level Monitor System shall be installed. The system shall include an electronic display module, a pressure transducer-based sender unit, and a 15' connection cable. The display module shall show the volume of water in the tank using 14 super bright easy-to-see LEDs arranged to form an inverted "V" pattern to easily distinguish the tank level at a glance. Tank level indication is enhanced by the use of green LEDs at

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the full and near-full levels, amber LEDs between  $\frac{3}{4}$  and  $\frac{1}{4}$  tank levels, and red LEDs at the near-empty and empty levels. 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.

All programming functions shall be accessed and performed from the front of the display module. The programming includes self-diagnostics, manual or self-calibration, and networking capabilities to connect remote slave displays. Low tank level warnings shall include flashing red LEDs starting below the  $\frac{1}{4}$  level and an output for an audible alarm.

The display module shall receive an input signal from a pressure transducer. This stainless steel sender unit 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.

Location of water tank level monitor shall be at the pump panel.

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- One (1) Y\_\_N\_\_  
**WATER TANK - 3000 GALLON**  
The apparatus shall be equipped with a three-thousand (3000) gallon polypropylene water tank. The tank shall be equipped with a four-inch (4") overflow pipe.
- One (1) Y\_\_N\_\_  
**WATER TANK**  
The apparatus shall be equipped with a "T" shaped tank.
- One (1) Y\_\_N\_\_  
**WATER TANK FILL TOWER**  
A fill tower measuring approximately 10" x 10" square shall be provided on the water tank up to and including 3500 gallons total capacity.
- One (1) Y\_\_N\_\_  
The apparatus shall be equipped with a polypropylene water tank. The tank body and end bulkheads shall be constructed of .5" thick, polypropylene, nitrogen-welded and tested inside and out. Tank construction shall conform to applicable NFPA standards. The tank shall carry a lifetime warranty.  
  
The transverse and longitudinal .375" thick swash partitions shall be interlocked and welded to each other as well as to the walls of the tank. The partitions shall be designed and equipped with vent holes to permit air and liquid movement between compartments.  
  
The .5" thick cover shall be recessed .375" from the top of the side walls. Hold down dowels shall extend through and be welded to both the covers and the transverse partitions, providing rigidity during fast fill operations. Drilled and tapped holes for lifting eyes shall be provided in the top area of the booster tank.  
  
The water fill tower shall be provided at front of the tank. The 0.5" thick polypropylene fill and overflow tower shall be equipped with a hinged lid and a removable polypropylene screen. The overflow tube shall be installed in fill tower and piped with schedule 40 PVC pipe through the tank.  
  
The water tank sump shall be located in the forward area of the tank. There will be a schedule 40 polypropylene tank suction pipe from the front of the tank to the tank sump. The tank drain and clean out shall be located in the bottom of the tank sump.  
  
The pump to tank refill connection shall be a sized to mate with tank fill discharge line. A deflector shield inside the tank will also be provided.  
  
The water tank manufacturer shall certify the capacity of the water tank prior to delivery of the apparatus. This capacity shall be recorded on the manufacturer's record of construction and the certification shall be provided to the purchaser when the apparatus is delivered.

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- One (1) The apparatus shall be equipped with a water tank manufactured by United Plastic Fabricating. Y\_\_N\_\_
- One (1) **DIRECT TANK FILL** Y\_\_N\_\_
- One (1) 2-1/2" diameter direct tank fill inlet shall be provided, including a 2-1/2" female NH swivel, plug and screen.
- The valve shall be located and controlled on the left side rear of body.
- The direct tank fill shall be located at the lower portion of the water tank.
- One (1) Y\_\_N\_\_
- QUICK DUMP - REAR**
- One (1) Newton 10" quick dump valve shall be provided and externally mounted. The location shall be at the center rear of the apparatus. Y\_\_N\_\_
- One (1) One (1) manual operated lever control shall be used to open and close the rear dump valve. Y\_\_N\_\_
- One (1) The Newton dump valve installed on the water tank shall be painted grey. Y\_\_N\_\_
- One (1) One (1) extendable steel chute painted grey with approximate inside dimensions of 10" wide x 10" high shall be provided with the apparatus. The chute shall be located at the rear quick dump and be able to manually extend and retract with ease of operation. Y\_\_N\_\_
- One (1) **QUICK DUMP - LEFT SIDE** Y\_\_N\_\_
- One (1) Newton 10" quick dump valve shall be provided and externally mounted. The location shall be at the left side of the apparatus ahead of the rear wheels. Y\_\_N\_\_
- One (1) One (1) manual operated lever control shall be used to open and close the left side dump valve. Y\_\_N\_\_
- One (1) The Newton dump valve installed on the water tank shall be painted grey. Y\_\_N\_\_
- One (1) One (1) extendable steel chute painted grey with approximate inside dimensions of 10" wide x 10" high shall be provided with the apparatus. The chute shall be located at the left side quick dump and be able to manually extend and retract with ease of operation. Y\_\_N\_\_
- One (1) **QUICK DUMP - RIGHT SIDE** Y\_\_N\_\_
- One (1) Newton 10" quick dump valve shall be provided and externally mounted. The location shall be at the right side of the apparatus ahead of the rear wheels.

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|---------|--|--------|
| One (1) | One (1) manual operated lever control shall be used to open and close the right side dump valve.   | Y__N__ |
| One (1) | The Newton dump valve installed on the water tank shall be painted grey.   | Y__N__ |
| One (1) | One (1) extendable steel chute painted grey with approximate inside dimensions of 10" wide x 10" high shall be provided with the apparatus. The chute shall be located at the right side quick dump and be able to manually extend and retract with ease of operation. | Y__N__ |

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### **APPARATUS BUILDUP SPECIFICATIONS AND REQUIREMENTS**

One (1)

Y\_\_N\_\_

#### **ALUMINUM HOSEBED GRATING TANDEM AXLE**

The hose bed compartment deck shall be constructed entirely from maintenance-free, extruded aluminum slats. The slats shall have an anodized, radiused ribbed top surface. The slats shall be of widths approximately 3/4" high x 6" wide and shall be assembled into a one-piece grid system to prevent the accumulation of water and allow ventilation to assist in drying hose.

One (1)

Y\_\_N\_\_

#### **HOSE BED STORAGE CAPACITY**

The hose bed shall be designed to have a storage capacity for a minimum of 55 cubic feet of fire department supplied fire hose.

One (1)

Y\_\_N\_\_

#### **ALUMINUM HOSEBED DIVIDER**

One (1) adjustable hose bed divider constructed of .250" aluminum shall be installed on the apparatus.

One (1)

Y\_\_N\_\_

#### **1/8" ALUMINUM BODY**

The body shall be fabricated of aluminum extrusions, smooth aluminum sheet and aluminum tread plate.

The aluminum extrusion alloy shall be 6061 with a temper rating of T6, and have a tensile strength of 45,000 PSI and yield strength of 40,000 pounds. The aluminum extrusions shall 3" x 3" aluminum tubing, 1-3/4" x 3" aluminum tubing and 3" x 3" aluminum angle and specially designed extrusions, up to .250" wall thickness where applicable.

The smooth aluminum sheet material alloy shall be 5052 with a temper rating of H32, and have a tensile strength of 33,000 PSI and yield strength of 28,000 pounds.

The aluminum tread plate alloy shall be 3003 with a temper rating of H22, and have a tensile strength of 30,000 PSI and yield strength of 28,000 pounds.

The extrusions shall be designed as structural-framing members with the smooth aluminum and tread plate fabricated to form compartments, hose beds, and floors. All aluminum material shall be welded together using the latest mig spray pulse arc welding system.

Compartments to be sweep out design and to be water and dust proof. All compartments shall be made to the maximum practical dimensions to provide maximum storage capacity. To ensure maximum storage space, the apparatus shall be constructed without any void spaces between the body and the compartment walls. Double wall construction does not meet this requirement.

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All exterior compartments shall have polished aluminum drip moldings installed above the doors where necessary to prevent water from entering the compartments.

Wheel well panels shall be formed aluminum that is welded in place. There shall be no visible bolt heads, retention nuts or fasteners on the exterior surface of the panel. To fully protect the wheel well area from road debris and to aid in cleaning, a full depth radius wheel well liner shall be provided. The frame side of the wheel well area on each side of the opening shall be attached to the frame side of the front and rear compartments. All seams on the frame side of the body shall be welded and caulked to prevent moisture from entering the compartments.

The rear wheel wells shall be radius cut for a streamlined appearance. A polished aluminum fenderette shall be furnished at each rear wheel well opening, held in place with stainless steel fasteners.

### **FASTENERS**

All aluminum and stainless steel components shall be attached using stainless steel fasteners.

Compartment door hinges, handrails and running boards shall be attached using minimum 1/4" diameter machine bolt fasteners.

3/16" diameter fasteners shall only be used in nonstructural areas such as; door handles, trim moldings, gauge mounting, etc.

One (1)

Y\_\_N\_\_

### **COMPARTMENT FLOORS**

The compartment floors shall be constructed of smooth aluminum material, to match the compartment interior walls.

One (1)

Y\_\_N\_\_

### **GALVANIZED SUB-FRAME**

The apparatus body sub frame shall be constructed entirely of heavy steel structural channel material.

Two full frame lengths, three-inch (3") 3.4 pound per foot longitudinal steel channels shall form the sides of the body sub frame and sides of the water tank cradle. Sub frame cross members shall be fabricated with three inch (3") 3.4 pound per foot heavy steel channel cross members welded to the longitudinal body sub frame sides and the full length frame pads.

Two full frame length 1/2" x 3" flat steel frame pads shall be attached to the body sub frame and rest on top of the chassis frame rails for proper frame weight distribution.

The steel frame pads, longitudinal steel channels and sub frame cross members shall be attached to the chassis frame rails using heavy "U" bolt fasteners to allow removal

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of the sub frame and body assembly from the chassis. There shall be a barrier provided between the sub frame and body to prevent electrolysis.

The rear sub frame and lower body platform support members shall be of the "two piece" design, fabricated of 3.4 lb. Per foot heavy channel and welded to the full length sub frame channel liners at the rear.

A minimum of two rear platform support channels shall be provided and constructed of 3.4 lb. Per foot heavy steel material. Each support channel shall have welded in gusset where the support meets the rear sub frame rails.

After fabrication the entire sub frame assembly shall be hot dip galvanized to prevent corrosion. The hot dip galvanized sub frame shall have a lifetime warranty against failure due to corrosion.

This steel sub frame shall carry the weight of the apparatus body, tank, water and equipment. This method of apparatus construction gives an excellent strength/weight ratio.

One (1)

Y\_\_N\_\_

### **BODY CONFIGURATION**

The aluminum apparatus body shall be up to 220" long, reference the drawing for actual body length.

One (1)

Y\_\_N\_\_

### **TANDEM AXLE WHEEL WELL LINER**

For ease of accessibility and maintenance, wheel well panels shall be double break formed painted smooth plate that is welded in place.

To fully protect the wheel well area from road debris and to aid in cleaning, a full depth (minimum of 25") radius wheel well liner shall be provided. Wheel well liner shall be smooth aluminum to prevent corrosion.

One (1)

Y\_\_N\_\_

### **FENDERETTES**

The rear wheel wells shall be radius cut for a streamlined appearance. A polished aluminum fenderette shall be furnished at each rear wheel well opening, held in place with concealed stainless steel fasteners.

One (1)

Y\_\_N\_\_

### **HOSEBED WIDTH**

The width of the pumper body hose bed shall be 74".

One (1)

Y\_\_N\_\_

### **COMPARTMENT HEIGHT**

The left side body compartments shall be 63" high.

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One (1)

### **COMPARTMENT HEIGHT**

Y\_\_N\_\_

The right side body compartments shall be 30" high.

One (1)

### **ROLL UP DOOR CONSTRUCTION**

Y\_\_N\_\_

The roll up door(s) shall be fabricated from aluminum extrusions and be manufactured and assembled in the United States.

The door slats shall be double-wall extrusions with dimensions of 1.366" high x .315" thick. The exterior surface shall be flat and the interior surface concave to deflect loose equipment to prevent the door from jamming. Each slat shall have interlocking end shoes to prevent the slat from moving side to side resulting in binding of the door. Each slat shall be separated by a co-extruded PVC and rubber inner seal to prevent metal to metal contact and minimize dirt and moisture from entering the compartment. The inner seal shall not be visible from the exterior to maintain a clean appearance of door. The slats shall have interlocking joints with a folding locking flange to provide security and prevent penetration by sharp objects.

The track shall be a one (1) piece aluminum assembly that has an attaching flange and finishing flange incorporated into the design that facilitates installation and provides a finished look to the door without additional trim or caulking. A low profile side seal shall be utilized to maximize usable compartment space.

A drip rail designed to prevent water from dripping into the compartment shall be provided. The drip rail shall have a built in replaceable non-contacting seal to eliminate scratching of the surface of the door.

Bottom rail extrusion must have smooth back to prevent loose equipment from jamming the door and have "V" shaped double seal to prevent water and debris from entering the compartment. The door latch system shall be a full width one (1) piece lift bar that enables the user to operate with one hand.

The roll mechanism shall have a clip system that connects the curtain slats to the operator drum to allow for easy tension adjustment without tools. A four (4) inch diameter counterbalanced operator drum to shall be incorporated to assist in lifting the door.

One (1)

### **ROLLUP DOORS**

Y\_\_N\_\_

The rollup doors shall be ROM manufacturing roll up doors.

One (1)

### **LEFT FRONT COMPARTMENT**

Y\_\_N\_\_

There shall be one (1) full height compartment located ahead of the rear wheels. The compartment shall be equipped with a full height single natural finish roll up door.

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- One (1) The compartment shall be equipped with the following: Y\_\_N\_\_
- COMPARTMENT LOUVER**
- One (1) louver with filter shall be installed on the back wall of the specified compartments. Y\_\_N\_\_
- One (1) **ADJUSTABLE SHELVING TRACKS**
- The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting. Y\_\_N\_\_
- One (1) **ADJUSTABLE SHELF**
- One (1) adjustable shelf shall be constructed of .125" smooth aluminum plate with 1.5" formed vertical lip front & back. Shelf supports on each side to be constructed of .188" aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8" bolts and spring-loaded cam locks. If shelf is longer than 40" a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf. Trim-Lok trim shall be installed on the front lip edge to afford protection to equipment and firefighter when loading/unloading. Y\_\_N\_\_
- One (1) **250# ROLLOUT TRAY**
- One (1) roll-out equipment tray shall be installed in a standard depth compartment. The tray with telescoping slides and roller bearings shall be rated to a maximum load of 250 lbs. Tray shall be of a closed-in design, formed of .188" smooth aluminum plate, fabricated with two (2) inch sides. Trim-Lok edge trim shall be installed on the front lip to afford protection to equipment and firefighter when loading/unloading. Reflective material measuring 1" x 6" shall be installed on the front corner both on the face and side of tray for firefighter safety.
- The tray unit shall roll out to full extension of the compartment, with latching mechanism to hold tray in both fully-extended and stored positions. Y\_\_N\_\_
- Two (2) **COMPARTMENT LIGHTS**
- Two (2) LED light fixtures shall be installed on the wall of the exterior compartment of the apparatus. The lights shall have a clear lens. Y\_\_N\_\_
- One (1) **COMPARTMENT LIGHT SWITCH**
- The compartment lights will be controlled by an automatic "On-Off" switch located on each compartment door.

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One (1) Y\_\_N\_\_

**LEFT HIGH SIDE COMPARTMENTS**

There shall be two (2) compartments located above the lower compartments. Each of the two (2) compartments shall be equipped with a natural finish roll up door.

The compartments shall be equipped with the following:

One (1) Y\_\_N\_\_

**COMPARTMENT LOUVER**

One (1) louver with filter shall be installed on the back wall of the specified compartments.

One (1) Y\_\_N\_\_

**ADJUSTABLE SHELVING TRACKS**

The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting.

Two (2) Y\_\_N\_\_

**COMPARTMENT LIGHTS**

Two (2) LED light fixtures shall be installed on the wall of the exterior compartment of the apparatus. The lights shall have a clear lens.

One light shall be supplied for each upper high side compartment.

Two (2) Y\_\_N\_\_

**COMPARTMENT LIGHT SWITCH**

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

One (1) Y\_\_N\_\_

**LEFT REAR COMPARTMENT**

There shall be one (1) full height compartment located behind the rear wheels. The compartment shall be equipped with a full height single natural finish roll up door.

The compartment shall be equipped with the following:

One (1) Y\_\_N\_\_

**COMPARTMENT LOUVER**

One (1) louver with filter shall be installed on the back wall of the specified compartments.

One (1) Y\_\_N\_\_

**ADJUSTABLE SHELVING TRACKS**

The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting.

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One (1)

Y\_\_N\_\_

### **ADJUSTABLE SHELF**

One (1) adjustable shelf shall be constructed of .125" smooth aluminum plate with 1.5" formed vertical lip front & back. Shelf supports on each side to be constructed of .188" aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8" bolts and spring-loaded cam locks. If shelf is longer than 40" a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf. Trim-Lok trim shall be installed on the front lip edge to afford protection to equipment and firefighter when loading/unloading.

One (1)

Y\_\_N\_\_

### **250# ROLLOUT TRAY**

One (1) roll-out equipment tray shall be installed in a standard depth compartment. The tray with telescoping slides and roller bearings shall be rated to a maximum load of 250 lbs. Tray shall be of a closed-in design, formed of .188" smooth aluminum plate, fabricated with two (2) inch sides. Trim-Lok edge trim shall be installed on the front lip to afford protection to equipment and firefighter when loading/unloading. Reflective material measuring 1" x 6" shall be installed on the front corner both on the face and side of tray for firefighter safety.

The tray unit shall roll out to full extension of the compartment, with latching mechanism to hold tray in both fully-extended and stored positions.

Two (2)

Y\_\_N\_\_

### **COMPARTMENT LIGHTS**

Two (2) LED light fixtures shall be installed on the wall of the exterior compartment of the apparatus. The lights shall have a clear lens.

One (1)

Y\_\_N\_\_

### **COMPARTMENT LIGHT SWITCH**

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

One (1)

Y\_\_N\_\_

### **RIGHT FRONT COMPARTMENT**

There shall be one (1) low compartment located ahead of the rear wheels. The compartment shall be equipped with a low single natural finish roll up door.

The compartment shall be equipped with the following:

One (1)

Y\_\_N\_\_

### **COMPARTMENT LOUVER**

One (1) louver with filter shall be installed on the back wall of the specified compartments.

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One (1) Y\_\_N\_\_

**ADJUSTABLE SHELVING TRACKS**

The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting.

One (1) Y\_\_N\_\_

**ADJUSTABLE SHELF**

One (1) adjustable shelf shall be constructed of .125" smooth aluminum plate with 1.5" formed vertical lip front & back. Shelf supports on each side to be constructed of .188" aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8" bolts and spring-loaded cam locks. If shelf is longer than 40" a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf. Trim-Lok trim shall be installed on the front lip edge to afford protection to equipment and firefighter when loading/unloading.

One (1) Y\_\_N\_\_

**250# ROLLOUT TRAY**

One (1) roll-out equipment tray shall be installed in a standard depth compartment. The tray with telescoping slides and roller bearings shall be rated to a maximum load of 250 lbs. Tray shall be of a closed-in design, formed of .188" smooth aluminum plate, fabricated with two (2) inch sides. Trim-Lok edge trim shall be installed on the front lip to afford protection to equipment and firefighter when loading/unloading. Reflective material measuring 1" x 6" shall be installed on the front corner both on the face and side of tray for firefighter safety.

The tray unit shall roll out to full extension of the compartment, with latching mechanism to hold tray in both fully-extended and stored positions.

One (1) Y\_\_N\_\_

**COMPARTMENT LIGHTS**

One (1) LED light fixture shall be installed on the wall of the exterior compartment of the apparatus. The light shall have a clear lens.

One (1) Y\_\_N\_\_

**COMPARTMENT LIGHT SWITCH**

The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door.

One (1) Y\_\_N\_\_

**RIGHT REAR COMPARTMENT**

There shall be one (1) low compartment located behind the rear wheels. The compartment shall be equipped with a low single natural finish roll up door.

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- One (1) The compartment shall be equipped with the following: Y\_\_N\_\_
- COMPARTMENT LOUVER**
- One (1) One (1) louver with filter shall be installed on the back wall of the specified compartments. Y\_\_N\_\_
- ADJUSTABLE SHELVING TRACKS**
- One (1) The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting. Y\_\_N\_\_
- COMPARTMENT LIGHTS**
- One (1) Two (2) incandescent light fixtures shall be installed in the compartment. The compartment lights shall have a clear lens. Y\_\_N\_\_
- COMPARTMENT LIGHT SWITCH**
- One (1) The compartment light will be controlled by an automatic "On-Off" switch located on each compartment door. Y\_\_N\_\_
- REAR BODY CONFIGURATION**
- One (1) The rear of the apparatus body shall be of the flat back design. Y\_\_N\_\_
- REAR COMPARTMENT**
- One (1) There shall be no compartment located on the rear of the body. Y\_\_N\_\_
- REAR STEP - 12" BOLT-ON**
- One (1) A 12" deep step surface shall be provided at the rear of the apparatus body, bolted in place and easily removable for replacement or repair. The tailboard shall be constructed of .188" aluminum diamond plate or equal non-slip surface in compliance with NFPA #1901 standards.
- One (1) The maximum height of the step assembly shall be no more than 24" from the ground when the apparatus is in the loaded condition. A label shall be provided warning personnel that riding on the rear step while the apparatus is in motion is prohibited. Y\_\_N\_\_
- HARD SUCTION MOUNTING**
- One (1) One (1) hard suction hose compartment shall be provided below the upper "T" of the booster tank, on the left side. The design shall allow the hose to be individually removed from the rear of the apparatus. The hard suction hose compartment shall

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- One (1) have an aluminum tread plate door with a stainless steel hinge and a push to latch door catches. Y\_\_N\_\_
- HARD SUCTION MOUNTING**
- One (1) One (1) hard suction hose compartment shall be provided below the upper "T" of the booster tank, on the right side. The design shall allow the hose to be individually removed from the rear of the apparatus. The hard suction hose compartment shall have an aluminum tread plate door with a stainless steel hinge and a push to latch door catches. Y\_\_N\_\_
- SUCTION HOSE SOURCE**
- One (1) New suction hose shall be provided by the body builder. Y\_\_N\_\_
- PORTABLE WATER TANK MOUNTING BRACKET**
- One (1) There shall be one (1) fully enclosed folding tank storage carrier provided on the passenger side of the booster tank and above the lower compartments to carry a portable folding tank. The tank carrier shall hold the folding tank in the vertical position for travel, and fold down over the lower body side for loading and unloading. The folding tank carrier shall be fabricated of smooth aluminum painted to match the body side and have polished aluminum tread plate end caps. There shall be a hinged bracket that is bolted to the top of the lower compartments with rubber stops to prevent the folding tank carrier from touching the body side when in the down position. There shall be a reinforcement plate installed on the compartment top where the folding tank carrier is attached. There shall be two heavy-duty clamps provided to hold the tank in the travel position. Y\_\_N\_\_
- FOLDING TANK SOURCE**
- One (1) New folding tank shall be provided by the body builder. Y\_\_N\_\_
- FOLDING STEP LEFT SIDE FRONT**
- One (1) Three (3) 8" square folding steps of chrome plated die cast aluminum shall be provided. The steps shall comply to NFPA #1901 non-slip standards and shall be installed on the left side front compartment face. Y\_\_N\_\_
- FOLDING STEP RIGHT SIDE FRONT**
- An 8" square folding step of chrome plated die cast aluminum shall be provided. The step shall comply to NFPA #1901 non-slip standards and shall be installed on the right side front compartment face.

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One (1) Y\_\_N\_\_

**FRONT BODY PROTECTION PANELS**

Aluminum tread plate overlays and panels shall be installed on the front of the body from the lower edge to the top of the compartment doors.

One (1) Y\_\_N\_\_

**REAR BODY PROTECTION PANELS**

Smooth aluminum shall be installed on the rear of the body, to allow for the proper application and installation of a "Chevron" stripe on the rear.

One (1) Y\_\_N\_\_

**POLISHED COMPARTMENT TOP WELDS**

The compartment top welds to be polished.

One (1) Y\_\_N\_\_

**REAR ACCESS LADDER**

There shall be a swing out and down access ladder supplied and installed on the apparatus, for accessing the top of the apparatus. It shall be of an all aluminum design and shall incorporate treads six (6") inches deep and no more than eighteen (18") inches apart. The ground to the first step dimension, on level ground, shall be no more than eighteen (18") inches. When in the deployed position the ladder shall have an angle of approximately 75-degrees to facilitate ascending and descending the ladder. The ladder shall be retained in the stowed and deployed position by two (2) gas cylinders and shall not require the use of lathes to hold it in position.

One (1) Y\_\_N\_\_

**HANDRAIL BELOW HOSEBED**

One (1) extruded aluminum non-slip handrail, approximately 60" in length, shall be provided and horizontally mounted below the hose bed on the rear of the apparatus.

One (1) Y\_\_N\_\_

**EXTRUDED ALUMINUM RUB RAILS**

Full body length polished aluminum rub rails shall be bolted in place on the lower right and left body sides. The side rub rails shall be a heavy extruded aluminum "C" channel.

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### **12 VOLT ELECTRICAL SPECIFICATIONS AND REQUIREMENTS**

One (1)

Y\_\_N\_\_

#### **LOW VOLTAGE ELECTRICAL SYSTEM SPECIFICATIONS**

The electrical system shall include all panels, electrical components, switches and relays, wiring harnesses and other electrical components. The electrical equipment installed by the apparatus manufacturer shall conform to current automotive electrical system standards, the latest Federal DOT standards, and the requirements of the applicable NFPA standards.

All wiring shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for the protected circuit. Voltage drops in all wiring from the power source to the using device shall not exceed 10 percent. The wiring and wiring harness and insulation shall be in conformance to applicable SAE and NFPA standards. The wiring harness shall conform to SAE J-1128 with GXL temperature properties. All exposed wiring shall be protected in a loom with a minimum 289 degree Fahrenheit rating. All wiring looms shall be properly supported and attached to body members. The electrical conductors shall be constructed in accordance with applicable SAE standards, except when good engineering practice requires special construction.

The wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection and shall be installed in accordance with the device manufacturer's instructions. Electrical connections shall be with mechanical type fasteners and large rubber grommets where wiring passes through metal panels.

The wiring between the cab and body shall be joined using Deutsche type connectors or an enclosed in a terminal junction panel area. This system will permit body removal with minimal impact on the apparatus electrical system. All connections shall be crimp-type with insulated shanks to resist moisture and foreign debris such as grease and road grime. Weather-resistant connectors shall be provided throughout to ensure the integrity of the electrical system.

There shall be no exposed electrical cabling, harnesses, or terminal connections located in compartments, unless they are enclosed in a junction box or covered with a removable electrical panel. The wiring shall be secured in place and protected against heat, liquid contaminants and damage. Wiring shall be uniquely identified every three-inches (3") by color coding or permanent marking with a circuit function code and identified on a reference chart or electrical wiring schematic per requirements of applicable NFPA #1901 standards.

The electrical circuits shall be provided with low voltage over current protective devices. Such devices shall be accessible and located in required terminal connection locations or weather resistant enclosures. The over current protection shall be suitable for electrical equipment and shall be automatic reset type and meet SAE standards. All electrical equipment, switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is

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protected. The system shall have electro-magnetic interference suppression provided as required in applicable SAE standards.

The electrical system shall include the following:

- a) Electrical terminals in weather exposed areas shall have a non-conductive grease or spray applied. A corrosion preventative compound shall be applicable to all terminal plugs located outside of the cab or body.
- b) The electrical wiring shall be harnessed or be placed in a protective loom.
- c) Holes made in the roof shall be caulked with silicone. Large fender washers shall be used when fastening equipment to the underside of the cab roof.
- d) Any electrical component that is installed in an exposed area shall be mounted in a manner that will not allow moisture to accumulate in it.
- e) A coil of wire must be provided behind an electrical appliance to allow them to be pulled away from mounting area for inspection and service work.
- f) All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.

The warning lights shall be switched in the chassis cab with labeled switches in an accessible location. Individual rocker switches shall be provided only for warning lights provided over the minimum level of warning lights in either the stationary or moving modes. All electrical equipment switches shall be mounted on a switch panel mounted in the cab convenient to the operator. The warning light switches shall be of the rocker type. For easy nighttime operation, an integral indicator light shall be provided to indicate when the circuit is energized. All switches shall be appropriately identified as to their function.

A single warning light switch shall activate all required warning lights. This switch will allow the vehicle to respond to an emergency and "call for the right of way". When the parking brake is applied, a "blocking right of way" system shall automatically activate per requirements of the applicable NFPA standards. All "clear" warning lights shall be automatically turned off upon application of the parking brake.

### **NFPA REQUIRED TESTING OF ELECTRICAL SYSTEM**

The apparatus shall be electrically tested upon completion of the vehicle and prior to delivery. The electrical testing, certifications, and test results shall be submitted with delivery documentation per requirements of the applicable NFPA standards. The following minimum testing shall be completed by the apparatus manufacturer:

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1. Reserve capacity test:

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for ten (10) minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a failed test.

2. Alternator performance test at idle:

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

3. Alternator performance test at full load:

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of two (2) hours. Activation of the load management system is permitted during this test. However, if an alarm sounds due to excessive battery discharge, as detected by the system requirements in the NFPA standards, or a system voltage of less than 11.7 volts dc for more than 120 seconds is present, the test has failed.

4. Low voltage alarm test:

Following the completion of the above tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts dc for a 12 volt system shall be considered a test failure. The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.

### NFPA REQUIRED DOCUMENTATION

The following documentation shall be provided on delivery of the apparatus:

- a. Documentation of the electrical system performance tests required above.
- b. A written load analysis, including:
  1. The nameplate rating of the alternator.
  2. The alternator rating under the conditions.

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3. Each specified component load.

4. Individual intermittent loads.

One (1)

Y\_\_N\_\_

### **LOW VOLTAGE ELECTRICAL SYSTEM**

The electrical junction or terminal boxes shall be weather resistant and located away from water spray conditions. In addition, the main body junction panel shall house the automatic reset breakers and relays where required. The main body junction panel shall be located in the pump compartment.

One (1)

Y\_\_N\_\_

### **LOAD MANAGER 2**

The apparatus shall be equipped with a Kussmaul model 091-79 Automatic Load Shedding System for performing continuous electrical load management. The Load Manager shall have the following features:

- Monitor 12-volt system and detect low voltage.
- Capability to control two (2) loads.
- Automatic reset when voltage rises.
- Adjustable voltage setpoint.

The load manager shall be protected against reverse polarity and shorted outputs, and be enclosed in a enclosure to enhance EMI/RFI protection. Rosenbauer shall provide for all electrical loads in excess of the NFPA minimum electrical requirements that exceed the alternator output.

One (1)

Y\_\_N\_\_

### **HIGH IDLE SYSTEM**

There shall be a high idle system furnished and installed on the apparatus. The high idle system shall have an on/off switch located in the chassis on the switch console. The system shall have an interlock that will disable the solenoid if the parking brake is not completely set.

One (1)

Y\_\_N\_\_

### **ELECTRICAL CONSOLE WITH EMERGENCY LIGHT SWITCH PANEL**

An electrical console shall be constructed of .125" smooth aluminum material and mounted in the cab of the truck chassis. Console shall be designed and installed between the driver and passenger seats. The top face of the console shall be designed as the switch panel for all emergency light switches. The switch panel shall be hinged for easy access to the switch connections.

All emergency light switches shall be lighted, rocker style. Switches shall be internally lit when the switch circuit is in the on position. A plug-in identification label is to be provided and installed adjacent to each rocker switch with backlighting provided behind the label.

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### **SWITCHES**

A rocker style internally lighted switch shall be provided and wired through a heavy-duty relay to activate power to the emergency lights. The emergency lights shall be activated by a single "MASTER SWITCH" on the electrical console.

One (1)

Y\_\_N\_\_

### **BATTERY SYSTEM**

The chassis shall be provided with 12 volt Group 31, 650 CCA maintenance free batteries. The batteries shall be wired into the system to form a "single" battery system.

One (1)

Y\_\_N\_\_

### **MASTER ELECTRIC SWITCH**

One (1) master battery disconnect switch shall be located conveniently to the driver of the apparatus. The switch shall disconnect the 12 volt power supply from the battery system.

A green "Master On" light shall be provided. This light shall illuminate anytime the master switch is in the "ON" position.

One (1)

Y\_\_N\_\_

### **BATTERY CHARGER**

One (1) Kussmaul Autocharge model #091-165-12 12-amp automatic battery charger shall be wired to the 12 volt battery system. The charger unit shall be mounted in a clean dry area and will be accessible for service and/or maintenance.

One (1)

Y\_\_N\_\_

### **AUTO-EJECT**

A Kussmaul "Super Auto-Eject" 20-amp automatic disconnect device shall be provided and installed on the 110 volt shoreline connection complete with weatherproof cover and matching plug. The Auto-Eject shall be activated by the chassis starter switch to disconnect the plug. The Super Auto-Eject shall be completely sealed to prevent contamination of the mechanism by inclement weather and road conditions. The Super Auto-Eject shall have an internal switch to open and close the AC circuit after the mating connector is inserted and before the connector is removed.

One (1)

Y\_\_N\_\_

### **SHORE POWER PLUG**

The shore power plug shall be located at the left front cab door.

One (1)

Y\_\_N\_\_

### **ALTERNATOR**

The alternator shall be supplied by the chassis manufacturer.

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- One (1) Y\_\_N\_\_  
**AIR HORNS**  
Two (2) Stuttertone chrome plated air horns shall be mounted on the side of the hood of the commercial chassis. An air protection valve shall be provided in the air horn piping that will not allow the chassis air brake system to drop below 90 PSI.
- One (1) Y\_\_N\_\_  
**AIR HORN FOOT SWITCH**  
One (1) foot switch shall be installed to activate the air horn system on the driver's side of the floor.
- One (1) Y\_\_N\_\_  
**AIR HORN FOOT SWITCH**  
One (1) foot switch shall be installed to activate the air horn system on the officer's side of the floor.
- One (1) Y\_\_N\_\_  
**INTERIOR CAB CEILING LIGHT**  
One (1) ceiling mounted dome light with on/off switch shall be supplied with the chassis.
- One (1) Y\_\_N\_\_  
**ENGINE COMPARTMENT LIGHT**  
One (1) 12 volt incandescent light with switch shall be mounted in the engine enclosure.
- One (1) Y\_\_N\_\_  
**PUMP ENCLOSURE LIGHTS**  
One (1) incandescent work light shall be provided in the pump enclosure. The control switch shall be mounted on the light head.
- Two (2) Y\_\_N\_\_  
**12V 150 WATT FLOODLIGHT**  
Two (2) Fire Research Focus model FCA100-D15 lamp head shall be provided. The lamp head mounting arm shall terminate in 3/4" NPT threads. Wiring shall extend from the lamp head mounting arm bottom.  
  
The lamp head shall have one (1) quartz halogen 150 watt 12 volt bulb. The bulb will draw 12.5 amps and generate 2600 lumens. The bulb shall be accessible through the front. The lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head shall incorporate heat-dissipating fins and be no more than 5" deep by 3 3/8" high by 10" wide. Lamp head and mounting arm shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

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- Two (2) Y\_\_N\_\_  
**TELESCOPIC POLE**  
Two (2) Fire Research 530 series side mount bottom raise telescopic light pole shall be provided. The light pole shall extend approximately 30” in height and be anodized aluminum. A knurled twist lock mechanism to secure the extension pole in position shall be included with the pole.
- Two (2) Y\_\_N\_\_  
**LIGHT SWITCH ON LAMPHEAD**  
A switch shall be installed on the quartz light lamp head. The weatherproof on-off toggle switch shall be mounted on the lower left side of the lamp head.
- Two (2) Y\_\_N\_\_  
**LIGHT MOUNTING LOCATION**  
The mounting location for the specified light shall be on the pump enclosure.
- One (1) Y\_\_N\_\_  
**BACK-UP ALARM**  
One (1) automatic electric back-up alarm shall be wired to the back-up light circuit, and mounted under the rear of the apparatus body.
- One (1) Y\_\_N\_\_  
**HEADLIGHT FLASHER**  
One (1) Code 3 model 700 wig-wag flasher shall be provided. This shall flash two loads of up to 8 amps (100 watts) each.
- One (1) Y\_\_N\_\_  
**VEHICLE DATA RECORDER**  
Apparatus shall be equipped with a Class1 “Vehicle Data Recorder (VDR) that is connected to the power train CAN (Controller Area Network) bus consisting of transmission (TCM), engine control (ECM) and anti-lock brake (ABS) modules mounted on the apparatus. The VDR will function per NFPA 1901-2009 sections 4.11 (Vehicle Data Recorder) utilizing the power train s J1939 data.  
  
The VDR data shall be downloadable by USB cable to a computer using either Microsoft™ or Apple™ Operating Systems using Class 1/ O.E.M. supplied reporting software.
- One (1) Y\_\_N\_\_  
**SEAT BELT WARNING SYSTEM**  
Apparatus shall be equipped with a Class1 Seat Belt Warning System” (SBW) that is connected to the power train CAN (Controller Area Network) bus consisting of transmission (TCM), engine control (ECM) and anti-lock brake (ABS) modules mounted on the apparatus. The SBW will function per NFPA 1901-2009 14.1.3.10 (Seat Belt Warning) using the Class1 “Seat Belt Input Module” for seat occupied and belt status information.

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The SBW system shall have the ability to use either normally open (NO) or normally closed (NC) switches (user selectable by “dip switches” at ground potential ) for operation.

One (1)

Y\_\_N\_\_

### **SEAT BELT WARNING DISPLAY**

A small rocker style display shall be installed in the chassis cab for the seat belt warning system.

One (1)

Y\_\_N\_\_

### **MARKER LIGHTS**

LED marker lights shall be installed on the vehicle in conformance to the Department of Transportation requirements.

One (1)

Y\_\_N\_\_

### **LICENSE PLATE BRACKET**

One (1) license plate bracket shall be provided at the rear bumper. The bracket shall have a light and shall be chrome plated.

One (1)

Y\_\_N\_\_

### **TAIL LIGHTS**

Two (2) Whelen LED tail/brake lights shall be provided. The rectangular 4"x6" light shall be red.

One (1)

Y\_\_N\_\_

### **TURN SIGNALS**

Two (2) Whelen turn signals shall be provided. The rectangular LED light shall be 4" x 6" in dimension.

One (1)

Y\_\_N\_\_

### **BACKUP LIGHTS**

Two (2) Whelen Series 600, halogen backup lights shall be installed on the rear of the apparatus body. The dimensions shall be 4" x 6" and the lens color shall be clear.

One (1)

Y\_\_N\_\_

### **MID BODY LED TURN SIGNALS**

Two (2) mid body LED turn signals shall be provided. The LED lights shall be approximately 1-1/4" x 4" in dimension. The location of the turn lights shall be at mid-body near the rear wheel axle.

One (1)

Y\_\_N\_\_

### **CAB GROUND LIGHTS**

Two (2) incandescent ground lights shall be installed under the two (2) cab doors.

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- One (1) Y\_\_N\_\_  
**PUMP PANEL GROUND LIGHTS**  
Two (2) incandescent ground lights shall be installed under the pump panel running boards. One (1) light shall be located on the driver's side and one (1) light located on the officer's side of the apparatus.
- One (1) Y\_\_N\_\_  
**REAR STEP GROUND LIGHTS**  
Two (2) incandescent ground lights shall be installed under rear step of the apparatus.
- One (1) Y\_\_N\_\_  
**GROUND LIGHT SWITCH**  
The ground lights shall automatically activate when the pump panel switch is applied.
- Two (2) Y\_\_N\_\_  
**STEP LIGHTS**  
Two (2) incandescent step lights with clear lens shall be installed to illuminate the rear step of the apparatus body.
- One (1) Y\_\_N\_\_  
**STEP/WALKWAY LIGHT SWITCH**  
The step/walkway light switch shall be installed and wired to a switch on the pump panel. The ground lights shall automatically activate when the pump panel switch is applied.
- One (1) Y\_\_N\_\_  
**DECK LIGHT MOUNTING**  
The deck lights shall be installed at the rear of the hose bed.
- One (1) Y\_\_N\_\_  
**DECK LIGHTS**  
One (1) Unity Model #AG spotlight and one (1) Unity Model #AG floodlight, with 50 watt bulbs shall be installed. The lights shall have an "on-off" switch.
- Two (2) Y\_\_N\_\_  
**SCENE LIGHTS**  
Two (2) Whelen Series 810 halogen 8" x 10" scene lights shall be installed. The lights shall be installed with a 8-32 degree downward angle. A switch for the scene light(s) shall be provided in the cab.
- Two (2) Y\_\_N\_\_  
**SCENE LIGHT LOCATION**  
Two (2) scene light shall be located on the rear of the apparatus body.

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One (1)

### **SCENE LIGHT SWITCH**

Y\_\_N\_\_

One (1) scene light switch shall be installed on the cab dash to activate rear scene lights upon engagement.

One (1)

### **DOOR OPEN/HAZARD WARNING LIGHT**

Y\_\_N\_\_

One (1) red flashing, warning light shall be provided and installed in the driver's compartment to indicate an open passenger or apparatus compartment door. The warning light shall also be attached to folding equipment racks and light towers as specified. The light shall be a flashing rectangular incandescent marker light with a red lens and shall be properly marked and identified.

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### **APPARATUS WARNING SYSTEM SPECIFICATIONS AND REQUIREMENTS**

- One (1) Y\_\_N\_\_  
**ELECTRIC SIREN**  
One (1) Code 3 Model #3692 V-Con electronic siren shall be mounted in the cab. The unit shall feature an electronic air horn, wail, yelp, hi-lo siren and shall have a hard wired microphone.
- One (1) Y\_\_N\_\_  
**SPEAKER**  
One (1) Federal Signal DynaMax Model #MS100 speaker shall be installed.
- One (1) Y\_\_N\_\_  
**SPEAKER LOCATION**  
The siren speaker shall be installed in the center of the apparatus bumper.
- One (1) Y\_\_N\_\_  
**EMERGENCY LIGHTING PACKAGES**
- One (1) Y\_\_N\_\_  
**LIGHTBAR**  
One (1) Whelen Ultra Freedom Model #FN55VLED LED light bar shall be installed. The light bar shall be 55" in length. The configuration and lens color shall be red / clear / red. The light bar shall be installed on the apparatus cab roof.
- One (1) Y\_\_N\_\_  
**UPPER REAR WARNING LIGHTS**  
One (1) pair of Whelen model #900 red Super LED warning lights shall be installed, one each side on the upper rear of the apparatus body. The dimensions of the lights shall be 7" x 9".
- One (1) Y\_\_N\_\_  
**UPPER SIDE REAR WARNING LIGHTS**  
One (1) pair of Whelen model #900 red Super LED warning lights shall be installed, one each side on the upper portion of the body side, towards the rear of the body. The dimensions of the lights shall be 7" x 9".
- One (1) Y\_\_N\_\_  
**LOWER FRONT WARNING LIGHTS**  
One (1) pair of Whelen model #600 red Super LED warning lights shall be installed, one each side on the front of the chassis cab. The dimensions of the lights shall be 4" x 6".
- One (1) Y\_\_N\_\_  
**INTERSECTION WARNING LIGHTS**  
One (1) pair of Whelen model #600 red Super LED warning lights shall be installed one each side of the chassis cab. The dimensions of the lights shall be 4" x 6".

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One (1)

Y\_\_N\_\_

### **LOWER MID BODY WARNING LIGHTS**

One (1) pair of Whelen model #500 surface mounted red Super LED warning lights shall be installed, one each side of the apparatus, mid-body. The dimensions of the lights shall be 1-5/8" x 5" x 1".

The lights shall be mounted in the rub rail.

One (1)

Y\_\_N\_\_

### **LOWER REAR SIDE WARNING LIGHTS**

One (1) pair of Whelen model #500 surface mounted red Super LED warning lights shall be installed, one each side of the apparatus body, towards the rear of the body. The dimensions of the lights shall be 1-5/8" x 5" x 1".

The lights shall be mounted in the rub rail.

One (1)

Y\_\_N\_\_

### **LOWER REAR WARNING LIGHTS**

One (1) pair of Whelen model #600 red Super LED warning lights shall be installed, one each side on the lower rear of the apparatus body. The dimensions of the lights shall be 4" x 6".

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### **APPARATUS FINISH SPECIFICATIONS AND REQUIREMENTS**

One (1)

Y\_\_N\_\_

#### **CHASSIS PAINT**

The commercial chassis shall be painted by the chassis manufacturer.

One (1)

Y\_\_N\_\_

#### **BODY PAINT PROCESS**

All bright metal fittings, if unavailable in stainless steel shall be heavily chrome plated. Iron fittings shall be copper plated prior to chrome plating.

All seam shall be caulked both inside and along the exterior edges with a urethane automotive sealant to prevent moisture from entering between any body panel.

The body and all parts shall be thoroughly washed with a grease cutting solvent (PPG DX330) prior to any sanding. After the body has been sanded and the weld marks and minor imperfections are filled and sanded, the body shall be washed again with (PPG DX330) to remove any contaminants on the surface.

The first coating to be applied is a pre-treat self etching primer (PPG DX1787) (.5 to 1.0 dry film build) for maximum adhesion to the body material. The next two to four coats (depending on need) shall be an acrylic urethane primer surfacer (PPG K38). The film build shall be 4-6 mils when dry. The primer surfacer coat, after appropriate dry time, shall be sanded with 320-600 grit sandpaper to ensure maximum gloss of the paint. The last step is the application of at least three coats of PPG Concept acrylic urethane two-component color (single stage). The film build being 2-3 mils dry. The single stage acrylic urethane, when mixed with component (PPG DCX61) catalyst shall provide a UV barrier to prevent fading and chalking.

All products and technicians are certified by PPG every two (2) years.

One (1)

Y\_\_N\_\_

#### **INTERIOR COMPARTMENT FINISH**

The interior compartment walls shall be coated with a heavy spray on lining material. The compartments shall be cleaned with a wax and grease remover and then caulked with a urethane caulk. The compartments are then sprayed with one coat of epoxy primer, then two to three coats of urethane bed liner. The lining material shall dry to form an impervious one piece covering to protect the compartment interiors from damage. The lining material shall be gray in color and applied on six (6) compartments.

One (1)

Y\_\_N\_\_

#### **FINISH COLOR**

The lining material shall be white in color and applied to the compartment interiors.

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One (1) Y\_\_N\_\_

**WHEEL PAINTING**

The front and rear wheels shall be finish painted to match the apparatus body. Wheels shall be properly prepared and finished with primer coats and top coats as specified.

One (1) Y\_\_N\_\_

**WHEEL TRIM PAINT**

The outer one-inch edge of each outside wheel rim shall be painted silver in color unless otherwise specified. Six (6) wheels shall have edge trim paint.

One (1) Y\_\_N\_\_

**TOUCH-UP PAINT**

One (1) two (2) ounce bottle of touch-up paint shall be furnished with the completed truck at final delivery.

One (1) Y\_\_N\_\_

**UNDERCOATING**

The cab fenders and entire underside of the two-door commercial chassis cab is to be cleaned and properly prepared for application of a sprayed on automotive type undercoating for added corrosion resistance. Undercoating is to be a solvent based, rubberized coating, black in color.

One (1) Y\_\_N\_\_

**UNDERCOATING**

The entire underside of the single axle apparatus body is to be cleaned and properly prepared for application of a sprayed on automotive type undercoating for added corrosion resistance. Undercoating is to be a solvent based, rubberized coating, black in color.

One (1) Y\_\_N\_\_

**SIMULATED GOLD LEAF LETTERING**

The lettering shall be applied in simulated gold leaf material, shaded in black and encapsulated in clear Mylar.

A quantity of fifty (50), four (4) inch letters are to be placed on the cab and on the body as directed by fire department.

One (1) Y\_\_N\_\_

**CAB AND BODY STRIPE**

A straight Scotchlite reflective stripe, 6" minimum in width, shall be applied horizontally around the cab and body in compliance with applicable NFPA 1901 standards. The purchaser shall specify the color and location of the stripe.

One (1) Y\_\_N\_\_

**COLOR OF STRIPING MATERIAL**

The color of the 3M brand striping material shall be white.

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One (1)

Y\_\_N\_\_

### **CHEVRON STRIPING**

The entire rear portion of the body shall have 3M reflective red and amber striping installed. The chevron style striping shall be applied at a 45-degree upward angle pointing towards the center upper portion of the rear panel.

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### **ADDITIONAL EQUIPMENT SPECIFICATIONS AND REQUIREMENTS**

- |         |  |        |
|---------|--|--------|
| One (1) |  | Y__N__ |
|         | <b><u>EQUIPMENT PAYLOAD WEIGHT ALLOWANCE</u></b>   |        |
|         | In compliance with NFPA #1901 standards, the apparatus shall be engineered to provide an allowance of 2000 pounds of fire department provided loose equipment.   |        |
| Two (2) |  | Y__N__ |
|         | <b><u>WHEEL CHOCKS</u></b>   |        |
|         | Two (2) large aluminum wheel chocks shall be provided.   |        |
| One (1) |  | Y__N__ |
|         | <b><u>WHEEL CHOCK MOUNTINGS</u></b>  |        |
|         | Two (2) wheel chock holders shall be mounted under the apparatus body.   |        |
| Two (2) |  | Y__N__ |
|         | <b><u>SUCTION HOSE</u></b>   |        |
|         | Two (2) 5.0" x 10 foot length of Kochek PVC flexible suction hose shall be supplied. The suction hose shall have light weight couplings provided.  |        |
| Two (2) |  | Y__N__ |
|         | <b><u>HOSE COUPLINGS</u></b>   |        |
|         | Light weight aluminum couplings shall be provided on the suction hose. A long handle female swivel shall be provided on one end and a rocker lug male shall be provided for the other end.   |        |
| One (1) |  | Y__N__ |
|         | <b><u>STRAINER</u></b>   |        |
|         | One (1) Kochek Model BS50C barrel strainer shall be provided. The strainer shall be constructed from aluminum with K-Chrome finish and include a tie off loop on the end plate. The strainer shall be provided with a 5.0" NST female rocker lug coupling. |        |
| One (1) |  | Y__N__ |
|         | <b><u>FOLDING PORTABLE WATER TANK</u></b>  |        |
|         | One (1) 3000 gallon, 22 oz vinyl, portable water tank shall be provided. The tank shall include an aluminum support frame.   |        |
| One (1) |  | Y__N__ |
|         | <b><u>MISCELLANEOUS HARDWARE</u></b>   |        |
|         | Miscellaneous loose hardware consisting of bolts, nuts, washers, and screws shall be supplied with the apparatus at time of delivery.  |        |

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### **APPARATUS WARRANTIES AND ADDITIONAL REQUIREMENTS**

One (1)

Y\_\_N\_\_

#### **TILT TESTING FACILITIES AND REQUIREMENTS**

The apparatus, prior to acceptance, will be required to meet the performance tests of the applicable NFPA Automotive Fire Apparatus Standard. As such, each bidder shall have the facilities to perform these tests at the manufacturing site. These tests shall include, but not limited to, acceleration, braking and tilt table testing for stability, all specified pump tests, a brake hold test with break away percentages documented, and turn radius tests.

The bidder shall own the facilities to perform any of the above tests, and shall not contract with an outside agency to have these tests performed on this apparatus.

The final and completed vehicle shall be tilt-tested and photographed to ensure that this procedure and certification is verified.

One (1)

Y\_\_N\_\_

#### **BUMPER TO BUMPER WARRANTY**

The manufacturer shall provide a one (1) year bumper-to-bumper warranty. The manufacturer shall supply details of their warranty information with their bid submission.

One (1)

Y\_\_N\_\_

#### **ALUMINUM BODY WARRANTY - FIVE YEAR**

The manufacturer shall provide a five (5) year structural and corrosion perforation warranty for the fabricated aluminum body. The manufacturer shall supply details of their warranty information with their bid submission.

One (1)

Y\_\_N\_\_

#### **GALVANIZED STEEL SUBFRAME WARRANTY**

The manufacturer shall provide a lifetime warranty for the galvanized steel sub frame of the apparatus body. The manufacturer shall supply details of their warranty information with their bid submission.

One (1)

Y\_\_N\_\_

#### **PAINT WARRANTY FIVE YEAR**

The manufacturer shall provide a five (5) year paint warranty for all portions of the apparatus that they have painted. The manufacturer shall supply details of their warranty information with their bid submission.

One (1)

Y\_\_N\_\_

#### **PUMP WARRANTY**

The fire pump manufacturer shall provide a five (5) year warranty. The manufacturer shall supply details of their warranty information with their bid submission.

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One (1)

Y\_\_N\_\_

### **STAINLESS STEEL PLUMBING WARRANTY**

The manufacturer shall provide a ten (10) year warranty on the stainless steel plumbing components and installation. The manufacturer shall supply details of their warranty information with their bid submission.

One (1)

Y\_\_N\_\_

### **WATER TANK WARRANTY**

**UNITED PLASTIC FABRICATION INC.** Warrants each UPF POLY-TANK IIE Booster/Foam tank to be free from manufacturing defects in material and workmanship for the service life of the vehicle (vehicle must be actively used in fire suppression). The UPF POLY-TANK IIE must be installed in accordance with the United Plastic Fabricating installation manual. Every UPF POLY-TANK IIE is thoroughly inspected and tested for leaks before leaving our facility. Should any problems develop with your UPF POLY-TANK IIE booster/foam tank and will not meet performance criteria during the service life of the vehicle, notify UPF in writing or call our TOLL FREE SERVICE HOT LINE 1-800-USA-POLY. Provide UPF with the serial number and a description of the problem. If the tank problem would render the truck out of service, UPF will dispatch a service technician WITHIN 48 HOURS (2 DAYS) to repair the tank. (This time period is for North America only). If the vehicle can remain in service, UPF will dispatch a service technician within a mutually agreed upon time period.

We will repair, or at our option, replace the tank with a new UPF POLY-Tank IIE. UPF will cover customary and reasonable costs to remove and install the UPF POLY-TANK IIE. This warranty will not cover tanks that have been improperly installed, misused or abused, and the serial number must not have, been altered, defaced or removed. UPF will not cover any unauthorized third party repairs or alterations. Any of these actions may void the warranty.

**THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION OF THE FACE HEREOF. THERE IS NO EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. ADDITIONALLY, THIS WARRANTY IS IN LIEU OF ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF UNITED PLASTIC FABRICATION, INC.**

This warranty contains the entire warranty. It is the sole warranty and price agreements or representation, whether oral or written, are either merged herein or expressly cancelled. UNITED PLASTIC FABRICATION, INC. Neither assumes, nor authorizes any person supposing to act on its behalf, to change, nor assume for it, any warranty or liability concerning its product.

**IN NO EVENT WILL UNITED PLASTIC FABRICATION, INC BE LIABLE FOR AN AMOUNT IN EXCESS OF THE PRESENT RETAIL, PURCHASE PRICE PLUS INSTALLATION AND REMOVAL COST OF THE BOOSTER TANK, FOR ANY LOSS OR DAMAGE, WHETHER DIRECT OR**

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### **INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR OTHERWISE ARISING OUT OF FAILURE OF ITS PRODUCT.**

This warranty gives you specific legal rights, and you may have other rights, which vary from state to state. Some states do not allow exclusion or limitation of incidental or consequential damage, so the above limitation or exclusion may not apply to you. Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

One (1)

Y\_\_N\_\_

### **COMPLETE PRINTED MANUAL**

The manufacturer shall provide with the vehicle upon delivery, one (1) complete delivery manual. This manual shall be in a notebook type binder, with reference tabs for each section of the vehicle. A companion compact disk (CD) with all of the printed material in an electronic format (Adobe Acrobat PDF) shall be provided.

Within each section shall be:

1. Individual component manufacturer instruction and parts manuals
2. Warranty forms for the body
3. Warranty forms for all major components
4. Warranty instructions and format to be used in compliance with warranty obligations
5. Wiring diagrams
6. Installation instruction and drawings for major parts
7. Visual graphics and electronic photos for the installation of major parts
8. Necessary normal routine service forms, publications and components of the body portion
9. of the apparatus
10. Technical publications for training and instruction on major body components
11. Warning and safety related notices for personnel protection
12. Cab and chassis manuals on parts, service and maintenance shall be provided

The manufacturer shall supply details of their manual information with their bid submission.

One (1)

Y\_\_N\_\_

### **"ON-LINE" SERVICE MANUAL SUPPORT**

As part of the standard delivery manual, the manufacturer shall give a password-protected link to the end user, allowing access to the manufacturers' database on service parts. The internet-based system shall allow the end user to access the major component supplier's service parts listing such as Hale, Waterous, Akron, etc. This shall be accomplished with simplistic point and click features on the manufacturer line item within the "stripper" or "line sheet". This will include, automatic updates, printable schematics, and manufacturer's web links and is available in a commercially available format of Adobe Acrobat Reader to access these documents. The manufacturer shall submit with the bid proposal, a sample set of on line Adobe

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formatted material that has been printed from the manufacturers website. Failure to do so will result in rejection of the proposal. Reference to "on delivery" or "at prebuild" submission is not an acceptable response for the bid document.

### Parts Listings within Manuals

The manuals will include cross-reference part numbers from the apparatus manufacturers' part number to the vendor parts. Example: Brand X Fire Apparatus, Hydraulic Ladder Rack, Part #WW-MN-0302 cross-referenced to Ziamatic Corporation Part 098-MN2345. This will allow for reference between individual parts and complete installation assemblies as completed by the body builder. The manuals will list all components of the vehicle that includes a vendor part utilized in a complete installation via the manufacturers "line item sheet" or "stripper" utilized to manufacture the completed vehicle. These are "As Built" and proposals with "typical" or "generic" manuals will be rejected.

### Illustrative Schematics within Manuals

The manufacturer shall include installation diagrams and drawings of all major sub assemblies. This will include components such as hydraulic ladder rack assemblies, pump panels, tanks, fire pumps, etc. The drawings shall be linked via an Internet based service program, in an electronic format from the manufacturers "stripper" (line item listing) of the manufacturing document. The manufacturer shall submit, with the bid proposal, a sample schematic. Failure to do so will result in rejection of the proposal. Reference to "on delivery" or "at prebuild" submission is not an acceptable response for the bid document.

### Digital Images within Manuals

In addition to two and three-dimensional installation drawings, the manufacturer shall make accessible, via an internet based link, the actual photos of the installed components listed within the "stripper" or line sheet. This will include, but not limited to Wiring terminals, main body distribution strips, fire pump shifting, auxiliary components, etc. The manufacturer shall submit a sample of these with the bid submission. Failure to submit the digital images with the bid will result in rejection of the proposal. Reference to "on delivery" or "at prebuild" submission is not an acceptable response for the bid document.

### Installation Instructions within Manuals

The manufacturers "work instructions" or "installation instructions" shall be included with the service manuals. These documents shall be accessible via a web-based link to the individual vehicle manufactured. The work instructions shall give systematic instructions of the installation process. The manufacturer shall submit, with the bid proposal, a sample set of instructions. Failure to do so will result in rejection of the proposal. Reference to "on delivery" or "at prebuild" submission is not an acceptable response for the bid document.

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### Automatic Updates of Manuals and Parts Listings

The online manuals will include automatic updates that are accessible via the web link. When clicking on the part within the manufacturers stripper or line sheet, it will allow the end user to access the component manufacturer website for updated information. This will allow for latest parts and service components from the individual part manufacturer or vendor.

### Electrical Schematics

To maintain the vehicles electrical systems, the manufacturer shall provide to the purchaser the instructional manuals, complete electrical information and schematics on the vehicle. The electrical information shall be provided as follows:

#### Wiring Systems 12 and 120 Volt:

1. Graphic symbols for electrical diagrams.
2. Wire labeling, imprinting codes and index.
3. Computer generated electrical schematics indicating the circuit number, wire size, switches, circuit breaker and terminals on the vehicle.

The manufacturer shall submit, with the bid proposal, a sample set of diagrams. Failure to do so will result in rejection of the proposal. Reference to "on delivery" or "at prebuild" submission is not an acceptable response for the bid document.