



**Town of Old Saybrook, Connecticut**  
**Request for Sealed Bid New**  
**Custom Pumper for the Old**  
**Saybrook Fire Co. #1**

Sealed Bid Proposals Due on April 14<sup>th</sup> 2020 at 3pm

Custom Pumper Committee

[engine@oldsaybrookfire.com](mailto:engine@oldsaybrookfire.com)

**TOWN OF OLD SAYBROOK**  
**REQUEST FOR SEALED BIDS**  
**TRIPLE COMBINATION PUMPER**  
**TO REPLACE ENGINE**

**Table of Contents**

<b><u>Section</u></b>	<b><u>Description</u></b>	<b><u>Pages</u></b>
1	Introduction and Request for Proposals	4
2	Instructions to Respondents	6
3	Administrative	11
4	Pumper Specifications	15
5	Custom Cab, Chassis and Components	16
5	Cab General	24
6	Light Tower / Electrical	45
7	Water and Class B Foam System	45
8	Pump	47
9	Compartments	57
10	Paint and Finishing	65
11	Signage	67

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12	Warranty	68
13	Options	70
14	Equipment Supplied by Respondent	70
15	Equipment Supplied by Purchaser	71
16	Trade in	73
17	Important Information Regarding RFP	73
18	Mandatory Questionnaire	74

# SPECIFICATIONS FOR FIRE APPARATUS

## **INTRODUCTION AND REQUEST FOR SEALED BID PROPOSALS:**

The Town of Old Saybrook will receive sealed proposals for the furnishing of One (1) Custom Pumper and equipment as specified herein until **April 14, 2020 at 3 pm**. **Bidders are requested to reference the OPTIONS Section as the Fire Department MAY seek to acquire two (2) custom pumping engines each using the Bid Specification .**

**1.001** Proposals must be clearly marked or stamped "SEALED BID – Custom Pumper" on a closed envelope along with opening date and time. The Town of Old Saybrook will not be responsible for accidental opening and may reject proposals that are open or with improper identification. All proposals will be addressed to or hand delivered to **Town Hall, Attention Fire Department Engine Committee, C/O Office of the First Selectman, 302 Main Street, Old Saybrook CT 06475**

**1.002** Bids being submitted must contain one marked original and 3 marked copies.

Bids will be publicly opened at Town Hall, 302 Main Street, Old Saybrook CT 06475 at 3pm on **April 14, 2020**.

Procedures for questions with the specifications are outlined under Instructions to Respondents

The Town of Old Saybrook or their representatives with the Old Saybrook Fire Co. # 1 shall be known as the Purchaser, Fire Dept, Buyer or Town.

The person or company proposing to furnish the pumper shall be known as the Respondent, Seller, Builder, Manufacturer or Bidder

### **1.003** PRE BID CONFERENCE

A Pre-Bid conference will be held on **March 18, 2020 at 7pm** at the Old Saybrook Fire Department, 310 Main Street Old Saybrook CT 06475. The purpose of the conference will be to go over and answer any questions about the request for bid.

### **1.004** PURCHASER'S RIGHTS

The purchaser reserves the right to reject any and all bids/proposals, in part or in whole, or to waive any defect, irregularities or informalities in the specifications and proposals, and to negotiate any changes that the purchaser believes to be in its best interests to do so.

In general, the scope of work covered by this "Request for Bid Proposal" (RFP) is outlined within the specification.

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This RFP is a competitive procurement instrument used to obtain a Custom Pumper which we believe will best serve the interest of the purchaser.

Whereas price is generally the determining factor in the award of a contract using the competitive bidding format, price may or may not be the determining factor for the award of the contract. These specifications have not been established to preclude any bidders. However, the purchaser does not intend to make a decision solely based upon lowest price as determined by the US Supreme Court ruling "Whitten vs Paddock" but intends to purchase an apparatus that meets the intentions, service, and needs of the Old Saybrook Fire Department.

The award of a contract will be made to the respondent whose bid proposal is determined to be the most advantageous to the purchaser based on the specific criteria outlined within the specification as well as the wants and needs of the purchaser.

The respondent shall not assume any opportunity will exist to add and or negotiate such matters or changes to its proposal after a proposal has been submitted, unless requested to do so by the Purchaser.

## **INSTRUCTIONS TO RESPONDENTS**

### **INTENT OF SPECIFICATIONS;**

**2.001** It is the intent of these specifications to cover the furnishing and delivery to the purchaser of a complete Custom Pumper **(or pumpers)** equipped as hereinafter specified. These specifications cover only the general requirements as to the type of construction and tests to which the apparatus must conform, together with certain details as to finish, equipment and appliances with which the successful bidder must conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features for the completed pumper.

**2.002** Apparatus proposed by the respondent shall meet the latest requirements of the National Fire Protection Association (NFPA) Standard 1901, "Standard for Automotive Fire Apparatus".

**2.003** Bids shall only be considered on apparatus with final assembly in the continental United States and the manufacturer, dealer and service facility shall have an established reputation of permanency and reliability in the field of fire apparatus construction, service and repair.

**2.004** Each bidder shall maintain dedicated service facilities at the manufacturing location for the repair and service of products. Evidence of such a facility shall be included in the bidder proposal. The bidder shall also show that the company is in a position to render prompt service and to furnish replacement parts for said apparatus. Bids shall only be considered from respondents with a field service facility within 65 travel miles of the Town of Old Saybrook.

**2.005** The custom Fire Pumper along with the required equipment furnished under this specification should be the manufacturer's current top of the line custom pumper. The pumper should be complete with the operating accessories as specified herein; furnished with such modifications and attachments as may be necessary and specified to enable the vehicle to function reliably and efficiently in sustained emergency operations.

**2.006** The design of the pumper and the specified equipment should permit accessibility for servicing, replacement and adjustment of component parts and accessories with minimum disturbance to other components and systems.

**2.007** The term heavy-duty as used to describe an item, should mean in excess of the basic usual quantity, quality, or capacity that is normally supplied with the standard production vehicle or component. All components and items should be supplied in a heavy duty or supplied for service duty use.

**2.008** Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified and shall state the location of the factory where the complete apparatus will be built.

**2.009** Each proposal shall be accompanied by a set of “Specifications” consisting of a detailed description of the apparatus and equipment proposed, and to which the apparatus furnished under contract shall conform. The specifications shall indicate size, type, model and make of all component parts and equipment.

#### **FORMAT OF PROPOSAL**

**2.010** All responses to this RFP must conform to the specific instructions in this RFP. Failure to conform may be considered appropriate cause for rejection of respondent’s proposal.

**2.011** To allow the purchaser to evaluate the respondent’s proposal the respondent shall submit the following documentation:

- The Proposal shall be submitted in the same order as this RFP
- Detailed Specifications of the proposed Class A Triple Combination Pumper
- Schematic drawings depicting proposed Fire Apparatus
- Written description of the proposed Fire Apparatus
- Warranties included in the proposal
- Sales brochures or other material that may help the Purchaser evaluate the Proposal.
- Sufficient documentation to fulfill the items requested within the RFP.
- The respondent shall outline their proposed manner in handling pre-construction conferences.

**2.012** To allow the purchaser to evaluate the respondent’s background and professional expertise and to determine if the respondent’s proposed approach will satisfy the purchasers needs, the respondents shall submit the following:

- Respondent may be asked to provide latest Dunn and Bradstreet Report.
- All requirements, terms or conditions the respondent may have should be outlined in the RFP and be included in the proposal.
- Certification that the Fire Apparatus manufacturer has been in business and building fire apparatus for at least 15 years.
- A list of similar pumpers delivered within the past three years.
- Certification that the proposal shall remain valid and not be withdrawn for a period of 90 days after the opening date.
- Any collateral sales, marketing or technical information that would allow the purchaser to evaluate the respondent’s ability to satisfy the purchasers needs.
- The respondent’s proposal should include a cover letter identifying the individual(s) having authority to negotiate and contractually bind the respondent. The cover letter shall also include the name of the person to be

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contacted both during the period of evaluation of proposals and for prompt contract administration upon award of the contract. This information is to include name, title, address, email address (if available), fax and telephone numbers.

**2.013** At the discretion of the purchaser, respondents may be provided an opportunity to present and explain the benefits of their proposal to Fire Department Personnel.

**2.014** The respondent certifies that the proposal submitted by said respondent is done so without any previous understanding, agreement or connection with any person, firm, or corporation making a proposal for the same contract, without prior knowledge of competitive prices, and it is, in all respects, fair, without outside control, collusion, fraud or otherwise illegal action.

### **Exceptions and Variations**

**2.015** Since the Purchaser has conducted extensive research into the purchase of the pumper's components, specified by brand, model number, dimensions, size or capacity, which are available to all manufacturers and respondents, substitutions or alternates, must be made as follows:

Any exceptions, variations or clarifications to the specifications must be set forth on a separate sheet in the bid. The Sheet shall be clearly labeled "Exceptions to Specifications".

**2.016** These exceptions must be numbered and relate to the exact item in the specification. The respondent must state the reason for the exception and document how the replacement component meets, exceeds or is superior to the item listed in the specification. The decision whether or not to accept the exception rests solely with the purchaser.

**2.017** A general statement that essentially takes "total exception" to the specifications will result in immediate rejection of the proposal.

**2.018** Failure to make exceptions in an acceptable manner may be cause for rejection of the proposal.



## **HOLD HARMLESS AGREEMENT –**

**2.019** The successful respondent shall provide a Hold Harmless Agreement Document which agrees to protect, defend, indemnify and hold harmless the Town of Old Saybrook and their officers and employees from any and all claims and damages of every kind and nature made, rendered or incurred by or in behalf of every person or corporation whatsoever, including the parties hereto and their employees that may arise, occur, or grow out of any acts, actions, work or other activity done by the Contractor, its employees, subcontractors or any independent contractors working under the direction of either the Contractor or Subcontractor in the performance of this contract.

### **Questions regarding the Request for Proposal**

**2.020** Should a respondent find during an examination of the RFP any discrepancies, omissions, ambiguities or conflicts or be in doubt as to their meaning he shall notify the truck committee as outlined below.

**2.021** Should a respondent find during the examination of the RFP Specifications any item which he knows or believes to be a conflict with the intent of the specification or intended use of the pumper or be in violation of current NFPA Standards or applicable laws, he shall notify the truck committee no later than 10 days prior to the bid opening date as out lined below.

**2.022** Questions regarding this RFP shall be submitted no later than ten (10) days before proposals are due. Please send all questions in written form via email to:  
352@oldsaybrookfire.com

**2.023** To ensure that all potential respondents have the same information, all questions submitted in writing will be answered via email no later than five (5) days before the proposals are due. All potential respondents who have obtained copies of this RFP and forwarded their email address and contact information will receive answers to questions submitted in writing. Verbal responses by the purchaser to verbal or written inquiries will not be binding.

**2.024** It is the respondent's responsibility to make certain they have received any and all addenda relating to their proposal prior to the bid opening date. If you are participating in this process we strongly encourage you to notify the purchaser by sending an email to [engine@oldsaybrookfire.com](mailto:engine@oldsaybrookfire.com) and provide us with contact information in the event any addenda is issued it will be sent to all respondents involved in the process who have provided the purchaser with this information.

## **CRITERIA FOR EVALUATING PROPOSALS**

### **Award of Contract**

**2.025** The Purchaser shall award the contract to the respondent who offers the best value to the Town.

2.026 Best value shall be determined by consideration of some or all of the following factors as deemed appropriate by the Purchaser.

- Price and financial terms.
- The quality, availability, adaptability, and efficiency of the use of the product proposed.
- The degree to which the proposed product meets the specified needs of the Town including the compatibility with and ease of integration with existing products, services, or systems currently in use by the purchaser.
- The number, scope, and significance of conditions or exceptions attached or contained in the proposal and the terms of warranties, guarantees, return policies, and insurance provisions;
- Whether the vendor can supply the product promptly, without delay or additional conditions.
- The total competitiveness and reasonableness of the total cost or price, including consideration of the anticipated operational costs that are incurred if accepted.
- Whether or not the vendor can supply the product at the price offered.
- The ability, capacity, experience, skill, and judgment of the respondent to perform the contract.
- The reputation, character and integrity of the Respondent including the Manufacturer, Dealer, Product and Service Facilities.
- The sufficiency, stability, and future solvency of the financial resources of the Respondent.
- The ability of the Respondent to provide future maintenance and service for the use of the products or service subject to the proposal.
- The answers given to questions requested within the specification.
- The proposed elements made for the pumper being designed by the respondent, including the height of hose beds, crosslays, and the layout of the pump panel, the comfort, ease of use, ergonomics and safety of the firefighters using the pumper.
- Each Respondent will be required to complete the questionnaire at the end of the RFP. Failure to do so will result in the rejection of the proposal, no exceptions.
- In addition to the items outlined in the RFP the purchaser has identified the following priorities in order of preference which the purchaser will take into consideration when evaluating proposals.
  1. The Safety of the Fire Fighters
  2. Integration into the Fire Departments Operations
  3. Ease of use and ergonomics
  4. Low crosslays (near shoulder height)
  5. Low hose bed
  6. Non Cluttered, easy to read and use pump panel
  7. Turning Radius / Cramp Angle
  8. Ease of deploying ladders
  9. Ease of deploying Hard Suction

10. Proper mounting and location of equipment  
11. Pumper as low as possible  
12. Pumper as short as possible  
13. Looks and symmetry  
**14. Location and design installation of the booster reel**

### **Administrative GENERAL PROVISIONS**

#### **Compliance with Federal and State Laws and Regulations**

**3.000** The respondent(s) shall be required to comply with all applicable Federal and State laws, rules, and regulations.

**3.001** At the discretion of the purchaser the apparatus may be weighed just before delivery with all equipment installed and the number of personnel that there are seats for. At the discretion of the purchaser the apparatus will not be accepted or paid for until this has been done. If the apparatus does not comply with the axle loading laws in the State of Connecticut, The DOT, NFPA Standards or SAE it will be **IMMEDIATELY REJECTED**.

**3.002** Signatures the proposal must be signed by an authorized official of the respondent.

**3.003** Approval Drawings: Approval drawings of the fire apparatus must be submitted within 60 days of the award of contract. The Purchaser will make every reasonable effort to correct the drawings before authorizing construction.

**3.004** Conflicts: Where conflicts occur, the RFP and the respondent's written proposal shall prevail over the engineering drawings. Unless a properly executed change order is made.

**3.005** Change Orders: After the contract is executed, changes to the contract, respondent's proposal, or approved engineering drawings shall be made with a written change order, which identifies the scope of the change, the cost of the change, and is authorized by the Purchaser.

### **QUALITY AND WORKMANSHIP**

**3.006** The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to accessibility of the various components which require periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions.

**3.007** Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and off road requirements and speed conditions as set forth under Chapter 4 of NFPA 1901.

**3.008** Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any component part for service or repair.

**3.009** All testing of completed vehicle specified in NFPA 1901 shall be completed by manufacturer or if required an independent third party at its site prior to delivery. All tests must have successful results.

#### **DELIVERY**

**3.010** The completed apparatus shall be delivered no more than 365 days after signing contract. The manufacturer will not be held liable for delay in delivery caused by accidents, floods or other acts of nature.

**3.011** To ensure proper break-in of all components while under warranty, the Pumper shall be delivered under its own power – rail or truck freight shall not be acceptable.

**3.012** A qualified delivery engineer representing the contractor shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in the proper operation, care and maintenance of the equipment delivered and to make minor adjustments and repairs as needed. This delivery engineer shall be available for both day time and night time instruction.

#### **INFORMATION REQUIRED**

**3.013** The manufacturer shall supply at time of delivery, Two (2) complete operation and maintenance manuals covering the completed apparatus as delivered in electronic format (CD or DVD).

#### **FAILURE TO MEET TEST**

**3.014** In the event the apparatus fails to meet any test requirements on the first trial, second trials may be made at the option of the bidder within 30 calendar days of the date of the first trial. Such trials shall be final and conclusive and failure to comply with the requirements shall be cause for rejection of the apparatus.

**3.015** Failure to comply with changes to conform to any clause of the specifications, within 30 calendar days after notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus.

**3.016** Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not constitute acceptance.

#### **SUMMARY OF TESTS**

**3.017** The following is a summary of tests for which Original Equipment Manufacturer (OEM) is responsible for submitting results as required by NFPA. In addition, the Town may elect to have

OEM conduct other tests to determine that the system or component meets the requirements as set forth in the technical specifications.

A. Apparatus Physical Dimensions.

NFPA (3.1 through 3-1.2)

B. Vehicle Weight Distribution.

NFPA (4.4.3 and 4.4.3.1)

C. Road Test and Performance Tests.

D. Electrical Systems and Components.

E. Electrical Generating System.

F. Electromagnetic Radiation and Suppression.

G. Warning Light and Siren System(s).

H. Tests of Apparatus Body Structure.

I. Crew Cab Compartment Interior Surfaces

J. PTO Generator System and Tests.

K. Cab and Crew Compartment Sound Level Test.

L. Cab and Crew Compartment Air Conditioning Level Test

M. Painting, Color, and Marking.

N. Manuals, Handbook, and Warranties.

## **PERFORMANCE BOND**

**3.018** The successful bidder shall furnish a Performance Bond equal to (100%) One Hundred Percent of the total contract amount. The bond shall insure prompt and complete performance of any contract entered into as a result of the award of this proposal. The purchaser shall receive the bond no later than fourteen (14) days after the award of the contract.

(The form of any bond required by this proposal, and the bonding company issuing the bond, is subject to the approval of the purchaser. The bonding company must be licensed to do business in the State of Connecticut, and have the authority to issue bonds with reference to Connecticut municipal contracts).

## **BID BOND**

**3.019** Each bid must be accompanied by a bid bond in an amount of ten percent (10%) of the maximum amount of the bid price, or in lieu thereof, deposit of cash or certified check payable to the purchaser in the amount equal to ten percent (10%) of the maximum amount of the bid, to assure the purchaser of the adherence of the bidders to his bid, the execution of the contract and the furnishings of performance and payment bonds by the successful respondent if his proposal is accepted.

**3.020** The purchaser will make a determination of who the successful respondent is as soon as possible. In any case this determination will be made within forty five (45) days of the bid opening. The deposits and bonds of all but the successful respondent will be returned as soon as practical.

**3.021** The actual awarding of the contract may take up to 90 days and is dependent upon approval of final funding for the pumper at a Town Meeting.

**3.022** Within ten (10) days or sooner after the execution of the Contract and acceptance of the Successful Respondents Performance Bond by the purchaser the Bid Bond or deposit will be returned to the Successful Respondent.

**3.023** If the successful respondent to whom the contract is awarded refuses or neglects to execute, or fails to furnish a Performance Bond in the amount of 100% of the contract price within two (2) weeks after notice to him of the award, the amount of his deposit may be forfeited and shall be retained by the Purchaser as liquidated damages. In addition to the 100% Performance Bond, the successful respondent shall also be liable for and agrees to pay the Purchaser on demand, the difference between the price bid by him and the price for which the contract shall be subsequently relet, together with the cost of reletting, if any, less the amount of the deposit if the bidder fails to execute the Contract for any reason. No plea of mistake if such accepted bid shall be available to the successful respondent for the recovery of his deposit or as a defense to any action based upon such accepted bid.

**3.024** Should the successful respondent not execute to the fullest extent of the submitted proposal the successful respondent shall indemnify the Purchaser for any legal expenses associated with said inability to execute the contract or the proposal.

#### **Preconstruction Conference**

**3.025** The successful respondent shall participate in a preconstruction conference with the Purchaser. The Respondent shall furnish within their proposal, a simple recommendation for a preconstruction conference. The proposal shall give the details that the respondent feels will best enable them to understand the Specifications as outlined in the RFP and help both parties understand the wants and needs of each party within the guidelines of the specifications.

No preference will be shown to the type, length or location of the preconstruction conference. Any costs associated with the preconstruction conference will be included in the final bid price.

#### **CAD DRAWINGS**

**3.026** The successful respondent shall provide at least three (3) large detailed CAD drawings of the pumper shortly after the pre-build conference.

#### **INSPECTION TRIP**

**3.027** An inspection trip to the manufacturing facility for six (6) representatives of the Fire Department shall be supplied at a mutually agreeable time when the pumper is complete or very near to being completed, but prior to it leaving the factory. The cost of travel, food and lodging expenses for this inspection trip shall be included in the final bid price.

## **FINAL INSPECTION**

**3.028** A final inspection will be performed in Old Saybrook when the Pumper is delivered and all systems are tested and all equipment is in place.

## **PARTS INQUIRY PROGRAM**

**3.029** A Windows-based computer file shall be provided for the retrieval of the fire apparatus manufacturer's part number and description of the components used in the construction of the apparatus.

**3.030** Payment Schedule: Respondents will submit with their bid proposal, options for payment terms and shall illustrate the savings to the purchaser for deposits and percentages of prepayment. The Town of Old Saybrook reserves the right to withhold an amount to be determined by the purchaser until full acceptance of the pumper. More information and options needed are listed later in the RFP.

## **LIABILITY**

**3.031** The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

# **GENERAL PUMPER SPECIFICATIONS**

**4.001** It is the intent of this Request for proposal to procure for the Purchaser a class "A" 1500 GPM single stage, Triple Combination Pumper, mounted on a "custom" tilt cab chassis with a water carrying capacity of 1000 gallons, utilizing modern design to ensure ease of operation and provide for firefighter safety. *Again based upon Town approval, a second engine may be entertained.*

**4.002** The completed apparatus, including the cab, body and chassis shall be constructed and assembled by the respondent and warranted by the respondent. Individual components such as engine, transmission, pump, axles, lighting, or tank, may be provided by other manufactures however, the respondent shall be responsible for the coordination of warranties and resolving any conflicts.

**4.003** The apparatus shall be designed and constructed using accepted engineering, design, and construction methods, with due consideration of the loads to be sustained, and the distribution of the loads. frame, suspension, drive line, and all other parts of the vehicle shall be strong enough to withstand the road speed, and general service under full load.

**4.004** The vehicle shall be designed so that parts or components requiring service or maintenance are readily accessible for inspection, adjustment, or repair.

**4.005** The manufacturer shall use 5052-H32 aluminum welded to extruded aluminum framing.

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where ever it is possible in construction of the cab and body of the vehicle (3/16" is desired).

The manufacturer should select the manufacturing methods that will provide for a 25-year service life, taking into consideration the lowest anticipated operational and maintenance costs (e.g. may use formed or extruded components).

**4.006** An aluminum cab and aluminum body will also be acceptable.

**4.007** All areas of the vehicle shall be protected by barriers, backers, "nutserts", butyl, etc, in order to protect against reaction caused by dissimilar metals, finishes and the like.

**4.008** The manufacturer shall be solely responsible for the design, construction and performance of the apparatus and all supplied equipment.

**4.009** All steel welding shall follow American welding Society D1.1-2004 recommendations for structural steel welding. All aluminum welding shall follow American welding Society and ANSI D1.2-2003 requirements for structural welding of aluminum. All sheet metal welding shall follow American Welding Society B2.1-2000 requirements for structural welding of sheet metal. Flux core arc welding to use alloy rods, type 7000, American welding Society standards

**4.010** The manufacturer shall be required to have an American welding Society certified welding inspector in plant during working hours to monitor weld quality.

**4.011** The manufacturer shall provide written documentation that the completed vehicle meets or exceeds the requirements contained in the National Fire Protection Association 1901 Standard for Automotive Fire Apparatus 2009 edition and any current NFPA Standard that may apply to apparatus components or equipment. Written documentation shall be provided that the completed vehicle complies with all federal, State, ICC, and DOT regulations for commercial vehicles as well as fire apparatus.

**4.012** It is the Purchasers intention to comply with all applicable NFPA Standards and governmental regulations. If there are any conflicts between this proposal and the applicable NFPA Standards or governmental regulations, the respondent shall notify the purchaser's truck committee.

**4.013** This RFP does not attempt to repeat requirements contained in applicable NFPA standards. Items are called out to establish the Town's intent, provide clarification and provide guidance to respondents. Where this RFP is silent the respondent should use their best design judgment and comply with the applicable NFPA standards.

## **CUSTOM FIRETRUCK CAB AND CHASSIS**

**5.001** It is the intent of the technical specifications contained herein to ensure the custom tilt-cab and chassis specified shall be engineered, designed, and manufactured exclusively for heavy-duty continuous use in extreme environments and rigorous adverse conditions. Each



custom cab and chassis shall be manufactured in strict compliance with all applicable requirements as set forth in the current edition of the NFPA (National Fire Protection Association) pamphlet 1901 with maximum safety and operational use as the key focus throughout the design and development phase.

**5.002** The chassis shall be designed and manufactured by the successful respondent. In order to protect the Purchaser from divided warranty issues, between the cab, chassis and body builder the Purchaser will only accept proposals from single source manufacturers.

**5.003** The Purchaser has conducted extensive research and has pre-approved the below listed tilt-cab, chassis and turbo charged engine configurations for purchase;

Eone Cyclone w/ Cummings ISX12 500 hp engine  
Pierce Enforcer w/ Detroit Diesel DD-13 500 hp engine  
Pierce Velocity w/ Detroit Diesel DD-13 500 hp engine  
Sutphen Monarch w/ Cummins ISX 500 hp engine  
Seagrave Marauder w/ Cummins ISX 500 hp engine

**5.004** Additional respondents may bid other Custom Cab and Chassis Make and Models provided they do so by properly taking exceptions to the specifications as outlined in the "Exceptions and Variations" Section. All such Custom Cab and Chassis configurations are to be the respondents top of the line unit, so designed for the severe duty use encountered in the fire service. As outlined in the Exceptions and Variations Section the respondent shall document how the proposed cab and chassis will meet or exceed the items outlined in the RFP and how it will meet the needs of the purchaser.

**5.005** The Chassis shall be powered by a 500 Horsepower, six-cylinder, fuel injected diesel engine.

**5.006** The engine shall be a Detroit Diesel DD 13 or Cummins ISX.

**5.007** The engine shall be turbo charged with an appropriate turbo charger approved by the engine manufacturer.

**5.008** The engine shall be capable of producing a minimum of 1500 foot pounds of torque at 1,200 rpm.

#### **EPA COMPLIANT**

**5.009** The engine and related exhaust system shall meet or exceed EPA Emission standards at the time of delivery.

**5.010** The pumper shall be geared at the rear axle and governed to attain a maximum speed of 68 mph.

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### **AUXILIARY COOLER**

**5.011** An auxiliary cooler shall be furnished to provide additional cooling to the engine under extreme pumping conditions. Water from the pump is to be piped to the coils of the heat exchanger allowing the engine fluid to be cooled as required.

### **Transmission**

**5.012** The Pumper shall be equipped with an Allison 4,000 series automatic transmission with Allison touch pad shift selector, internally illuminated for night operation. The controls shall be located to the right of the steering wheel near the forward portion of the engine cover. The transmission shall be capable of five (5) speed operation with overdrive. When activated the "Mode" switch shall provide the six (6) speed overdrive condition.

### **TRANSMISSION COOLER**

**5.013** A transmission oil cooler shall be provided that is integral to the radiator and located at the bottom of the radiator. The cooler shall use engine coolant to control the transmission oil temperature.

### **Driveline**

**5.014** Drivelines shall be a heavy-duty metal tube and be equipped with Spicer 1810 universal joints. The shafts shall be dynamically balanced before installation. A splined slip joint shall be provided in each driveshaft, slip joint shall be coated with Glidecoat or equivalent.

### **STEERING SYSTEM**

**5.015** Dual Sheppard M110 steering gears, with integral heavy-duty power steering, shall be provided. For reduced system temperatures, the power steering shall incorporate an air to oil cooler and an Eaton model VN20F hydraulic pump with integral pressure and flow control. All power steering lines shall have wire braded lines with crimped fittings.

**5.016** A tilt and telescopic steering column shall be provided to improve fit for a broader range of driver configurations.

**5.017** The steering wheel shall be approximately 18.00" in diameter, have tilting and telescoping capabilities, and a four (4)-spoke design.

### **AIR BRAKE SYSTEM**

**5.018** The apparatus shall be equipped with air-operated brakes and an anti-lock braking system. The brake system shall meet or exceed the design and performance requirements of the current Federal Motor Vehicle Safety Standard -121, and the test requirements of NPFA 1901.

**5.019** The system shall consist of three (3) reservoirs with a minimum total capacity of 5100 cubic inches. The system shall be of dual circuit and quick build up design powered by an engine mounted gear driven air compressor.

**5.020** The system shall be protected by a heated air dryer with heated automatic moisture ejector on the wet tank and quarter turn (brass) drain valves on the other tanks.

**5.021** The system shall be plumbed using color-coded nylon airlines with brass push-lock fittings

#### **PARK BRAKE**

**5.022** Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

#### **PARK BRAKE CONTROL**

**5.023** A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted to the right of the steering wheel on the dash within easy access of the driver.

#### **PARK TO NEUTRAL**

**5.024** The transmission, upon application of the parking brake, shall automatically shift into neutral.

#### **Air Compressor**

**5.025** A Wabco 18.7 cfm air compressor shall be provided. The compressor shall be able to produce 18.7 cfm of air at 1,200 rpm.

**5.026** An auxiliary air tank separate from the braking system tanks shall be installed and be of sufficient size for air primer, air horns, light tower and pump valves. The tank shall be of suitable size to ensure enough air capacity for the use of equipment at the same time. Each air tank shall have a drain valve mounted on the bottom of the tank.

Each tank shall have auto moisture ejects installed.

**5.027** A ¼" standard air inlet fitting shall be provided in the area of the driver's door or cab area. This fitting shall be direct piped with check valve into the brake system wet tank and used to operate the brake systems if the vehicle is required to be towed.

#### **ANTI-LOCK BRAKE SYSTEM**

**5.028** The vehicle shall be equipped with a Wabco 4S4M, anti-lock braking system. The ABS shall provide a four (4) channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology shall control the anti-lock braking system. Each wheel shall be monitored by the system. When any particular wheel begins to lockup, a signal shall be sent to the control unit. This control unit then shall reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system shall eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

#### **ESC ELECTRONIC STABILITY CONTROL**

**5.029** The apparatus shall have a Wabco ABS-based Electronic Stability Control (ESC). This

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system shall monitor all wheel ends regardless suspension type, and which axle it sees braking forces first.

**5.030** An ABS warning light shall be installed on the driver's dash that remains illuminated until the vehicle is moving at least four-(4) miles per hour.

#### **AUTOMATIC TRACTION CONTROL**

**5.031** Automatic Traction Control (ATC) shall be installed to sense wheel slip, apply air pressure to brakes, and reduce engine torque to provide improved traction.

**5.032** An ATC indicator light shall illuminate when the system is active.

**5.033** A mud and snow switch shall be provided. When the switch is in the "ON" position, it shall allow momentary wheel slip to obtain traction under extreme mud and snow conditions.

#### **Engine Brake**

**5.034** One (1) Jacobs Engine Brake is to be installed with the controls located on the instrument panel within easy reach of the driver.

**5.035** An "On/Off" switch and a control for "Low/High" shall be provided on the instrument panel within easy reach of the driver.

**5.036** The engine brake shall interface with the Wabco ABS brake controller to prevent engine brake operations during adverse braking conditions.

**5.037** A pump shift interlock circuit shall be provided to prevent the engine brake from activating during pumping operations.

**5.038** The brake lights shall activate when the engine brake is engaged.

#### **Alternator**

**5.039** The engine shall be equipped with a Neihoff Model C680-1, 430 amp Alternator. It shall also have a custom three point voltage regulator, manufactured by C.E. Niehoff. The alternator shall be connected to the power and ground distribution system with heavy duty cables that are sized to carry the full rated alternator output.

#### **Height**

**5.040** Maximum Overall height shall not exceed 10' 2", lower is preferred.

#### **Length**

**5.041** Maximum Overall length shall not exceed 32' 6", shorter is preferred.

#### **Frame**

**5.042** The chassis frame shall consist of two (2) heavy-duty galvanized coated hot dipped frame rail channels with a minimum of six (6) bolted cross members. The entire frame rail assembly shall be galvanized, running gear, and all frame mounted components shall be painted gloss

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enamel black. The running gear consists of the axles, drivelines, air tanks, steering gear, frame mounted brackets, drag link, and fuel tank.

**5.043** The frame rails shall extend the full length in front of the cab to provide a base for the front bumper.

#### **Extended Front Bumper**

**5.044** A one piece, ten (10) gauge, painted steel bumper, a minimum of 10" high that has 45 degree corners. Sufficient diamond plate area type shall be provided to mount a trash hook, and a set of hydrant tools to the gravel shield with room for warning & cornering lights.

Top rub rail shall have line-x coating.

**5.045** The front bumper will be properly braced and supported.

**5.046** The front bumper shall have an aluminum diamond plate deck and gravel shield.

**5.047** Two (2) painted tow hooks shall be provided and shall be attached directly to the front frame under the bumper. The tow hooks shall be painted black.

#### **MECHANICAL SIREN**

**5.048** Chrome plated and mounted Federal Q2B-NN electric siren shall be recessed on driver's side front bumper. The siren activation switch shall be wired thru the chassis park brake and operate in the "Response Mode" only. Siren shall be positioned so as to not interfere with tilting cab to the fullest extent of its travel.

The siren shall be activated by the driver's horn button and by a foot switch on the dog house.

**5.049** A siren brake shall be included with braking switch located within the switch control panel.

#### **Electronic Siren**

**5.050** The pumper shall be equipped with a Whelen Model 295SL100. The Siren shall have the ability for PA System, Wail, Yelp, Warble, Piercer tones. It shall be mounted in the center of the cab for use by the driver or officer.

**5.051** A Whelen SA122FMP 100 watt siren speaker, made of painted black finish shall be mounted through the front bumper.

#### **AIR HORNS**

**5.052** There shall be dual Grover Stuttertone air horns installed in compliance with NFPA requirements and shall connected to the chassis air system. The horns shall be mounted through the front bumper, one driver's side and the other on the officer's side. Officer's side shall be a foot pedal mounted next to the siren switch on the dog house.

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A pressure protection valve shall be installed to prevent the air brake system from being depleted of air pressure by operation of air horns. The air horns shall be actuated by an overhead lanyard for the driver only.

**5.053** A weather proof push button air horn activation switch, clearly labeled, shall be placed on the pump panel. This switch shall be RED in color.

**5.054** The air horns shall be allowed to be actuated in both "Response Mode" and "On Scene Mode".

#### **FRONT AXLE**

**5.055** The front axle shall be a Dana D-2200 drop beam with a capacity of 23,000 pounds. The axle shall be hub piloted, 10 stud, furnished with oil seals and come complete with assist cylinder, hoses, and mounting brackets

#### **FRONT DISC BRAKES**

**5.056** Bendix ABD 22 x 17" disc brakes shall be provided for the front axle. The front brakes shall be full air actuated with automatic slack adjustment.

#### **FRONT SUSPENSION**

**5.057** Front suspension shall be properly designed and engineered for the intended use of the pumper.

#### **REAR AXLE**

**5.058** The rear axle shall be a Meritor™ RS-30-185 Single reduction drive axle with a capacity of 31,000 lbs. The axles shall be hub piloted, 10 studs, furnished with oil seals.

#### **REAR SUSPENSION**

**5.059** Rear suspension shall be properly designed and engineered for the intended use of the pumper

#### **REAR BRAKES**

**5.060** Brakes shall be "S" Cam, 16-1/2" x 8" size and shall be full air actuated with automatic slack adjusters.

#### **REAR BRAKE SLACK ADJUSTERS**

**5.061** The rear brakes shall include Meritor automatic slack adjusters installed on the axle which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

#### **TIRES**

**5.062** Front Tires Shall be Goodyear Radials 425/65R 22.5. All Season Mud and Snow Tire.

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Rear Tires Shall be Goodyear Radials 315/80R 22.5 All Season Mud and Snow Tires.

### **WHEELS**

**5.063** Wheels shall be highly polished Alcoa Dura-Bright, non-corrosive aluminum and/or as an option of Painted Rims in color Black.

### **LUG NUT COVERS**

**5.064** Chrome plated lug nut covers will be installed on all lug nuts and/ or as an option Black in color.

### **HUB COVERS (front)**

**5.065** Highly polished Stainless steel hub covers will be provided on the front axle. An oil level viewing window will be provided and/ or Black painted in color.

### **TIRE PRESSURE MONITORING DEVICES**

**5.066** Front tires shall be equipped with an air pressure indicator cap on the valve stem.

Rear tires shall have Cat's Eyes installed on them for proper filling of both inner and outer tire.

### **CAB GENERAL**

**5.067** The cab shall be capable of comfortably holding six (6) fire fighters in turnout gear.

**5.068** The rear crew compartment of the cab shall have a raised roof of 10". These measurements have been selected to correspond with most manufacturers cab configurations without disqualifying any bidder or the need for incurring higher costs of custom construction.

**5.069** The cab shall have 4 barrier height doors. The front doors shall be properly designed and manufactured to reduce mirror vibration.

**5.070** Two (2) electrical wiring diagrams, prepared for the model of chassis and body, shall be provided.

### **STEP LIGHTS**

**5.071** Total of four (4), A clear Whelen Model PELCC 12v white LED light shall illuminate each interior cab step. These lights shall illuminate whenever the battery switch is on and the cab door is opened.

### **CORNERING LIGHTS**

**5.072** Two (2) Whelen MV6 scene/cornering lights shall be mounted on the sides of the front bumper extension, one on each side. The lights shall come on steady, with their corresponding turn signal.

### **CAMERA SYSTEM**

**5.073** A camera system compatible with the cab mounted display shall be provided. A total of

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one (1) color cameras shall be provided. The cameras shall be Safety Vision model SV-620. A single camera shall be located at the rear of the body. \*\*Location / Mounting of this camera is TBD at a prebuild meeting\*\*

Switch to the rear camera when the pumper is placed in reverse.

Have a function switch to turn on the rear camera when laying hose.

### **EXTENDED CAB**

**5.074** The cab shall be extended between 67" and 74" measured from the center of the front wheel to the rear of the cab wall. These measurements have been selected to correspond with most manufacturers cab configurations without the disqualifying any bidder or the need for incurring higher costs of custom construction.

### **Cab Floor**

**5.075** The interior flooring of the cab shall be covered with an advanced black multi-layer acoustic dampening mat. The floor matting shall be an open/closed cell, flexible polyurethane polyamide material with frictional dampening and dissipation properties. The mat shall be a fire and skid resistant non-wicking material.

### **Seating**

**5.076** The cab shall include a driver seat-HO Bostrom Model Sierra Air 100 – Durawear Material color Burgundy. Seat shall be Vinyl Material for carcinogen purposes.

A Knox box will be supplied by the purchaser and mounted facing the door below the drivers seat within the cab. The respondent will install a control cable run between the knox box and the officers seat radio storage area. The respondent will install a ground and a low current ignition power to the knox box.

**5.077** Five (5) SCBA seats HO Bostrom Model Tanker 450 Durawear Material color Burgundy. These seat shall be Vinyl Material for carcinogen purposes.

The SCBA Seats shall be capable of holding the department provided Scott 5.5 SCBA with 45 minute bottles. These will be located for the – Officer and 4 in the rear crew compartment.

- 1) Officers Seat- With under seat storage to be provided for the radio chassis. All power shown here for both the chassis and the radio control heads will be filtered. One Motorola XTL5000 and one Motorola XTL2500 along with room for a modem. The bidder will supply ground and power at 35-40 amps from battery under the officers seat for use with the radios. A low current ignition wire will be provided under the officers seat in the radio storage area. A knox box control cable will be run between the radio storage under the officers seat to the knox box facing the door at the drivers seat. From the officers seat radio storage three Remote head control cables will be run to the three locations of the control heads. The Remote Head Control Cables shall be provided by the purchaser. One cable will run to the radio compartment shown in 9.030. The length of control cable required from the officers seat storage to the radio compartment discussed in 9.030 shall



be supplied with the respondents bid. The length of control cable required from the officers seat to either the dash board or engine cover where the Remote Radio Control Heads will be mounted shall be supplied and installed with the respondents bid. Control Heads, Radio Chassis, and Portable Radio Chargers will be mounted by the purchaser.

2) Outboard seats shall be rear facing.

2) Inboard seats shall be forward facing.

#### **REAR UNDER SEAT COMPARTMENT**

**5.078** Rear forward facing inboard seats shall be mounted on a standard 2 seat riser.

#### **SHOULDER HARNESS HEIGHT ADJUSTMENT**

**5.079** All seating positions furnished with three (3)-point shoulder type seat belts shall include a height adjustment. This adjustment shall optimize the belts effectiveness and comfort for the seated firefighter.

#### **SEAT BELTS**

**5.080** All seating positions in the cab and crew cab shall have red seat belts.

#### **EQUIPMENT IN CAB**

**5.081** The rear and side wall of the cab across from the rearward facing outboard seats, and outside of the forward facing seats shall be covered with Pactrac shall be a minimum of 43" in length of the rear cab floor to ceiling.

#### **ENGINE COVER MOUNTING**

**5.082** A raised aluminum "mounting shelf" with a 1" lip shall be fabricated full length of the top of the engine cover. It shall be located towards the rear (raised max. 1 ½" for wiring and conduit) and will be used for mounting customer supplied A/C Motorola six portable radio bank charger, TIC, and 3 gas detectors. This shall include the electrical circuitry and a means to reduce damage to the engine cover because of the installation. It shall be the same color as the engine cover, with multiple (answered in 5-084) 110v AC and 12v DC termination points provided. It shall not interfere with any openings in the rear of the engine cover that are used for the inspection of engine fluids and other items. Between the driver and the officers seat and under the cover a power and ground access point for two single unit portable radio chargers shall be provided supplying 15-20amps from the battery.

**5.083** The provision to store run books, map books, keys, drinks and clipboards shall be provided on the engine cover. These items will be secured in case of an accident or in case the cab is tilted up.

**5.084** A minimum of 6 12v cigarette lighter plug shall be affixed in the center of the cab for use of auxiliary 12v plug for equipment. Mounting location will be TBD at time of inspection.

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**5.085** A tilt and telescoping steering wheel shall be provided with horn button wired to the Federal Q siren when the emergency master / response mode is on.

**5.086** The entire cab interior shall be of tough heavy duty design with rugged long lasting materials. The components of the cab interior including doors, dash, headliner and engine cover shall have premium insulation to reduce engine noise as well as engine and road heat. They shall be covered with appropriate Heavy Duty Vinyl or ABS where appropriate.

**5.087** Painted surfaces shall be a red in color spattered, with a heavy duty durable finish.

**5.088** Headliner, padded surfaces and sound deadening materials shall be colored to compliment the dark gray spattered finished interior cab color.

**5.089** The cab doors shall be equipped with grab handles to assist with entry and egress. They shall also contain brushed scuff plates, reflective material and a Whelen Model M4RC red LED warning light which will be visible from the rear when the doors are open.

**5.090** There shall be five (5) 6.00" round Whelen, Model 60CREGCS white and red LED dome lights installed in the cab as specified below.

The white light shall be controlled by the door switch and a switch on the light.

The red light shall be controlled by the switch on the light.

**5.091** There shall be one (1) of the LED light fixture installed over the driver's seat and one (1) over the Officers seat.

**5.092** Three (3) of the LED light fixtures shall be installed in the rear of cab, in the crew area, one (1) above each step well and one (1) in the center above the crew seats. Each shall be split red/white and operated by either door opening or manual operation via an integrated switch operable on the light fixture.

One additional independent LED light strip will be installed in the center of the rear cab to work independently from the door ajar circuit and be off of battery power.

**5.093** The cab shall have power windows on each door, all operable from the respective door and driver's position. All side windows shall be standard tinted windows.

**5.094** To enhance light penetration one (1) fixed window total of (2) with standard glass will be provided on each side of the cab above the front wheel well area.

#### **TILT CAB**

**5.095** A hydraulic cab lift system shall be provided, consisting of an electric-powered hydraulic pump, fluid reservoir, dual lift cylinders, remote cab lift controls and all necessary hoses, valves and safety latches.

**5.096** A "CAB NOT LATCHED" indicator shall be provided in the cab dash-warning cluster.

**5.097** An auxiliary manual cab lift back-up system shall be furnished inside the passenger side of the pump enclosure for use in the event of total electrical shutdown.

**5.098** The cab tilt control shall be equipped with an interlock that shall disable the cab tilt system in the event the parking brake is not applied.

#### **ENGINE COMPARTMENT LIGHT**

**5.099** There shall be two (2) Whelen model 3C0CDCR 12v clear LED lights with 3FLANGEC flanges mounted under the engine tunnel to serve as area work lighting on the engine. The lights shall activate automatically when the cab is tilted.

**5.100** The cab shall be equipped with self-cancelling turn signals

#### **Fender Crowns**

**5.101** Black Rubber fender crowns will be installed at all wheel openings. These shall be designed and installed to prevent the trapping of water and the reaction of dissimilar metals.

#### **FENDER LINERS**

**5.102** Full-circular, aluminum, inner fender liners painted job color red shall be installed in all of the wheel wells.

#### **CAB SIDE DRIP RAIL**

**5.103** There shall be a drip rail along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side. These shall be welded on to the cab.

#### **REAR WALL COVERING**

**5.104** The exterior surface of the rear wall of the cab will be overlaid with bright aluminum tread plate except for areas that are not typically visible when the cab is lowered.

**5.105** 4) Fire Hooks provided by the purchaser shall be installed 2) on each side on the exterior of the crew cab behind the rear doors. Where the tools are mounted shall be brushed stainless trim plate to protect the side of the cab.

#### **MIRRORS**

**5.106** Two 2) Retractable style mirrors shall be provided. Each mirror will have flat glass and a separate convex section. The mirror heads shall be injection molded chrome plated ABS plastic. One mirror shall be mounted on the driver's door and one on the officer's door of the cab with polished heavy duty die-cast aluminum arms. The mirrors will be heated and adjustable with remote control convenient to the driver. The mirrors will be mounted and reinforced to prevent mirror vibration.

## **SUNVISORS**

**5.107** Two (2) smoked Lexan sun visors shall be provided. The sun visors shall be located above the windshield with one (1) mounted on each side of the cab.

## **WINDSHIELD WIPERS**

**5.108** The cab shall be equipped with appropriate electric intermittent windshield wipers with a washer component, in conformance with FMVSS and SAE requirements. The wiper blades shall be heavy duty and long lasting so designed to clear the windshield for maximum visibility in inclement weather including heavy snow.

**5.109** The windshield washer fluid reservoir shall be located in an easily accessible area for simple maintenance and refilling.

## **HVAC**

**5.110** A HVAC system shall be provided that is capable of heating the cab to 75 degrees F with an ambient temperature of 0 degrees F with 50 % relative humidity, and cooling the cab to 65 degrees F with an ambient temperature of 100 F with 80% relative humidity. Adequate powerful windshield defrosts vents and capabilities shall also be provided.

**5.111** Six (6) NFPA Approved Helmet Holders – Will be shipped loose.

**5.112** One (1) 12V power socket shall be provided on top of the dash area near center just behind the windshield for charging of equipment.

## **CAB GRAB HANDLES**

**5.113** The “A” Posts on each side of the Cab shall have grab handles which shall match the interior cab color.

**5.114** Four (4) 1-1/4" diameter x 24" long, knurled, bright anodized aluminum handrails shall be provided, one (1) at each cab door entrance. Grab rail stanchions shall be black painted and offset when necessary to prevent "hand-pinching" when opening or closing the doors. Formed rubber gaskets shall be provided between each stanchion base and the cab surface. The grab handles shall include a stainless steel scuff plate to protect painted surfaces.

## **BATTERY CHARGER / AIR COMPRESSOR**

**5.115** A Kussmaul Pump Plus 1200 Battery Charger / with Air Compressor Shall be provided. The plug socket shall be located on the front driver's side of the cab above the drivers wheel well. The socket shall be yellow in color, weather proof and shall automatically disconnect or eject when the engine is started. A 120volt on-board air compressor shall be mounted on the vehicle to maintain the air pressure in the air brake system while the vehicle is not in use. A pressure switch shall sense the system pressure and operate the compressor whenever the pressure drops below a predetermined level. The electrical equipment that is required to be on charge will also be wired through this unit. This unit shall be installed in a location accessible for

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easy access for repairs.

The unit shall be completely sealed to prevent road dirt contamination.

**5.116** The Kussmaul mating connector body shall also be supplied with the loose equipment.

### **HIGH IDLE**

**5.117** A high idle switch shall be provided, inside the cab that shall automatically maintain a preset engine rpm. The high idle shall be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light shall be provided, adjacent to the switch. The light shall illuminate when the above conditions are met. The light shall be labeled "OK to Engage High Idle."

### **MUD FLAPS**

**5.118** Mud flaps shall be installed behind the front and rear wheels of the apparatus with the manufacturers logo.

### **DATA RECORDING SYSTEM**

**5.119** The chassis shall have a Class One Vehicle Data Recorder system installed. The system shall be designed to meet NFPA 1901. The following information shall be recorded:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status
- Seat Belt Status
- Master Optical Warning Device Switch Position
- Time
- Date

### **COOLING SYSTEM FAN**

**5.120** The engine cooling system shall incorporate a thermostatically controlled fan clutch. When the fan clutch is disengaged, the vehicle shall have improved vehicle performance, cab heating in cold climates, and fuel economy, while eliminating the potential dangers associated with a fan going from non-rotating to rotating as found with other style fan clutches. The fan shall automatically lock-in when the vehicle is placed in pumping mode.

### **ENGINE AIR INTAKE**

**5.121** An air intake with an ember separator (to prevent road dirt, burning embers, and recirculating hot air from entering the engine) shall be mounted at the front of the apparatus, on the passenger side of the engine. The ember separator shall be mounted in the air intake with flame retardant, rotomolded polyethylene housing. It shall be easily accessible by the hinged access panel at the front of the vehicle.

### **Engine Exhaust**

**5.122** The engine exhaust shall exit on the passenger side of the pumper in front of the rear wheels.

### **EXHAUST HEAT DEFLECTOR SHIELD**

**5.123** There shall be a 5" heat deflector shield installed over the exhaust to aid in dissipating the heat to prevent exhaust heat from adversely affecting anything stored in the body.

### **HEATER LINE SHUT OFF VALVES**

**5.124** The heater circuit shall have quarter turn shut off valves installed on both the supply and return lines to allow a complete shut off of coolant flow to the cab heaters in hot seasons of the year. These valves shall be installed in addition to the valves in the heater unit(s). Both valves shall be labeled to be viewable by maintenance workers.

### **DIESEL EXHAUST FLUID SYSTEM**

**5.125** As part of the EPA compliant emissions system the chassis shall be equipped with an approximately 4 to 5 gallon Diesel Exhaust Fluid (DEF) reservoir system. The reservoir shall contain a Multifunctional Head Unit (MFHU) that contains integrated level and temperature sensors. The MFHU also shall contain a coolant powered heater to thaw DEF in conditions below 12°F (-11°C) to meet governmental regulations. The reservoir shall be located on the left frame rail behind the front axle beneath the cab. The mounting system shall use stainless steel mounting brackets to reduce the possibility of corrosion. The Inlet shall be marked "Diesel Exhaust Fluid Only".

### **FUEL TANK**

**5.126** A minimum 65 gallon fuel tank shall be provided and mounted at the rear of the chassis. The tank shall be constructed of unpainted Stainless Steel. It shall be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank shall be mounted with stainless steel straps.

A .75" drain plug shall be provided in a low point of the tank for drainage. A fill inlet shall be located on the left hand side of the body and be covered with a hinged, spring loaded, stainless steel door that is marked "Diesel Fuel Only."

A .50" diameter vent shall be provided running from top of tank to just below fuel fill inlet.

The tank shall meet all FHWA 393.67 requirements including a fill capacity of 95 percent of tank volume.

A fuel shut off shall be installed in the fuel line, at the fuel tank.

All fuel lines shall be provided as recommended by the engine manufacturer.

### **FUEL/WATER SEPERATOR**

**5.127** A Racor model B32001 fuel water separator shall be installed in addition to the standard Engine fuel filter. There shall be water in fuel indicator installed in cab's dash area.

### **GRILLE**

**5.128** A painted black non-corrosive aluminum mesh grille screen, inserted behind a formed

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black painted non corrosive grille surround, shall be provided on the front center of the cab, and shall serve as an air intake to the radiator.

#### **DOOR JAMB SCUFFPLATES**

**5.129** All cab door jambs shall be furnished with a brushed stainless steel scuff plates, mounted on the striker side of the jamb.

#### **SEAT BELT MONITORING SYSTEM**

**5.130** A seat belt monitoring system (SBMS) shall be provided. The SBMS shall be capable of monitoring up to ten (10) seat positions indicating the status of each seat position with a green or red LED indicator as follows:

Seat Occupied Buckled Green

Seat Occupied Unbuckled Red

No Occupant Buckled Red

No Occupant Unbuckled Not Illuminated

Alarm:

The SBMS shall include an audible alarm that shall be activated when a red illumination condition exists and the parking brake is released, or a red illumination condition exists and the transmission is not in park.

#### **CAB INSTRUMENTATION**

**5.131** The cab instrument panel shall include gauges, telltale indicator lamps, control switches, alarms, and a diagnostic panel. The function of the instrument panel controls and switches shall be identified by a label adjacent to each item. Actuation of the headlight switch shall illuminate the labels in low light conditions. Telltale indicator lamps shall not be illuminated unless necessary. The cab instruments and controls shall be conveniently located within the forward cab section, forward of the driver. The gauge assembly and switch panels are designed to be removable for ease of service and low cost of ownership.

WE NEED TO HAVE THIS MATCH THE CURRENT ENGINE 352 AS CLOSE AS POSSIBLE FOR OPERATIONAL PURPOSES ONLY. THE COMMITTEE MUST BE SENT A PANEL DRAWING FOR APPROVAL PRIOR TO WORK.

#### **GAUGES**

**5.132** The gauge panel shall include the following ten (10) black faced gauges with black bezels to monitor vehicle performance:

Voltmeter Gauge (volts):

Low volts (11.8 VDC)

Amber telltale light on indicator light display with steady tone alarm

High volts (15.5 VDC)

Amber telltale light on indicator light display with steady tone alarm

Engine Tachometer (RPM)

Digital Speedometer MPH mounted on the driver's side and the officer's riding position.

Fuel Level Gauge (Empty - Full in fractions):

Low fuel (1/8 full)

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Amber telltale light on indicator light display with steady tone alarm

Engine Oil Pressure Gauge (PSI):

Low oil pressure to activate engine warning lights and alarms

Red telltale light on indicator light display with steady tone alarm

Front Air Pressure Gauges (PSI):

Low air pressure to activate warning lights and alarm

Red telltale light on indicator light display with steady tone alarm

Rear Air Pressure Gauges (PSI):

Low air pressure to activate warning lights and alarm

Red telltale light on indicator light display with steady tone alarm

Transmission Oil Temperature Gauge (Fahrenheit):

High transmission oil temperature activates warning lights and alarm

Amber telltale light on indicator light display with steady tone alarm

Engine Coolant Temperature Gauge (Fahrenheit):

High engine temperature activates an engine warning light and alarms

Red telltale light on indicator light display with steady tone alarm Diesel

Exhaust Fluid Level Gauge (Empty - Full in fractions):

Low fluid (1/8 full)

Amber telltale light on indicator light display

### **INDICATOR LAMPS**

**5.133** To promote safety, the following telltale indicator lamps shall be located on the instrument panel in clear view of the driver. The indicator lamps shall be "dead-front" design that is only visible when active. The colored indicator lights shall have descriptive text or symbols.

The following amber telltale lamps shall be present:

Low coolant

Trac cntl (traction control) (where applicable)

Check engine

Check trans (check transmission)

Air rest (air restriction)

Driver door open

Passenger door open

Tower (tower raised) (where applicable)

DPF (engine diesel particulate filter regeneration)

HET (engine high exhaust temperature) (where applicable)

ABS (antilock brake system)

MIL (engine emissions system malfunction indicator lamp) (where applicable)

Regen inhibit (engine emissions regeneration inhibit) (where applicable)

Trans temp (transmission temperature)

SRS (supplemental restraint system) fault (where applicable)

DEF (low diesel exhaust fluid level)

The following red telltale lamps shall be present:

Hard suction rack down

Ladder Rack Down

Parking brake



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Stop engine

The following green telltale lamps shall be present:

Left turn

Right turn

Battery on

Ignition

Aux brake (auxiliary brake engaged) (where applicable)

The following blue telltale lamps shall be present:

High beam

## **ALARMS**

**5.134** Audible steady tone warning alarm: A steady audible tone alarm shall be provided whenever a warning message is present.

### **Alarm silence:**

**5.135** Any active audible alarm shall be able to be silenced by holding the ignition switch at the top position for three (3) to five (5) seconds. For improved safety, silenced audible alarms shall intermittently chirp every 30 seconds until the alarm condition no longer exists. The intermittent chirp shall act as a reminder to the operator that a caution or warning condition still exists. Any new warning or caution condition shall enable the steady or pulsing tones respectively.

## **INDICATOR LAMP AND ALARM PROVE-OUT**

**5.136** A system shall be provided which automatically tests telltale indicator lights and alarms located on the cab instrument panel. Telltale indicators and alarms shall perform prove-out when the ignition switch is held in the up position for three (3) to five (5) seconds to ensure proper performance.

## **CONTROL SWITCHES**

**5.137** For ease of use, the following controls shall be provided immediately adjacent to the cab instrument panel within easy reach of the driver. All switches shall have backlit labels for low light applications.

**Headlight/Parking light switch:** A three (3)-position maintained rocker switch shall be provided. The first switch position shall deactivate all parking and headlights. The second switch position shall activate the parking lights. The third switch position shall activate the headlights.

**Panel backlighting intensity control switch:** A variable voltage control switch shall be provided. The switch moved in the up direction increases the panel backlighting intensity to a maximum and the switch moved in a down direction decreases the panel backlighting intensity to a minimum level.

**Ignition switch:** A three (3)-position maintained/momentary rocker switch shall be provided. The first switch position shall deactivate vehicle ignition. The second switch position shall

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activate vehicle ignition. The third momentary position shall perform prove-out on the telltale indicators and alarms when the ignition switch is held in the up position for three (3) to five (5) seconds to ensure proper performance. A green indicator lamp is activated with vehicle ignition. This switch shall be located to the left of the steering wheel.

Engine start switch: A two (2)-position momentary rocker switch shall be provided. The first switch position is the default switch position. The second switch position shall activate the

vehicle's engine. The switch actuator is designed to prevent accidental activation. This switch shall be located next to the Ignitions switch to the right of the steering wheel.

Hazard switch shall be incorporated into the steering column.

Heater and defroster controls. Shall be located in close proximity to the driver and be clearly labeled and back lit and be easy to read during all conditions of light.

Turn signal arm: A self-canceling turn signal with high beam headlight controls will be located on the left side of the steering wheel.

Windshield wiper control shall have high, low, and intermittent modes and be located in close proximity of the drive and be clearly labeled and back lit and be easy to read during all light conditions .

Parking brake control: A yellow air actuated push/pull park brake control shall be located to the right of the steering wheel.

Chassis horn control: Activation of the chassis horn control shall be provided through the center of the steering wheel.

Mechanical Siren Switch: This switch has automatically become active in RESPONSE MODE

### **CUSTOM SWITCH PANELS**

**5.138** The design of cab instrumentation shall allow for emergency lighting and other switches to be placed within easy reach of the operator or officer, thus improving safety. There shall be positions for up to three (3) switch panels in the overhead console on the driver's side, up to five (5) switch panels in the engine tunnel console, and up to three (3) switch panels in the overhead console on the officer's side. All switches have backlit labels for low light applications.

**5.139** Diesel particulate filter regeneration switch (where applicable).

**5.140** Diesel particulate filter regeneration inhibit switch (where applicable).

### **DIAGNOSTIC PANEL**

**5.141** A diagnostic panel shall be accessible while standing on the ground and shall be located

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inside the driver's side door, left of the steering column. The diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches shall allow engine and ABS systems to provide blink codes should a problem exist. The diagnostic panel shall include the following:

Engine diagnostic port

Transmission diagnostic

ABS diagnostic port

SRS diagnostic port (where applicable)

Engine diagnostic switch (blink codes flashed on check engine telltale indicator)

ABS diagnostic switch (blink codes flashed on ABS telltale indicator)

### **CAB LCD DISPLAY**

**5.142** A digital four (4) row by 20 character dot matrix display shall be integral to the gauge panel. The display shall be capable of showing simple graphical images as well as text. The display shall be split into three (3) sections. Each section shall have a dedicated function. The upper left section shall display the outside ambient temperature. The upper right section shall display odometer, trip mileage, PTO hours, fuel consumption, engine hours, and other configuration specific information. The bottom section shall display INFO, CAUTION, and WARNING messages. Text messages shall automatically activate to describe the cause of an audible caution or warning alarm. The LCD shall be capable of displaying multiple text messages should more than one caution or warning condition exist.

### **DO NOT MOVE APPARATUS" INDICATOR**

**5.143** A Whelen Model 5SROOFRR flashing red LED indicator light, located in the driving compartment, and shall be illuminated automatically per the current NFPA requirements. The light shall be labeled "Do Not Move Apparatus If Light Is On."

The same circuit that activates the Do Not Move Apparatus indicator shall activate a steady tone alarm when the parking brake is released.

### **DO NOT MOVE TRUCK MESSAGES**

**5.144** Messages shall be displayed on the gauge panel forward of the steering wheel directly in front of the driver whenever the "Do Not Move Truck" light is active. The messages shall designate the item or items not in the stowed for vehicle travel position (parking brake disengaged).

The following messages shall be displayed (where applicable):

Do Not Move Truck

DS Cab Door Open (Driver Side Cab Door Open)

PS Cab Door Open (Passenger's Side Cab Door Open)

DS Crew Cab Door Open (Driver Side Crew Cab Door Open)

PS Crew Cab Door Open (Passenger's Side Crew Cab Door Open)

DS Body Door Open (Driver Side Body Door Open)

PS Body Door Open (Passenger's Side Body Door Open)

Rear Body Door Open

DS Ladder Rack Down (Drivers Side Ladder Rack Down)

PS Suction Rack Down (Passenger Hard Suction Rack Down)

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Deck Gun Not Stowed

Lt Tower Not Stowed (Light Tower Not Stowed)

Any other device that is opened, extended, or deployed that creates a hazard or is likely to cause major damage to the apparatus if the apparatus is moved shall be displayed as a caution message after the parking brake is disengaged.

### **EMI/RFI PROTECTION**

**5.145** To prevent erroneous signals from crosstalk contamination and interference, the electrical system shall meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system shall be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source. The apparatus shall have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system shall meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10Khz1GHz to 100 Volts/Meter. The vehicle OEM, upon request, shall provide EMC testing reports from testing conducted on an entire apparatus and shall certify that the vehicle meets SAE J551/2 and SAE

J1113/25 Region 1, Class C EMR for 10Khz1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself. EMI/RFI susceptibility shall be controlled by applying appropriate circuit designs and shielding. The electrical system shall be designed for full compatibility with low level control signals and high powered two way radio communication systems. Harness and cable routing shall be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

### **ELECTRICAL HARNESSING INSTALLATION**

**5.146** To ensure rugged dependability, all 12volt wiring harnesses installed by the apparatus manufacturer shall conform to the following specifications:

SAE J1128 Low tension primary cable

SAE J1292 Automobile, truck, truck tractor, trailer and motor coach wiring

SAE J163 Low tension wiring and cable terminals and splice clips

SAE J2202 Heavy duty wiring systems for on highway trucks

NFPA 1901 Standard for automotive fire apparatus

FMVSS 302 Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks and buses.

SAE J1939 Serial communications protocol

SAE J2030 Heavy duty electrical connector performance standard

SAE J2223 Connections for on board vehicle electrical wiring harnesses

NEC National

Electrical Code

SAE J561 Electrical terminals Eyelet and spade type

SAE J928 Electrical terminals Pin and receptacle type A

For increased reliability and harness integrity, harnesses shall be routed throughout the cab and

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chassis in a manner which allows the harnessing to be laid into its mounting location. Routing of harnessing which requires pulling of wires through tubes shall not be allowed. Wiring shall be run in loom or conduit where exposed, and have grommets or other edge protection where wires pass through metal. Wiring shall be color, function and number coded.

Wire colors shall be integral to each wire insulator and run the entire length of each wire.

Harnessing containing multiple wires and uses a single wire color for all wires shall not be allowed. Function and number codes shall be continuously imprinted on all wiring harness conductors at 2.00" intervals. All wiring installed between the cab and into doors shall be protected by an expandable rubber boot to protect the wiring. Exterior exposed wire connectors shall be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids.

Electrical wiring and equipment shall be installed utilizing the following guidelines:

1. All wire ends not placed into connectors shall be sealed with a heat shrink end cap. Wires without a terminating connector or sealed end cap shall not be allowed.
2. All holes made in the roof shall be caulked with silicon (No Exception). Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.
3. Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in it. Exposed area shall be defined as any location outside of the cab or body.
4. For low cost of ownership, electrical components designed to be removed for maintenance shall be quickly accessible. For ease of use, a coil of wire shall be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work.
5. Corrosion preventative compound shall be applied to non waterproof electrical connectors located outside of the cab or body. All non waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation of the plug.
6. Any lights containing non waterproof sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.
7. All electrical terminals in exposed areas shall have DOW 1890 protective Coating applied completely over the metal portion of the terminal.
8. Rubber coated metal clamps shall be used to support wire harnessing and battery cables routed along the chassis frame rails.
9. Heat shields shall be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust shall be protected by a heat shield.
10. Cab and crew cab harnessing shall not be routed through enclosed metal tubing. Dedicated wire routing channels shall be used to protect harnessing therefore improving the overall integrity of the vehicle electrical system. The design of the cab shall allow for easy routing of additional wiring and easy access to existing wiring.
11. All braided wire harnesses shall have a permanent label attached for easy identification of the harness part number and fabrication date.
12. All standard wiring entering or exiting the cab shall be routed through sealed bulkhead connectors to protect against water intrusion into the cab.

### **BATTERY CABLE INSTALLATION**

**5.147** All 12volt battery cables and battery cable harnessing installed by the apparatus manufacturer shall conform to the following requirements:

SAE J1127 Battery Cable

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SAE J561 Electrical terminals, eyelets and spade type

SAE J562 Nonmetallic loom

SAE J836A Automotive metallurgical joining

SAE J1292 Automotive truck, truck tractor, trailer and motor coach wiring

NFPA 1901 Standard for automotive fire apparatus

Battery cables and battery cable harnessing shall be installed utilizing the following guidelines:

1. All battery cables and battery harnesses shall have a permanent label attached for easy identification of the harness part number and fabrication date.
2. Splices shall not be allowed on battery cables or battery cable harnesses.
3. For ease of identification and simplified use, battery cables shall be color coded. All positive battery cables shall be red in color or wrapped in red loom the entire length of the cable. All negative battery cables shall be black in color.
4. For ease of identification, all positive battery cable isolated studs throughout the cab and chassis shall be red in color.
5. For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus shall be coated to prevent corrosion.

### **ELECTRICAL COMPONENT INSTALLATION**

**5.148** All lighting used on the apparatus shall be, at a minimum, a two (2) wire light grounded through a wired connection to the battery system. Lights using an apparatus metal structure for grounding shall not be allowed. An operational test shall be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order. The results of the tests shall be recorded and provided to the purchaser at time of delivery.

### **BATTERY SYSTEM**

**5.149** Six (6) 12 volt, Exide Group 31 batteries that include the following features shall be provided:

950 CCA, cold cranking amps

190 amp reserve capacity

High cycle

Group 31

Rating of 5700 CCA at 0 degrees Fahrenheit

1140 minutes of reserve capacity

SAE Posts

**5.150** Each battery case shall be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover shall be manifold vented with a central venting location to allow a 45 degree tilt capacity. The inside of each battery shall consist of maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

### **BATTERY SYSTEM**

**5.151** A single starting system shall be provided. An ignition switch and starter button shall be located on the instrument panel to the left of the steering wheel.

### **MASTER BATTERY SWITCH**

**5.152** A Guest or Cole Hersee brand ¼ turn type master battery switch, to activate the battery system, shall be provided on the outboard side of the driver's seat platform, facing out the driver's door. All electrical circuits except those used to charge equipment shall disconnect when the switch is in the off position.

### **BATTERY COMPARTMENTS**

**5.153** The batteries shall be stored in well ventilated compartments that are located under the cab and bolted directly to the chassis frame. The battery compartments shall be constructed of 3/16" steel plate and be designed to accommodate a maximum of three (3) group 31 batteries in each compartment. The compartments shall include formed fit heavy duty roto molded polyethylene battery tray inserts with drains on each side of the frame rails. The batteries shall be mounted inside of the roto molded trays.

### **JUMPER STUDS**

**5.154** One (1) set of battery jumper studs with plastic color coded covers shall be installed on the battery box on the driver's side. This shall allow enough room for easy jumper cable access.

### **ELECTRONIC LOAD MANAGER**

**5.155** An electronic load management (ELM) system shall be provided that monitors the vehicles 12volt electrical system, automatically reducing the electrical load in the event of a low voltage condition, and automatically restoring the shed electrical loads when a low voltage condition expires. This ensures the integrity of the electrical system.

For improved reliability and ease of use, the load manager system shall be an integral part of the vehicle's solid state control system requiring no additional components to perform load management tasks. Load management systems which require additional components shall not be allowed.

The system shall include the following features:

System voltage monitoring.

A shed load shall remain inactive for a minimum of five minutes to prevent the load from cycling on and off.

Sixteen available electronic load shedding levels.

Priority levels can be set for individual outputs.

High Idle to activate before any electric loads are shed and deactivate with the service brake.

If enabled:

"Load Man Hi Idle On" shall display on the information center.

Hi Idle shall not activate until 30 seconds after engine start up.

Individual switch "on" indicator to flash when the particular load has been shed.

The information center indicates system voltage.

The information center, where applicable, includes a "Load Manager" screen indicating the

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following:

Load managed items list, with priority levels and item condition.

Individual load managed item condition:

ON = not shed

SHED = shed

### **SEQUENCER**

**5.156** A sequencer shall be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges.

This sequencer operation shall allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

For improved reliability and ease of use, the load sequencing system shall be an integral part of the vehicle's solid state control system requiring no additional components to perform load sequencing tasks. Load sequencing systems which require additional components shall not be allowed.

Emergency light sequencing shall operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights shall be activated one by one at half second intervals. Sequenced emergency light switch indicators shall flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer shall deactivate the warning light loads in the reverse order.

Sequencing of the following items shall also occur, in conjunction with the ignition switch, at half second intervals:

Cab Heater and Air Conditioning

Crew Cab Heater

Crew Cab Air Conditioning

Exhaust Fans

### **EXTERIOR LIGHTING**

**5.157** Exterior lighting will comply with Federal Department of Transportation, Federal Motor Vehicle Safety Standards and National Fire Protection Association requirements in effect at time of proposal.

**5.158** All exterior automotive lighting and warning lighting should be manufactured by Whelen where feasible and all lighting shall be LED style. Black cluster modules / Bezels or Black trim, shall be used where appropriate.

2 MARS 888 lights will be installed on the front of the cab. These shall be pedestal mounted and black trim. Lights shall have clear halogen lenses. Lights shall be mounted on the front corner cowl.

### **LED ICC/MARKER LIGHTS**

**5.159** LED DOT Clearance and Identification lights shall be purchased and installed on the apparatus by the successful respondent Per FMVSS 108 requirements.

### **FRONT HEADLIGHTS**



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**5.160** Front headlights will be rectangular LED Firetech Heated lights or equivalent mounted in the front trim housing. The housing shall be of a black painted finish. Headlights will consist of two (2) lights mounted in the front trim on each side of the cab grill. The outside light on each side will contain a low and high beam. The inside light on each side will contain of a high beam light only.

#### **FRONT WARNING LIGHTS AND TURN SIGNALS**

**5.161** Two (2) Whelen model M6 Series Super LED Red Warning Lights shall be installed directly above the inside headlight on each side of the cab. They shall be mounted in black painted modules that match and compliment the head lights.

Two (2) Whelen model M6 Series amber LED turn signal lamps with arrow, mounted within a black flange, shall be installed directly above the outside headlight or warning light on each side of the front of the cab.

Respondents may use their proprietary painted finished trim housings and layout for the headlights, turn signals and Super LED Zone A Warning Lights.

#### **AUXILIARY TURN SIGNALS / MARKER LIGHTS**

**5.162** Whelen model M6 Series amber LED lamps shall be mounted outboard of the turn signal at approximately a 45-degree angle off the front of the cab. To provide turn signal capabilities to the side.

#### **MIDSHIP AUXILIARY TURN SIGNAL**

**5.163** Two (2) Whelen model V23ATPC LED Amidships auxiliary turn signal light shall be installed. One on each side of the pumper.

#### **Brow Light**

**5.164** There shall be one (1) Whelen S30MB Pioneer Summit light installed on the brow of the cab. A switch should be installed in the cab so that either the Driver or Officer can operate the lights. The mounting bracket shall be attached to the bottom of the lamp head and be machined to conform to the roof radius. The bracket and housing shall be painted black in color. Wiring shall extend from a weatherproof strain relief at the rear of the lamp head.

#### **Cab Side Scene Lights**

**5.165** Total of Two (2) There shall be one (1) on each side of the cab above the driver and officer doors Whelen S161MB Pioneer Summit Series. A switch should be installed in the cab so that either the Driver or Officer can operate the light. These lights should also operate when either door on the respective side is opened.

#### **Cab and Chassis Ground Lights**

**5.166** Total of Two (2) - One (1) Whelen LED PELCC shall be installed under each front door of the cab. LED clear with polycarbonate lens. These should operate when associated door is opened.

**5.167** Total of Six (6) - One (1) Whelen LED PELCC light shall be installed under each side pump

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panel, two (2) under the front bumper at the corners, and two (2) under the rear bumper in line with the steps. All LED's clear with polycarbonate lens. These should also automatically operate when parking brake is applied and when placed in reverse. There shall be an on/off switch for maintenance purposes.

### **DECK LIGHTS**

**5.168** A Whelen Model PFBP12C w/ black cover, 12 volt floodlight will be mounted at the front of the hose bed which shall supply light to the hose bed when packing hose in the dark. The switch for this light will be on the pump panel.

### **REAR FMVSS LIGHTING**

**5.169** The rear stop/tail / directional and warning LED lighting shall consist of the following within a Whelen 4 position vertical black finished bezel: 1 Each Side.

Two (2) Whelen, Model M Series red LED stop/tail lights.

Two (2) Whelen, Model M Series amber LED arrow turn lights.

Two (2) Whelen, Model M Series LED backup lights

Two (2) Whelen Red M Series Super LED Warning Lights with red lens and clear LED's to meet the requirements of NFPA Zone C lower lighting.

**5.170** Appropriate reflectors shall be provided around the pumper.

### **Rear Facing Scene Lights**

**5.171** Two (2) Rear facing 12v Whelen Super LED Model M6 scene lights shall be installed on the rear of the body as high as possible (one each side). Switch should be installed in the cab area which should be operated by either the Driver or the Officer. These lights shall also operate when the truck is placed in reverse. \*\* Special consideration will need to be made with the fabrication when locating this light on the Driver's side because of the 2 arm ladder rack.\*\*

### **BACK-UP ALARM**

**5.172** A Whelen, Model WBUA112, solid state electronic audible back-up alarm that actuates when the truck is shifted into reverse shall be provided. The alarm shall automatically adjust to ambient noise levels to avoid the nuisance of high decibel output when not required. The device shall sound at a range of 87 to 112 decibels.

### **NFPA WARNING LIGHT PACKAGE**

**5.173** The following warning light package shall include all of the minimum warning lights and actuation requirements for the current revision of the NFPA 1901 Fire Apparatus Standard. The lighting as specified shall meet the requirements for both "Clearing Right of Way" and "Blocking Right of Way" which includes disabling all white warning lights when the apparatus is in "Blocking Right of Way" mode.

### **LIGHT PACKAGE ACTUATION CONTROLS**

**5.174** The entire warning light package shall be actuated with a single warning light switch located on the cab switch panel. The wiring for the warning light package shall engage all of the

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lights required for "Clearing Right of Way" mode when the vehicle parking brake is not engaged. An automatic control system shall be provided to switch the warning lights to the "Blocking Right of Way" mode when the vehicle parking brake is engaged.

**5.175** When the Clearing Right of Way mode is activated the horn button on the steering wheel shall default to the Federal Q Siren.

#### **WARNING LIGHT FLASH PATTERN**

**5.176** All of the perimeter warning lights shall be set to the default NFPA flash pattern as provided by the warning light manufacturer.

#### **UPPER LEVEL LIGHTING - WHELEN**

##### **NFPA ZONE A, UPPER**

**5.177** A Whelen # FNQLED "Edge Freedom", 82" warning light bar shall be furnished and rigidly mounted on top of the cab roof. The light bar shall be equipped with eight (8) forward facing linear red LED lights. Two (2) forward facing linear white LED, two (2) corner forward facing LEDs, and two (2) corner rear facing linear red LED lights. The light bar shall be equipped with clear lenses.

**5.178** The forward facing white lights shall be automatically disabled for the "Blocking Right of Way" mode.

**5.179** The Freedom light bar shall be equipped with a # 795H Low Profile LED Opticom emitter. The Opticom emitter shall be disabled automatically for the "Blocking Right of Way" mode.

##### **NFPA ZONE A, LOWER**

**5.180** Four (2) Whelen M Series super LED Red & (2) Whelen Roto Beams light heads shall be provided and installed two (2) each side of the front of the cab. Each light head shall be equipped with LED's and a red colored lens. The lower Zone A warning lights shall be mounted on the front of the custom chassis above the headlight modules as stated in the cab section of the RFP.

**5.181** Total of Two (2). One (1) Whelen Model M6R Super LED with a red lens and black finished flange shall be mounted each side of the front bumper.

#### **ALTERNATING FLASHING HEADLIGHT SYSTEM**

**5.182** An alternating flashing wig-wag system, wired to the apparatus headlights, shall be installed. The wig-wag system shall be individually switched at the master light console. The alternating flashing system shall be automatically disabled during the "Blocking Right of Way" mode.

**5.183** Antenna. The respondent will install two NMO Mounts and antenna wire on the cab roof. The Antenna wire will be run to the Officers Seat Radio Storage area with adequate supply of antenna wire coiled and stored for the radio chassis connection. The respondent will supply the NMO Mounts and antenna wire. The purchaser will provide to the respondent a 4G modem antenna (two piece antenna) for use with the purchasers CAD system for

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mounting on the cab roof. The modem antennas will be installed by the purchaser and the Antenna wires will be run to the officers seat radio storage area. There are design specifics relating to minimum distances required between the two 4G antennas and also to the NMO Mounts and radio light bar. The respondent should coordinate proper placement of the NMO mounts and the 4G Antenna with Julie Reibold of Northeastern Communications in Naugatuck CT.

#### **NFPA ZONES B & D REAR, UPPER**

**5.184** The lighting requirement for this area is covered by the lights noted in Zone "C" - Upper.

#### **NFPA ZONES B & D MIDSHIP, LOWER**

**5.185** Two (2) Whelen 60R02FRR 600 super LED light heads shall be provided and installed one (1) each side. Each light head shall be equipped with red LED's. The lights shall be installed amidships with a black plated mounting flange.

#### **NFPA ZONE C, UPPER**

**5.186** A Whelen B6MM LED Tailboard Beacon Warning Light with polished base shall be mounted on the stanchion above the hose bed on each side of the apparatus.

The driver's side shall have a blue lens on the upper Beacon Portion and an amber super LED lens in the lower directional light section.

The passenger side shall have a Red Lens on the upper Beacon Portion and a Blue super LED light in the lower directional light section.

#### **LIGHT TOWER**

**6.001** There shall be a Willburt Night Scan Chief Profiler 2.3 with Whelen LED Light Heads 12v. The tower shall be mounted on the properly re- enforced cab roof near the air conditioning unit between light bar and the raised roof. It shall be equipped with a portable wireless control unit. Mounting or storage location for the controller TBD.

**6.002** The light tower will be connected per manufacturer's recommendations to the air and 12v electrical systems of the pumper.

**6.003** In the event that the light tower does not fit on the roof with the light bar and A/C unit the respondent shall come up with an alternate plan to safely mount the unit without increasing the total height of the pumper and without any un-sightly box protection.

A/C unit can be moved to another location of the pumper.

# WATER DELIVERY

## **TANK PRIORITY**

**7.001** First and foremost the tank shall be so engineered, designed and constructed so that the hose bed and more importantly the top of the hose loads are as low as reasonable.

## **TANK**

**7.002** The apparatus shall be equipped with a United Plastic Fabricating 1,000 U.S. gallon water "L" shaped tank. Certification of the tank capacity shall be recorded on the manufacturer's record of construction and shall be provided to the purchaser upon delivery of the apparatus.

The UPF® water tank shall be the top of the line heavily constructed of minimum 1/2" thick polypropylene sheet stock, properly welded inside and out and profusely braced and supported to ensure the extended long life for use under extreme fire fighting conditions. This material shall be a non-corrosive stress relieved thermoplastic, U.V. stabilized for maximum protection. The tank shall be so constructed with baffles and supports per NFPA requirements. It shall also be constructed and vented to provide maximum flow and complete drainage of water if so needed.

The Tank shall float in a properly supported cradle to avoid twisting and stress caused by chassis and frame flexing. Thick rubber cushions shall be placed on all horizontal surfaces that the tank rests on.

Stops or other provisions shall be provided to prevent an empty tank from bouncing excessively while moving the vehicle.

The mounting systems shall be approved by the tank manufacturer.

## **CLASS B FOAM TANK**

**7.003** The foam tank shall be an integral portion of the polypropylene water tank. The cell shall have a capacity of 20 gallons of Class B foam. The foam cell shall not reduce the capacity of the water tank. The foam cell shall have a screen in the fill dome, a breather in the lid and drain in the bottom of the cell.

## **FOAM SYSTEM**

**7.004** A simple gravity feed foam system will be provided. The system will consist of plumbing from the foam tank to the Drivers pump panels and terminate with an Elkhart Concentrate Outlet and quick connect fitting. The quick connect fitting will be able to adapt to an included Task Force Tips foam eductor model UE-095 appliance. This quick connect fitting will also be able to be hooked up to an included external pickup tube. The Foam concentrate outlet shall be located close enough to one of the pump panel discharge within reach of the pick-up tube to concentrate outlet connection.

**7.005** The foam eductor and 1 pickup hose one with attached quick connect fitting and one

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with matching pickup tube will be shipped loose.

**7.006** A small foam tank level gauge, so labeled will be provided on the main pump panel.

#### **WATER TANK DRAIN**

**7.007** There shall be a 1-1/2" drain valve provided under the sump of the water tank. The valve shall include a locking lever to prevent accidental draining of the water tank.

#### **WATER TANK SLEEVES**

**7.008** If so required The United Plastic Fabricating water tank shall contain the appropriate number of tank sleeves for plumbing to the rear of the apparatus. This should only occur as a last possible resort.

#### **WATER TANK FILL TOWER**

**7.009** The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" polypropylene and shall be a minimum dimension of 8" x 8" at the outer perimeter. The tower shall be located in the left front corner of the tank. The tower shall have a 1/4" thick removable polypropylene screen and a polypropylene hinged-type cover.

**7.010** A 4" overflow pipe shall be installed approximately halfway down the fill tower and extend through the tank and exit underneath the vehicle.

#### **MIDSHIP FIRE PUMP**

**8.001** The fire pump shall be a Hale QMAX, 1500 gpm single stage midship mounted Class A centrifugal pump. The pump shall be optioned with all heavy duty components to ensure long life, reliability and maintenance savings.

The pump shall be tested, pass and perform all required standards as outlined in all NFPA Standards.

**8.002** Pump system shall have an integral discharge manifold system that allows a direct flow of water to all discharge valves.

#### **PUMP BODY**

**8.003** The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI. All moving parts in contact with water shall be of high quality bronze or stainless steel. Pumps utilizing castings made of lower tensile strength cast iron are not acceptable.

**8.004** The pump body shall be split, on a single plane in two sections for easy removal of the entire impeller assembly, including wear rings and bearings from beneath the pump, without disturbing piping or the mounting of the pump.

#### **FIRE PUMP MOUNTING**

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**8.005** The fire pump shall be mounted within a separate body module that is not directly connected to the apparatus body.

The pump shall be frame mounted; therefore minimizing the likelihood of the pump casing cracking should the apparatus be involved in a collision.

The pump module shall be mounted to the frame in four (4) locations and shall be reinforced appropriately in order to carry the expected load for the life of the apparatus.

**8.006** There shall be Two (2) Whelen Model 3C0CDCR 12v white LED lights with Model 3FLANGEC flanges installed 1 on each side of the pump compartment. The lights will be activated by a switch on or near the light.

### **IMPELLER**

**8.007** The pump shall have one (1) double suction impeller. The pump body shall have two (2) opposed discharge volute cutwaters to eliminate radial unbalance.

The pump shaft shall be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing shall be located immediately adjacent to the impeller. The sleeve bearing shall be lubricated by a force-fed, automatic oil lubricated design, pressure balanced to exclude foreign material. The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.

### **MECHANICAL SEAL**

**8.008** The pump shaft shall be equipped with a high quality maintenance free spring loaded, self-adjusting mechanical seal, capable of providing a positive seal to atmosphere under all pumping conditions. This positive seal to atmosphere must be achievable under vacuum conditions up to 26 inches of HG or positive suction pressures up to 250 PSI. The seal and pump shall be capable of functioning with a teflon backup seal should the seal fail.

### **THERMAL RELIEF VALVE**

**8.009** A Hale Model TRV 120 Thermal Relief Valve shall be provided and installed on the discharge side of the pump. The valve shall function automatically when the water temperature in the pump exceeds 120 degrees Fahrenheit. The valve shall discharge a 3/8" stream of water to the booster tank thereby preventing pump overheating. The valve shall be self-resetting after the temperature of the water in the pump drops below 120 degrees Fahrenheit. The thermal relief valve shall be equipped with visual warning lamp.

### **AIR OPERATED PUMP SHIFT**

**8.010** The pump shift actuating mechanism shall be yellow in color, air operated from a valve in the cab identified as "PUMP SHIFT". Full instructions for shifting the pump shall be inscribed on the valve plate. There shall be two (2) green pump system shift indicator lights in the chassis cab. The first light shall become energized when the pump has completed its shift into pump gear and shall be labeled "Pump Engaged". The second light shall become energized when the chassis parking brake has been set and when the pump and the chassis transmissions have been shifted completely into the correct gears for pumping, this light shall be labeled "OK to Pump". A manual back-up method of placing the pumper in pump shall be provided.

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**8.011** There shall be one (1) green pump system shift indicator light located on the operator's panel. This light shall only become engaged when the chassis parking brake has been set and when the pump and the chassis transmissions have been completely shifted into the correct gears. The light shall be located adjacent to the throttle control and shall be labeled "Warning: Do Not Open Throttle Unless Light is On"

#### **MASTER DRAIN VALVE**

**8.012** A master pump drain valve shall be located in pump compartment lower than the main body and connected in such a manner as to allow complete water drainage of the pump body and all required accessories. Water shall be drained below the apparatus body and away from the pump operator.

#### **INDIVIDUAL BLEEDERS AND DRAINS**

**8.013** All lines shall drain through the master drain valve or shall be equipped with individual drain valves, easily accessible, labeled and color coded to match the corresponding discharge.

**8.014** One (1) Class 1 Series 115 individual lift up activated drain valve shall be furnished for each 1-1/2" or larger discharge port.

**8.015** Drain/bleeder valves shall be located at the bottom of the side pump module panels. All drains and bleeders shall discharge below the running boards.

#### **1) TRIDENT AIR PRIMER**

**8.016** The pump shall have a Trident Emergency Products, three barrel, compressed air powered, high efficiency, multi-stage, venturi based AirPrime™ System. All wetted metallic parts of the priming system are to be of brass and stainless steel construction. A clearly labeled, single panel mounted control shall activate the priming pump and open the priming valve to the pump.

#### **INTAKE RELIEF VALVE**

**8.017** There shall be a Hale stainless steel intake relief valve installed on the intake side of the pump. The surplus water shall be discharged away from the pump operator and terminate with Male NST hose thread. The relief outlet shall be directed below the pump with the discharge terminating in a 2-1/2" male NST connection. The discharge shall be away from the pump operator and labeled "Do Not Cap".

#### **FRONT SUCTION**

**8.018** A 6" front inlet, with black painted long handle cap, shall be provided. The front suction shall extended straight through the front bumper. The inlet pipe shall be constructed of 5" stainless steel pipe. The valve shall be a 5" Heavy Duty Akron Air operated butterfly valve. The valve operator shall be adjusted to operate in a slow close fashion to eliminate the possibility of water hammer. A switch located on the pump control panel shall activate the valve and be equipped with an open / closed indicator.

Documentation shall be provided noting the maximum flow capability through bow suction



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**8.019** The piping will be so constructed to provide maximum water flow to the pump. The respondent shall state how they shall construct the front suction to provide maximum flow.

#### **SUCTION INLETS**

**8.020** Two (2) 6" N.S.T. suction inlets shall be provided, one on the driver side and one on the officer side pump panel. A removable strainer shall be installed on each inlet. They shall be so placed and designed for maximum water flow.

#### **PUMP SUCTION ENDS**

**8.021** The main pump suction inlets shall be furnished with short suction tubes to minimize the distance an exterior appliance protrudes beyond the pump panel. Yet the tubes shall be long enough to quickly and efficiently accept appliances and hard suction hose. A 6" NST chrome plated long handle pressure vented cap shall be installed on each main inlet of the pump.

#### **AUXILIARY SIDE SUCTION(S)**

**8.022** A total of two (2) Auxiliary Side Suctions shall be provided. One (1) 2-1/2" auxiliary suction shall be provided at the driver side pump panel, and one (1) on the officer's side pump panel. The 2-1/2" auxiliary suction shall terminate with a removable strainer, chrome plated 2-1/2" NST female swivel with a chrome plated plug and retaining chain.

#### **TANK TO PUMP**

**8.023** There shall be Two (2) 3" tank to pump lines. The water tank will be so constructed to facilitate two 3" tank to pump discharges located in the bottom of the tank. One of the discharges will be near the front of the tank and one will be located near the rear of the tank. This is to ensure that the maximum amount of water possible will be drained quickly and efficiently from the tank should the pumper be parked on a steep incline during fire operations. These lines shall be plumbed directly into the rear of the pump suction manifold for maximum efficiency. These need to be labeled and front and rear.

**8.024** Piping shall be so located and designed for maximum water flow.

**8.025** A check valve shall be provided to prevent accidental pressurization of the water tank through the pump connection.

**8.026** Two Akron Brass 3" Generation II Swing-Out™ Valves shall be provided between the pump suction manifold and the water tank. The valve shall be equipped with the Akron "Tork-Lok" feature. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. All stainless steel parts shall be 316 grade for increased resistance to corrosion. The valve shall be compatible with a slow closing device. The valve shall be quickly adjustable to one of eight handle options and require only 90° travel.

**8.027** Two (2) Clearly Labeled push/pull control handle shall be located on the operator's

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panel with function plate. These need to be labeled as FRONT & REAR.

### **TANK FILL**

**8.028** One (1) 2 " gated full flow pump to tank refill line controlled at the pump panel shall be provided. A deflector shield inside the tank shall be furnished. Tank fill plumbing shall utilize a 2 " high pressure hose for tank connection to accommodate flexing between components.

**8.029** An Akron Brass 2 " Generation II Swing-Out™ Valve shall be provided between the pump discharge manifold and the water tank. The valve shall be equipped with the Akron "Tork-Lok" feature. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. All stainless steel parts shall be 316 grade for increased resistance to corrosion. The valve shall be compatible with a slow closing devise. The valve shall be quickly adjustable to one of eight handle options and require only 90° travel.

The valve shall carry a 10 year manufacturer's warranty.

A clearly labeled push/pull control handle shall be located on the operator's panel with function plate.

### **TANK LEVEL GUAGES**

**8.030** Total of two (2) There shall be a Whelen model PS Tank, level gauge located behind the rear cab doors on each side of the pumper, as high up as possible. Purchaser will supply the Whelen Lights. Respondent will supply the tanks sending units and wiring and light installation.

### **PUMP PANEL**

**8.031** A simple, non-cluttered, largely labeled, clearly readable and color coded pump panel will be of utmost importance.

**THIS SHALL MATCH OUR CURRENT 352. THIS IS FOR OPERATIONAL PURPOSES ONLY. A DRAWING SHOULD BE PROVIDED TO THE COMMITTEE PRIOR FOR APPROVAL.**

Either side pump panel shall have the following considerations;

- The pump panels shall be aluminum covered in a heavy duty black vinyl material with bright finished trim.
- Access to the pump for inspection purposes shall be easy to do.
- Polished stainless steel trim collars with corresponding colored labeling matching the valve controls shall be installed around all inlets, outlets, valve controls and discharge gauges.
- Discharge drain valves shall have the matching color and labeling as the discharge and be made by Class 1 Series 115 to function by lifting up the controller to open the drain.
- The identification tags for each valve control, inlet and outlet shall be easily read with a contrasting easy to read color in as large a font as possible.
- Each side pump panel shall be equipped with a diamond plate step that shall serve as a shield for the manufacturers supplied pump panel LED Lighting. The lights shall be able to sufficiently illuminate the pump panel to easily read the signage and gauges. The light switches shall be labeled and located on the respective pump panel.

- The respondent shall include a sample large photo of how their labeling and color coding on the pump panel or similar pump panel will look.

### **PUMP THROTTLE AND GOVENOR**

**8.032** The pumper shall be equipped with a Fire Research Incontrol TGA 400 pressure governor and monitor control kit. The unit shall include a hand throttle control knob with quick release in the center of the knob. The unit shall be located on the pump panel and make use of all aspects of its monitoring system.

### **PUMP PANEL AIR HORN SWITCH**

**8.033** An air horn activation switch will be labeled and placed at the pump panel.

### **ENGINE FUEL TANK GAUGE**

**8.034** There shall be a fuel tank level gauge labeled and mounted on the pump panel.

### **VALVE CONTROLS**

**8.035** All push/pull valve controls shall have polished chrome plated zinc tee handles. Guides for the push/pull control rods shall be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls shall be capable of locking in any position. They shall be Akron Brass 2 "Generation II Swing-Out™ Valve shall be provided. The valve shall be equipped with the Akron "Tork-Lok" feature. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. All stainless steel parts shall be 316 grade for increased resistance to corrosion. The valve shall be compatible with a slow closing devise. The valve shall be quickly adjustable to one of eight handle options and require only 90° travel. The control rods shall pull straight out of the panel and shall be equipped with universal joints to eliminate binding.

**8.036** The identification tags for each valve control shall be easily read with as large a font as possible.

The following discharges will make use of said Tee-Handles

- Booster Reel
- Front 1 ¾" Cross Lay
- Middle 1 ¾ Cross Lay
- Rear 2 ½ Cross Lay
- Tank Fill and Recirculating Valve
- 2) Tank to Pump
- MINUTEMAN
- Drivers Side Rear 2 ½
- Blitzfire
- Passenger Side Rear 3"

PHOTO OF OUR CURRENT PUMP PANEL ON ENGINE TWO CAN BE PROVIDED.

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**8.037** The following discharges shall be controlled by horizontal valve controls

- Drivers side Discharge # 1 - 2 ½" NST
- Drivers side Discharge # 2 - 2 ½" NST
- Passenger side Discharge # 3 2 ½" NST
- Deck gun

**8.038** The following will be controlled with manual wheel handle controls with open / closed status indicator.

- Passenger Side 4" LDH Discharge

## **Two (2) MAIN PUMP GAUGES**

**8.039** The pump vacuum and pressure gauges shall be Class 1 liquid filled and freeze proof. The gauges shall be 6.00" in diameter and shall have white faces with black writing, and a pressure range of 30.00"-0-600#.

**8.040** The pump pressure and vacuum gauges shall be installed adjacent to each other at the top of the pump operator's control panel.

**8.041** Test port connections shall be provided at the pump operator's panel. One shall be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They shall have 0.25 in. standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They shall be marked and labeled accordingly.

This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

## **INDIVIDUAL DISCHARGE GAUGES**

**8.042** Each discharge will be equipped with a Fire Research FPA 400 Series Insight Pressure Indicator. The back of the gauges shall be white with black writing.

**8.043** They shall be labeled and installed with color coded bezels to match the discharge valve handle bezel and corresponding discharge surround. The gauge will be placed in close proximity to the discharge handle and if on the driver's side pump panel, be in close proximity to the discharge outlet.

The gauges shall be installed per the manufacturer's recommendations, especially in relation to matching the appropriate parts for the pipe size of the discharge.

## **STAINLESS STEEL INTAKE MANIFOLD**

**8.044** 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.

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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.

#### **STAINLESS STEEL DISCHARGE MANIFOLD AND PIPING ASSEMBLIES**

**8.045** Unless otherwise stated the parts of the water discharge systems that are 2" or larger, that are not part of the pumps integral discharge manifold shall be fabricated with minimum of Schedule #10 Type 304 stainless steel. All threaded fittings shall be a minimum of Schedule #40 stainless steel. The discharge manifold and piping assemblies shall have radiused sweep elbows to minimize water turbulence. The manifold shall be welded and pressure tested prior to installation. The stainless steel manifold and discharges shall be attached to the pump discharge and have additional brackets as required to support the discharge manifold, valves and related components.

The stainless steel manifold and piping assemblies shall have a ten (10) year warranty.

#### **FRONT AND MIDDLE 1 ¾" CROSSLAYS**

**8.046** All crosslays should be as low as possible, near shoulder height for easy access and deployment.

**8.047** Quantity Two (2) - Both the front and middle Crosslay's compartments shall be provided above the side mount operator's pump panel accommodating 200' of 1-3/4" double jacket hose spaced single stack. One (1) 2" Akron Generation II ball valve with mechanical swivel shall be installed on each crosslay to allow deployment off either side of the pumper. The valve shall be plumbed to the crosslay with 2" high-pressure flexible hose and stainless steel couplings and end with an 1 ½" NST Fitting. The high pressure hose shall be tested to 1200 PSI. The crosslay valves shall be push-pull controlled at the pump operator's panel.

Each crosslay will include a swivel to enable use off either side of the pumper.

Each crosslay shall be equipped with a drain valve.

Stainless Steel scuff plates shall be provided in areas around the cross lay's that are susceptible to scuffing.

Stainless steel nylon guided rollers shall be provided at each end of the crosslay hose bed to facilitate deployment of hose. Vertical rollers shall be installed on each side of the hose bed opening, and a horizontal roller shall be installed under the opening.

#### **REAR 2 ½" CROSSLAY**

**8.048** One-(1) pre-connected crosslay compartment shall be provided above the side mount operator's panel accommodating 200' of 2-1/2" double jacket hose stacked side by side or double wide. Stainless steel nylon guided rollers shall be installed at each end with stainless steel scuff plates around the perimeter.

One-(1) 2-1/2" Akron Generation II ball valve with mechanical swivel shall be installed to permit deployment from either side of the pumper. The valve shall be plumbed to the crosslay with 2-1/2" high-pressure flexible hose and stainless steel couplings and end with a 2 ½ NST

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Fitting. The high pressure hose shall be tested to 1200 PSI.

The crosslay valve shall be push-pull controlled at the pump operator's panel.

This discharge shall be equipped with a drain valve.

This crosslay shall be equipped with a swivel to enable use off either side of the pumper.

### **CROSSLAY DIVIDERS (2)**

**8.049** Two (2) crosslay hosebed dividers shall be provided manufactured from 1/4" smooth aluminum plates, extruded aluminum bases mounted in an extruded track for horizontal adjustment, with radius corners, and sanded to prevent damage to the hose.

### **ALUMINUM/HYPALON TRIPLE CROSSLAY COVER**

**8.050** There shall be one (1) triple crosslay cover provided. The top of the cover shall be so constructed of aluminum tread plate to hold the weight of a standing fire fighter who may be operating the deck gun that is in the dunnage compartment. The cover shall be equipped with stainless steel piano hinge, chrome lifts handles, and two (2) hook latches. Red Hypalon end flaps shall be used to secure the hose from falling out of the crosslays. They shall be so constructed at the bottom as to not delay deploying the crosslays.

### **BOOSTER REEL**

**8.051** An aluminum Hannay Booster Hose Reel capable of holding 150' of 1 1/2" NST REELTEX booster hose and nozzle shall be placed in the dunnage area. The reel will be capable of electrical re-wind with manual hand crank back up. The reel motor will be protected from overload with a sized automatic reset circuit breaker. An electric rewind control will be a fully shielded rubber covered button properly labeled and installed in a convenient location. The area where the hose travels away from the pumper will be equipped with sufficient polished stainless steel hose roller guide assemblies from both sides of the dunnage area. Plumbing to the reel will consist of 1.50" Aeroquip hose and a 1.50" valve controlled at the pump panel with a T-handle.

This shall be installed in the dunnage of the engine.

### **PUMP PANEL DISCHARGES**

**8.052** Three (3) 3" piped discharges will be provided. Two (2) installed on the driver's side and one (1) on the officers side of the apparatus. Each will be piped with 3" pipe and controlled with an Akron Generation II gate valves. Each discharge will be equipped with chrome plated 30 degree elbows and chrome plated 2-1/2" NST x 1-1/2" NST male reducer cap and retainer chains.

### **OFFICERS SIDE LDH DISCHARGE**

**8.053** There shall be a large diameter discharge, with 4" plumbing, located on the officers side of the pump module. An Akron Brass 4" Swing-Out™ valve with tork lock feature shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The valve shall not require lubrication of seats or any other internal waterway parts.

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The gear actuator shall be controlled by a hand wheel valve controller. The Hand wheel worm gear shall be connected to the remote mounted valve via a rod assembly. The Hand wheel shall turn a gear sector mounted on the valve for smoother and easier operations under pressure. A position indicator shall show the position of the ball valve as per NFPA 1901. Opening and closing speed shall comply with the current NFPA standard to minimize effects of water hammer.

The discharge shall terminate with a 30 degree elbow with 5" storz fitting then a 5" to 4" storz fitting with a 4" storz cap and retainer chain. This discharge shall be able to connect to 4" or 5" storz LDH without the need of adding another fitting. This setup will have 2 different colored fittings to differentiate between the 5" and 4" Fittings.

### **REAR DISCHARGES**

**8.054** Three (3) 3" Discharges w/3" Akron Generation II gated discharge outlets shall be installed to the front of the hose bed, two on the Driver's Side and one on the Officers Side of the apparatus. Each will be piped with 3" pipe.

#### **1 ¾" REAR DISCHARGE**

**8.055** There shall be a discharge piped through the front of the hose bed to feed the hose bed that is closest to the Officers side. The discharge shall be piped with 2" Pipe, with an Akron Generation II valve, terminating with a 1 ½" NST fitting and capable of flowing 250 gpm.

#### **3" REAR DISCHARGE**

**8.056** There shall be a discharge piped through the front of the hose bed to feed the hose bed that is closest to the Officers side. This discharge will be piped with 3" pipe w/ an Akron Generation II valve and be so designed to feed the hose load on the upper portion of the fold down shelf on the Officers Side of the rear hose bed. This discharge will terminate with a 2 ½" NST fitting.

### **DECK GUN AND PLUMBING**

**8.057** A TFT CROSSFIRE WITH TFT EXTENDAGUN Pre piped Deck gun shall be provided. The gun shall include a stream shaper and smooth bore stacked tip set. The gun shall be able to flow 1,250 gpm. The piping shall be a minimum of 3" stainless steel with One (1) Akron Generation II valve. The valve will be controlled at the pump panel. A drain line and valve shall be included. A proper height raised flange or extend-a gun feature shall be selected to ensure the unobstructed use of the deck gun. The piping shall be properly supported and braced for its intended use. If so warranted the gun should be connected to the vehicles monitoring and warning system.

**8.058** The stacked tip set with stream shaper shall consist of four (4) tips with the base tip having a 2-1/2" female NH swivel inlet and 2" outlet. The other tip sizes shall be 1-3/4", 1-1/2" and 1-3/8". Each tip shall be laser engraved with an orifice size, thread size.

### **HOSEBED LAYOUT**

**8.059** The hose bed shall include 3 Adjustable heavy duty aluminum hose bed dividers.

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Each hose bed divider shall have an oval shaped hand hold slot to assist in moving the divider. The dividers shall be adjustable from side to side in the hose bed to accommodate varying hose loads.

**8.060** From Drivers side to Officers Side

HOSEBED #1 – 200' OF 2 ½" DOUBLE JACKET HOSE FLAT PACKED – 1 WIDTHS WIDE.

HOSEBED #2 – 400' OF 3" DOUBLE JACKET HOSE FLAT PACKED – 2 WIDTHS WIDE.

HOSEBED #3 – 1500' OF 5" LDH FLAT PACKED.

HOSEBED #4 – 300' OF 1 ¾" DOUBLE JACKET HOSE FLAT PACKED – 1 WIDTHS WIDE.

HOSEBED #5 – 200' OF 2 ½" DOUBLE JACKET HOSE FLAT PACKED – 1 WIDTHS WIDE.

**8.061** The upper inside area of the beavertails will be covered with brushed stainless steel to prevent damage to painted surface when hose is removed.

**8.062** The flooring of the hose bed will be removable aluminum grating with the top surface corrugated to aid in hose aeration.

**HOSE BED COVER**

**8.063** There shall be a secure net with quick disconnect.

**CROSSLAY COVER**

**8.064** The cross lays shall be a secure net with quick disconnect.

There shall be a secure net with quick disconnect. The covers shall be secured in place as required.

A method of holding the cover in the up position to facilitate the packing of the crosslays shall be provided.

**LEFT AND RIGHTSIDE RUNNING BOARD**

**8.065** A modular bolt-on running board shall be installed on both sides of the pump module. The running boards shall be constructed of anti-slip tread plate. The outside edge of the running board shall be flush with the rub rail that is installed on the body to maintain a uniform appearance. The running board shall be installed with sufficient support to form a sturdy, non-deflecting step area for personnel. The running boards shall also have sufficient protection above them to avoid scuffs on the pump panels.

**COMPARTMENTATION**

**9.001** Body and compartments will be fabricated of 5052-H32 aluminum of thickness required for severe fire service duty.

**9.002** The body side and compartment assemblies shall be designed and assembled to provide maximum strength and durability under all operating conditions.



**9.003** Special attention shall be taken to minimize corrosion on all fabricated parts and structural members of the body. All bolt-on components shall be provided with a dissimilar metals isolation barrier to prevent electrolysis and corrosion.

**9.004** The body design shall also incorporate removable panels to access spring hangers, rear body mounts and fuel tank sending units etc.  
The body shall be completely isolated from the cab and pump module structure.

**9.005** Dimensions used in this specification shall be the general outer dimension taken from a typical line diagram of the apparatus. These dimensions shall not take into account items like material thickness, access panels, doors, and other installed options.

**9.006** Side compartments will be an integral assembly with the rear fenders.

**9.007** Circular aluminum fender liners painted job color red will be provided for prevention of rust pockets and ease of maintenance.

**9.008** Compartment flooring will be of the sweep out design with the floor higher than the compartment door lip.

**9.009** Drip protection will be provided above all compartment doors by means of bright aluminum extrusion, formed bright aluminum tread plate or polished stainless steel.

**9.010** The top of the compartment will be covered with bright aluminum tread plate rolled over the edges on the front, rear and outward side. These covers will have the corners welded.

**9.011** Side compartment covers will be separate from the compartment tops.

**9.012** Front facing exterior compartment walls will be covered with bright aluminum tread plate.

**9.013** All Compartment doors shall be AMDOR Roll up doors. The doors shall be Non-painted satin finished non-corroding aluminum. Doors shall be constructed using 1" extruded double wall aluminum slats which will feature a flat smooth interior surface to provide maximum protection against equipment hang-ups.

Roll up doors shall have drip pan covers mounted to the top of the compartments.

**9.014** The doors shall be so designed and manufactured with appropriate seals to prevent seepage of moisture, road dirt and contaminants. They shall also be manufactured to resist corrosion and degradation caused by salt, sand and other environmental contaminants

**9.015** A polished stainless steel lift bar shall be provided for each roll-up door. Lift bar shall be located at the bottom of the door and have latches on the outer extrusion of the doors frame. A ledge shall be supplied over lift bar for additional area to aid in closing the door. The doors

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shall be able to be opened with one gloved hand. The exterior surface of each slat shall be flat.

**9.016** To conserve space in the compartments, the spring roller assembly shall not exceed 3.00" in diameter. A garage style roll door shall not be acceptable. The header for the roll-up door assembly shall not exceed 4.00".

**9.017** A heavy-duty magnetic switch shall be used for control of open compartment door warning lights.

**9.018** All compartments shall be self-draining

**9.019** The high side compartment doors shall be equipped with pull straps.

**9.020** Shelving and pull out trays shall have reflective trim on their faces and sides so visible when the compartment doors are open or the trays are pulled out.

#### **DRI-DEK MATTING**

**9.021** Dri-Dek brand matting black in color shall be provided on the bottom of each compartment or bottom of each slide out tray and shelf.

**9.022** The aluminum frame body around the aluminum non-painted roll up door components shall be painted red job color to match the rest of the pumper.

**9.023** All compartments will be equipped with Whelen Fluorent Plus, Model F\*\*PC RED LED compartment light strips. In order to insure proper sizing the light strips will be supplied by the manufacturer. The strips shall be centered vertically along each side of the door framing. Opening the compartment door shall automatically turn the compartment lighting on. To insure proper custom size the manufacturer will be responsible to purchase and install these Whelen Lights.

**9.024** Compartments D-1,D-3, O-1, O-3 and the rear compartment shall be equipped with tracks for mounting shelf(s). These tracks shall be installed vertically to support the adjustable shelf(s), and shall be full height of the compartment. The tracks color shall match the compartment interior.

**It is understood that the upper and lower depth of the compartments shall vary to meet the needs and wishes of the purchaser to have the water tank manufactured to insure that the top of the hose load is as low as possible.**

**Minor variations to the compartment measurements may be taken for design and engineering purposes or in order to use a respondents stock or standard design as a cost savings measure for the purchaser.**

**9.025** The fire body shall be as wide as possible to provide the maximum amount of usable hose bed and compartment space. The side body compartments shall be as deep as possible in the upper and lower areas.

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## **COMPARTMENTATION DRIVERS SIDE**

### **9.026 Ahead of the Rear Wheels- D-1**

This compartment shall be 48" w x 63" h x 25" deep +-

**9.027** The upper portion of the compartment shall include pac trac mounting board.

**9.028** An adjustable height tray with 3" sides capable of holding 150 Lbs will be included and positioned approximately 16" up from the bottom of the compartment. This shall have adjustable height tracks for full compartment lower height.

## **D-1 COMPARTMENT**

**9.029** In the D-1 compartment shall be an area capable of holding 1 Motorola XTL2500 radio control head model 05, standard palm microphone with clip and speaker model HSN4032. This compartment shall have low current battery and ignition. A ground wire shall also be installed for use with mic clip.

### **Above rear wheels-D-2**

**9.030** This compartment shall be 62" w x 30" h x 14" d.

**9.031** This compartment must be capable of holding three (3) of the Purchasers supplied Scott 5.5 SCBA with 45 minute bottles. It must also hold three (3) Purchaser supplied Portable radios with chargers. Conduit and ground and power wiring for 15-20 amps from the battery for the portable radio chargers will be provided by the respondent.

2 horizontal mounting tracks shall be installed in this compartment for mounting SCBA.

**9.032** The respondent shall include and mount 3 Ziamatic Walkaway SCBA Brackets to hold 3 OSFD Scott air pacs with 45 minute bottles.

### **Additional Compartment in wheel well area ahead of the rear wheel.**

**9.033** A fabricated slide out speedy-dri hopper will be fabricated in this compartment.

**9.034** The area behind the rear wheel will be used for the diesel fuel fill.

### **Behind rear wheels D-3**

**9.035** This compartment shall be 48" w x 63" h x 25" + - Deep. It shall have a slide out tray on the compartment floor with 3" sides capable of holding 300 Lbs.

Two shelves will need to be fabricated for this compartment to hold the FOLLOWING equipment.

S 788E2 Cutter & SP E552 Spreader.

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This compartment will have shoreline power strip and shoreline power for the battery charging. Location for these items will be approved prior to build.

### **COMPARTMENTATION OFFICERS SIDE**

**9.036** The compartments on the officers side will be approximately  $\frac{3}{4}$  height. The top of these compartments shall be capable of serving as the shelf to hold a Zico Drop Down Hard Suction Rack capable of holding 3) 10' lengths of 6" Hard Suction.

#### **Ahead of rear wheels O-1**

**9.037** This compartment will be 48" w x 44" h x 25" d +-  
It shall have an adjustable shelf.

**9.038** This compartment shall have a rack capable of holding four (4) Spare Scott 45 minute SCBA Cylinders. The type of rack proposed shall be approved by the purchaser.

#### **Above rear wheels O-2**

**9.039** This compartment shall be 62" w x 9.5" h x 14d +-  
  
This will be bottom hinged D handle opening painted the same color of the body door.

### **Additional wheel well area compartments**

**9.040** There shall be two compartments, one in front and one behind the rear wheels. Each compartment shall be capable of holding three (3) Spare SCBA Cylinders. They must be so constructed to prevent water, road dirt, dust and contaminants from entering. The door shall be polished stainless steel.

#### **Behind rear wheels O-3**

**9.041** This compartment shall be 48" w x 44" h x 25" d + -  
It shall have a slide out tray on the compartment floor with 3" sides capable of holding 300 lbs.  
It shall have an adjustable shelf for the upper portion.  
The lower portion shall be open into the rear tailboard compartment.

### **COMPARTMENTATION REAR**

#### **Rear Compartment**

**9.042** The rear tailboard compartment shall be made as large as possible with due consideration for the hose bed, rear steps to access the hose bed, rear camera.

Rear camera location will be approved at the pre build meeting.

Adjustable shelf racks shall be installed in this compartment.

This compartment shall be open to both side rear compartments.

### **BEAVER TAIL / TAILBOARD**

**9.043** A heavy duty Beaver Tail / Tailboard a minimum of 16" deep shall be provided. The

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walking surface shall be aluminum diamond plate. The tailboard shall be equipped with proper rub rails or bumper system. This shall have 45 degree corners.

### **AGGRESSIVE WALKING SURFACE**

**9.044** All exterior surfaces designated as stepping, standing, and walking areas will comply with the required average slip resistance of the current NFPA standards.

### **LOUVERS**

**9.045** All compartments shall have venting louvers to provide the proper airflow inside the body compartments and to prevent water from dripping into the compartment.

### **BODY RUB RAILS**

**9.046** Rub rails shall be installed beneath the compartment doors to protect them from damage should the body be brushed or rubbed against another object. They shall be fabricated for easy replacement should they become damaged. The rub rails shall be black poly.

### **HARD SUCTION**

**9.047** Above the Officers side compartments there shall be a Ziamatic- Zico Drop Down Hard Suction Rack Model # HSS-CWT.

**9.048** The Hard Suction Rack shall include three (3) 10' lengths of Kochek NH 6" Light Weight Hard Suction equipped with long handles on the female coupling and rocker lugs on the male coupling.

**9.049** The rack shall have reflective trim and flashing amber LED warning lights, Whelen Model OSA00FCR on the front and back sides of the brackets, visible when they are in the down position.

The rack will be integrated into the cab warning system.

The rack will have an electrical locking system.

Locking and unit control switches shall be clearly labeled and outside the operational area of the unit.

### **LADDER STORAGE**

**9.050** There shall be a ladder rack on the Drivers side of the pumper. The ladder rack shall make use of two independent electric / hydraulic powered arms. One arm will function off the front of the Officers side compartments and the other arm will function off of the rear of the Officers side compartments. The arms of the rack shall be so designed as to not interfere with the suction hose and bracket when in the stowed position as well as not interfere with the rear tail or upper and lower warning lights.

**9.051** When in the stowed position the ladders shall be carried above the DRIVERS side of the rear hose bed. The side wall of the hose bed may be lowered to keep the height of the ladders within the maximum height of 10'2" .

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**9.052** When lowered for use over the DRIVERS side of the pumper the side brackets shall display visible reflective trim and flashing amber Whelen Model OSA00FCR LED lights on the front and back sides of the brackets, visible when they are in the down position. The ladder rack will be connected to the apparatus warning system in the cab to notify the driver if it is not stowed.

**9.053** When lowered for use the ladder rack shall have the middle width of the ladders at approximately 4' off the ground.

**9.054** The ladder rack shall be equipped with power actuated locks which will only activate when the air brake is set.

**9.055** Locking and unit control switches shall be clearly labeled and outside the operational area of the unit.

**9.056** The following will be included and properly mounted on the ladder bracket to protect against unnecessary wear and tear.

DuoSafety Ladders

1200-A 28' 2 Section ladder DUO SAFETY ONLY

775-DR 14' DOUBLE END ROOF LADDER DUO SAFETY ONLY

585-A 10' Folding attic ladder DUO SAFETY ONLY

**9.057** One (1) 8' Pike Poles (Supplied by the Purchaser) will be mounted on the ladder rack. Respondent shall provide the mountings for said poles. Mounting To be determined at Pre- Build conference.

#### **FOLDING STEPS ON FRONT OF DRIVERS SIDE BODY COMPARTMENTS**

**9.058** Three (3) folding steps shall be provided on the rear of the bulkhead of the cab on the driver's side. The folding steps should be able to be used as a hand hold with openings wide enough for a gloved hand. All steps shall provide adequate surface for stepping conforming to NFPA-1901 requirements, shall be provided on the front face of the Drivers side compartments. Each step shall have an LED light at the top and bottom of each step to illuminate the stepping areas. The steps shall be mounted to accommodate access to the upper body area with a maximum of 18" height between each step.

#### **FOLDING STEPS ON FRONT OF OFFICERS SIDE BODY COMPARTMENTS**

**9.059** There shall be two (2) folding steps on the Officer side. The folding steps should be able to be used as a hand hold with openings wide enough for a gloved hand. All steps shall provide adequate surface for stepping conforming to NFPA-1901 requirements, shall be provided on the front face of the Officers side compartments. Each step shall have an LED light at the top and bottom of each conforming to NFPA-1901 requirements, shall be provided on the front face of the Officers side compartments, the steps shall be mounted to accommodate access to the upper body area with a maximum of 18" height between each step.

They shall be so positioned as to not interfere with the operation of the ladder rack.

**9.060** If it is determined that the folding steps will interfere with the ladder rack, provisions will be made to properly re-enforce the officers side pump panel to accept the weight and use of the folding steps.

#### **REAR STEPS**

**9.061** The successful respondent shall properly design a rear stepping system that will allow fire fighters to safely access the rear hose bed. The system may include a minimum of (4), fixed diamond plate steps or a minimum of (4) or more folding steps provided at the rear of the hose bed, (2) on each side of the pumper. The steps should be capable of being used as a hand hold. All steps shall provide adequate surface for stepping conforming to NFPA-1901 requirements. Each step or area shall have LED lights to safely illuminate the steps. It is the intent of these steps to give safe access to the rear hose bed of the pumper. Steps and grab rails shall be provided at any area that personnel may need to climb.

#### **REAR DIAMOND PLATE STEP**

**9.062** There shall be a rear diamond plate step located below the hose bed and above the rear compartment. This step will be used to assist with operations at the rear hose bed and shall also serve as a protective shield for the backup camera.

#### **GRAB RAILS**

**9.063** In addition to the grab rails installed on the cab additional grab rails shall be installed on the body. All handrails, unless otherwise stated, shall be constructed of knurled aluminum of not less than 1-1/4" in diameter. All railing shields and brackets shall be black painted, and shall be bolted to the body with stainless steel bolts and gasket functioning material. The lower bracket on all vertical handrails shall have a drain hole drilled in it at the lowest point.

The following handrails shall be provided on the apparatus:

- There shall be a handrail installed on the top driver's side front of the body.
- There shall be a handrail installed on the top Officers side front of the body.
- There shall be a large vertical handrail installed at the left rear of the apparatus.
- There shall be a large vertical handrail installed on the right rear of the apparatus.

#### **Mounting Equipment**

**9.064** The successful respondent shall mount all firefighting equipment in the cab, compartments and on the pumper. Unless otherwise specified and when practical PAC tool mountings shall be provided by the respondent and be of a nature to insure ease of accessibility and of a safe and secure nature. Protection of the equipment, vehicle occupants and protection from water seepage and corrosion because of dissimilar metals must be insured. All mountings should be done to NFPA Standards.

**9.065** All bidders will have the opportunity to measure and discuss the placement of equipment with the Purchaser's Truck Committee before the bid date. One week's notice must be given to schedule said appointment.

**9.066** An inventory list of items and equipment supplied by the purchaser is included as an addendum at the end of this RFP. Items and equipment provided by the purchaser and Items and equipment included in the bid specification must be suitably mounted and the cost of the mounting shall be included in the proposal price.

**9.067** The Successful Respondent will consult with the Purchaser who will play an important role with regards to the placement of the equipment and the types of mounts to be used. The Purchaser will have the final say as to the mounting locations of the equipment.

**9.068** Mounting of Items such as Two Way Radios and Computer Terminals will not be included in the mounting of equipment bid. However, certain areas may require the respondent to provide conduit, races, chases or power feeds as indicated in the RFP.

**9.069** Cost of mountings, hold downs and labor for the agreed upon inventory of equipment and equipment supplied by the successful respondent must be included in the bid price.

**9.070** Equipment that is mounted in an area that may be prone to scuffing, scraping, wear or tear to painted or colored surfaces must be properly protected with polished bright finished plates to prevent such damage. Said plates shall be installed to prevent rust or the trapping of water or other contaminants. The cost of said protection plates must be provided in the bid price.

**9.071** Screws and fasteners used for the mounting of equipment must be those that do not rust and do not react with the metals that they are fastening to.

#### **REAR TOW EYES**

**9.072** Two (2) painted tow eyes shall be furnished on the rear of the vehicle. The tow eyes shall be made from plate steel and shall be bolted directly to the chassis frame rails with grade 8 bolts and shall extend below the body. The tow eyes shall be smooth and free from sharp edges, and have a minimum eyelet hole of 2-1/2". The tow eyes shall be painted.

#### **EXTERIOR PAINTING**

**10.001** A high quality premium painting system with an established history of long lasting performance shall be used. Each respondent shall provide information about the steps taken to provide a quality long lasting paint finish.

**10.002** At a minimum all exposed metal surfaces not chrome plated, polished stainless steel or bright aluminum tread plate shall be thoroughly cleaned and prepared for painting. All irregularities in painted surfaces shall be rubbed down and all seams shall be caulked or properly sealed before the application of the finish coat.

**10.003** All removable items such as brackets, compartment doors, door hinges, trim, etc. shall be removed and painted separately to insure finish paint behind all mounted items. Body assemblies that cannot be finish painted after assembly shall be finish painted before assembly. All painted surfaces shall be thoroughly sanded, solvent cleaned.



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**10.004** Both aluminum and steel surfaces to be painted shall be primed with a two (2)-Component primer which is compatible with the finish coat.

**10.005** The Custom Cab shall be one tone high luster polyurethane paint finish.

**10.006** All painted surfaces shall be a minimum of three (3) coats of paint. The paint shall be deep colored fire engine red. The actual colors and paint numbers shall be agreed upon by the successful respondent and the purchaser at the Pre-Build Conference. The successful respondent shall be prepared to provide color samples for the committee to select from at the Pre-Build Conference.

**10.007** The apparatus shall be finish painted with three (3) coats of polyurethane base clear system.

#### **PAINT CORROSION PROTECTION**

**10.008** All exterior fastener locations that penetrate the paint on the cab or modular body shall be treated with Electrolysis Corrosion Kontrol (ECK)

**10.009** All respondents shall clearly define the process followed and used for corrosion protection, surface and paint preparation.

#### **PAINTED FRAME**

**10.010** The frame rails and body sub-frame shall be coated with a heavy duty glossy black finish.

#### **PAINT COMPARTMENT INTERIOR**

**10.011** The compartment interior will be painted with a gray spatter finish for ease of cleaning and to make it easier to touch up scratches and nicks.

#### **REFLECTIVE STRIPES**

**10.012** Three black reflective stripes will be provided across the front of the cab and along its sides. The reflective band will consist of a 1" black stripe at the top with a 1" gap than a 6" black stripe then a 1" gap and a 1" black stripe on the bottom.

**10.013** The areas on the body of the pumper, between compartments that are painted red shall have the same matching black stripe pattern.

**10.014** The areas of the non-painted roll up compartment doors shall have the same reflective pattern except the area showing the red gaps will be replicated with 1" black reflective striping. The D-1 and O-1 doors shall have a reversed "Z" pattern on them.

#### **STRIPING, CHEVRON STYLE, REAR BODY**

**10.015** The apparatus shall have the NFPA required 6" red and yellow reflective Chevron style striping affixed to the right, left and if needed to comply with the 50 % rule the center portions of the rear hose body above or around the rear compartment. The striping shall be set in a manner to have the effect of an inverted "V" shape. The stripe shall travel low to high from the

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outside to the inside.

**10.016** The chevron striping shall consist of 3M part numbers 1172 EC, red and 3983, fluorescent yellow-green. These colors may change, the respondent needs to provide color options to the committee. Only 3M VIP Reflective Striping shall be used.

**LETTERING** Sign Gold - Gold Leaf Type Product

**10.017** The respondent shall affix 2) purchaser supplied emblems on the 2) front doors of the cab. The purchasers has the file for the door emblem.

**10.018** On the front corners of each side of the cab shall be a corresponding numeric number mounted vertically with 3" 22KT Burled Gold laminate gold leaf letters, with left hand shading and right hand outline. Shading colors TBD.

**10.019** "Old Saybrook" Below the center of the front windshield will be 3" 22KT Burled Gold laminate gold leaf letters, with left hand shading and right hand white outline. All Shadowing to be determined.

**10.020** On the rear doors of the cab the following lettering will be done in as large a font as possible while maintaining balance and aesthetics. The lettering shall be a 3D Shadow Shadowing to be determined. Highlight in 22KT Burled gold laminate gold leaf letters with a Copperplate Bold or similar Font;

Lettering on the door will either be a two line or a three line OLD SAYBROOK FIRE DEPT. Finalization of lettering on this door will be announced at Pre-Bid meeting.

**10.021** On each side of the cab above the front wheels there will be "corresponding engine company" The lettering shall be a 3D Shadow shall be determined with Highlight in 22KT Burled gold laminate gold leaf letters with a Copperplate Bold or similar Font.

**10.022** On the rear tailboard compartment will be a large red with shadowing reflective "corresponding engine company"

**10.023** A 22KT Burled gold leaf laminate stripe with pinstripes above and below will be included along the two tone color break of the cab.

## **SIGNAGE**

### **CAB SAFETY SIGNS**

**11.001** All NFPA required safety and warning signs shall be provided.

The following safety signs shall be provided in the cab:

**11.002** A label displaying the maximum number of personnel the vehicle is designed to carry shall be visible to the driver.

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**11.003** “Occupants will be seated and belted when apparatus is in motion” signs shall be visible from each seat.

**11.004** “Do Not Move Apparatus When Light Is On” sign adjacent to the warning light indicating a hazard if the apparatus is moved (as described in before mentioned section).

**11.005** A warning label stating that “Fire Helmets shall not be worn and must be properly secured” visible from all seats.

**11.006** A label displaying the height, length, and GVWR of the vehicle shall be visible to driver.

### **CHASSIS DATA LABELS**

**11.007** The following information shall be on labels affixed to the vehicle in convenient locations:

#### Fluid Data

- Engine Oil
- Engine Coolant
- Chassis Transmission Fluid
- Pump Transmission Lubrication Fluid
- Drive Axle Lubrication Fluid
- Air Conditioning Refrigerant
- Air Conditioning Lubrication Oil
- Power Steering Fluid
- Cab Tilt Mechanism Fluid
- Transfer Case Fluid
- Air Compressor System Lubricant
- Generator System Lubricant
- Front Tire Cold Pressure
- Rear Tire Cold Pressure
- Maximum Tire Speed Rating

#### Chassis Data

- Chassis Manufacturer
- Production Number
- Year Built
- Month Manufactured
- Vehicle Identification Number
- Paint colors and numbers

#### Manufacturers weight certification:

- Gross Vehicle (or Combination) Weight Rating (GVWR or GCWR)
- Gross Axle Weight Rating, Front
- Gross Axle Weight Rating, Rear

**11.008** A warning sign will be placed below the hose bed that states “Riding on the Tailboard

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Prohibited”

## **WARRANTY**

**12.001** The apparatus shall be warranted to be free from defects in materials and workmanship under normal use and service. Each proposer shall supply, as part of their bid package, a copy of the warranty or warranties that they propose to provide, and in no case shall it be less than three (3) years on the entire apparatus. The cab and body including materials and paint shall be warranted for at least 15 years. Warranties shall begin at the acceptance of the vehicle by the Purchaser.

Failure to provide the warranties for all major components may be cause for rejection of the bid package.

Normal wear and deterioration is excluded from this warranty.

**12.002** All warranty work is to include labor. It shall also be the successful respondent’s responsibility to cover any towing charges incurred for any warranty claims if the apparatus is ever disabled or unsafe to operate.

**12.003** This warranty shall be printed on a company form and shall be included with your bid. If any component manufacturer has a longer warranty, it shall be included at no additional cost to the purchaser. A copy of the component manufacturer's warranty shall be placed in the service manual included with the complete apparatus upon delivery. The successful respondent / bidder shall be the single source for all warranty claims on the apparatus.

### **COMPONENT WARRANTY**

**12.004** The successful respondent shall provide adequate warranty and documentation for each component of the pumper that supplies a warranty of their product. Below is a minimum list of warranties that will be accepted;

- Life time frame rail warranty
- Lifetime UPR Poly Tank warranty
- A fifteen (15) year structural warranty.
- A fifteen (15) year paint warranty. The first 10 years shall be non-prorated.
- A fifteen (15) year rust, corrosion and dissimilar metals reaction warranty shall be provided.
- A ten (10) year AMDOR roll-up door warranty
- A ten (10) year stainless steel and fabricated plumbing warranty.
- A ten (10) year valve and gate warranty.

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- A five (5) year Hale pump, component parts and labor warranty
- A five (5) years or 100,000 miles engine warranty.
- A five (5) year unlimited mileage transmission and transmission cooler warranty.
- A five (5) year electrical warranty.
- A five (5) year electronic module and component warranty
- A five (5) year Camera System warranty
- A five year warranty on the hard suction and ladder racks.
- A three (3) year Steering system warranty
- A three (3) year ABS and ATC warranty
- A three (3) year unlimited front and rear axle warranty.
- A three (3) year unlimited air and brake system warranty
- A three (3) year ladder and suction rack/ bracket warranty
- OEM fabricated or purchased parts shall be free of defects or break downs in material and workmanship for a period of one (1) year after acceptance of the pumper.

### **Backup Warning System**

**13.005** Provide pricing for a backup monitoring system. The system will include an audible beeping warning sound in the cab. The beeping will get faster as the pumper approaches an object and become a steady beep as it gets real close.

## **Equipment**

### **MISCELLANEOUS EQUIPMENT TO BE FURNISHED BY THE RESPONDENT.**

**14.001** pt. touch-up paint for each color used.

**14.002** A bag of stainless steel nuts and bolts, as used in the construction of the apparatus.

### **WHEEL CHOCKS**

**14.003** There shall be two Ziamatic AC-2 wheel chocks provided with the apparatus. One wheel chock mounted in front of and one behind the driver's side rear wheels.

### **DOT REQUIRED DRIVE AWAY KIT**

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**14.004** Three (3) triangular warning reflectors with carrying case shall be supplied to satisfy the DOT requirement.

#### **Miscellaneous Equipment List**

##### **14.005**

This equipment bid shall be a separate bid from the custom pumper bid, with each item individually listed, with the price associated with the items. The Old Saybrook Fire Department reserves the right to add/remove items (based upon bid price) from the list, if it is found in the best interest of the town. Price must be good for one full year.

Item Number	# of Each	Description
S 788E2	1	Hurst eDRAULIC Cutter
SP E552	1	Hurst eDRAULIC SPREADER
Blowhard QUICKIE	1	Blowhard Quickie Vent Fan
Booster Hose Spanner Wren	1	Spanner Wrenches for Niedner Reeltex hose
Niedner Reeltex 1.5" hose	1	150 feet of Niedner Reeltex Hose
SSTFD-2000	1	2000 Gallon Frameless Fol-da-Tank
H700-40-45NH	1	LDH Hydrant Valve
Mount for above item	1	Mount for above item
Honda EU2000i	1	Honda Generator w/ Light
Akron 7982-7983	2	Akron Revolution Intake Storkz Inlet 4"
ELKXDSHUTOFF25PG	2	2.5" XD Shutoff Nozzle
ELKXDSHUTOFF15PG	4	1.5" XD Shutoff Nozzle
ELKCHIEFXD15MRT	2	CHIEF XD 1.5" MID-RANGE Tip
ELK188XD	2	188XD Long Barrel Smooth Bore 1.5"

#### **Equipment Supplied by the Purchaser**

**15.000** The below listed equipment is being supplied by the purchaser and shall be properly mounted by the respondent.

The following will be mounted between the forward facing rear seat and the passenger side door against the rear wall pac trac panel or on deck of the cab;

One - 2 ½ gallon Pressurized water extinguisher

One Set of Irons – Axe and Halligan Mated together.

Two Rechargeable Box Lights with wiring.

Three Hi-Vis Traffic Vests

One AED mounted

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The following will be mounted between the forward facing rear seat and the Driver's side rear door against the rear wall pac trac panel or on the deck of the cab;

One Set of Irons – Axe and Halligan Mated together.

Two Rechargeable Box Lights with wiring.

Three Hi-Vis Traffic Vests

The following will be mounted in the upper portion of compartment D-3

Bolt Cutters

Short Handle Flat Shovel

2 Push Brooms (Mounting Location TBD at prebuild Conference)

The following will be mounted at various locations around the body, compartments or cab of the pumper.

1) Hydrant/Spanner wrench mounting set- Elkhart # 470 w/ 2) T-464 spanners and one S-454 Hydrant Wrench

2) Set of Spanner wrenches –Kochek KS34

1) Rechargeable Box light with wiring for the Officer Location TBD

1) Rechargeable light for the driver – Wiring to be provided by respondent. Location TBD.

1) Dry Chem, 1) CO 2, all w/ mounting brackets. Location TBD

Hose Appliances to be mounted in Compartments. The following PAC tool mountings shall be supplied by the respondent.

For Storz Fittings PAC 1040 Series

For NST Double Males and Females Mated together PAC 1042 Series

Appliances supplied by the purchaser.

2) 4"to 5" Storz

2) 2 ½"NST to 4" Storz (1040 Series)

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1) 2 ½" NST Double Male and Double Female

1) 1 1/2" NST Double Male and Double Female

1) 2 ½ Nozzle

1) 1 ¾ Nozzle

1) Rubber Mallet

Foam Eductor and pickup tubes listed in the RFP

Mentioned in the RFP for the side of the cab w/ purchaser supplied mounts.

4) Fire Hooks Unlimited Talon Hooks / Two 6' # TAL-6 steel and Two 5' # TAL-5 Steel

4) Brackets # TL-1

2) #MTB-2

2) Probar nests - forked end holder only.

**NO CO2 EXTINGUISHER?**

## **Pumper Trade In**

**16.000** The Town of Old Saybrook has two engines that possibly can be traded in. One is a 1994 E-One Cyclone with 1500 GPM Pump with 1000 gallon water tank.

The second engine is a 2005 Ferrara Inferno with 2000 GPM Hale Fire Pump, 1000 Gallon tank, 50 gallon Class B Foam Tank, 9000 Watt 25 foot light tower and a 15kw generator.

More information on these two above mentioned trucks can be provided if/ when needed.

**Important Information Regarding this RFP**



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17.000 – The Town of Old Saybrook is looking for the pricing on the following purchase options. Bidder must supply all options below. ***The Fire Department may, based upon Town approval, wish to acquire two (2) engines based off the specification RFP. Therefore, the Bidder shall comply with the pricing options so listed as follows:***

Pricing for the Purchase of 1 Custom Pumper with NO DOWN PAYMENT.

Pricing for the Purchase of 2 Custom Pumpers with NO DOWN PAYMENT.

Pricing for the Purchase of 1 Custom Pumper with DOWN PAYMENT/ PREPAYMENT.

Pricing for the Purchase of 2 Custom Pumpers with DOWN PAYMENT/ PREPAYMENT.

Pricing for the Purchase of 1 Custom Pumper with FINANCING OPTIONS AVAILABLE.

Pricing for the Purchase of 2 Custom Pumpers with FINANCING OPTIONS AVAILABLE.

**Overall cost reduction for the Purchase through an order of two (2) engines.**

### **MANDATORY QUESTIONNAIRE**

Pumper Questions to be answered

Please provide the answers to the following questions. The respondent shall answer the questions for the pumper before it is loaded with equipment and water.

Cab Width (excluding mirrors) \_\_\_\_\_

Width of inside of drivers door to the engine cover \_\_\_\_\_

Width of inside of officers door to the engine cover \_\_\_\_\_

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Height of the raised Roof \_\_\_\_\_

Length -center of the front wheel to the back of the cab \_\_\_\_\_

Wheel base \_\_\_\_\_

Total Length \_\_\_\_\_

Cramp Angle \_\_\_\_\_

Angle of Approach \_\_\_\_\_

Angle of Departure \_\_\_\_\_

Height of the bottom of the crosslays from the ground \_\_\_\_\_

Height of the bottom of the Hose bed from the ground \_\_\_\_\_

Top height of the pumper excluding antennae \_\_\_\_\_

Height of the steps into the cab \_\_\_\_\_

Height of the tailboard from the ground \_\_\_\_\_

Height of the center length of hard suction when the bracket is dropped down \_\_\_\_\_

Height of the middle of the ladders when the ladder rack is down \_\_\_\_\_

The usable length of the hose bed from the front wall \_\_\_\_\_

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Length of Motorola Control Cable required from Officers seat to Radio Compartment next to the pump panel as described in 9.030 taking into account cab tilt \_\_\_\_\_

Length of Motorola Control Cable required from Officers seat to Radio Control Heads being mounted on either dash board or Engine Cover between Driver and Officer \_\_\_\_\_

Door Opening Size - exterior doors for the rear under seat compartment \_\_\_\_\_

Thickness of the Aluminum used on the cab skin \_\_\_\_\_

Thickness of the aluminum used on the body skin \_\_\_\_\_

Height from the ground to the floor of the cab \_\_\_\_\_

The GVWR of the pumper is \_\_\_\_\_

Approximate number of days to complete the pumper \_\_\_\_\_

Please add any clarifications regarding your answers to these questions.

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