

**Proposer / Bidder Registration Form**

It is the Bidder's responsibility to make certain they have received any/all addenda relating to their bid / proposal prior to the bid opening date. If you are downloading a bid we strongly encourage you to notify the City of Beverly Purchasing Department at [dgelineau@beverlyma.gov](mailto:dgelineau@beverlyma.gov) and provide us with the following information. In the event any addenda is issued it will be sent to all bidders who have provided the City with this information.

Request for Proposal or Invitation for Bid Number: 13-015

Contact Name:

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Company Name:

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Address:

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City/Town:

State:

Zip Code:

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Phone:

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Fax:

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Cell:

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Email:

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## CITY OF BEVERLY

**13-015**

**BEVERLY FIRE DEPARTMENT TWO (2) FIRE PUMPERS**



**BIDS DUE:**

**THURSDAY, MAY 9, 2013 @ 11:00 A.M.**

**at the Office of the Purchasing Agent, City Hall 191**  
**Cabot Street, Beverly, Massachusetts 01915**

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BID CERTIFICATION:

Complete this page by signing in the space below and return with completed pricing pages.

As required under Chapter 233 and 701 of the Mass. Acts and Resolves of 1983 and Chapter 30B of Massachusetts General Laws, when returning the City's solicitation documents, certification must be made to the following by signing in the space indicated below. **Failure to offer such signature will result in rejection of the bid.**

1. *"The undersigned certifies under the penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word person shall mean any natural person, business, partnership, corporation, union, committee, club or their organization, entity, or group or individuals" and,*
2. *"Pursuant to M.G.L. c.62C, §49A, I hereby certify, under penalties of perjury that to my best knowledge and belief the undersigned bidder has complied with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support."*

This bid is submitted by:

\_\_\_\_\_  
(Complete name of firm to be given here)

Signature: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Business Address: \_\_\_\_\_

Telephone: \_\_\_\_\_ Employer I.D. #: \_\_\_\_\_

Email Address: \_\_\_\_\_

**CERTIFICATE AS TO CORPORATE BIDDER**

I, \_\_\_\_\_ certify that I am the \_\_\_\_\_ of the  
**Corporation named as bidder in the attached Bid Form; that** \_\_\_\_\_,

Who signed said Bid Form on behalf of the bidder was then \_\_\_\_\_ of said  
Corporation; that I know his/her signature hereto is genuine and that said Bid Form was duly signed, sealed and  
executed for and in behalf of said Corporation by authority of its governing body.

A TRUE COPY,

ATTEST: \_\_\_\_\_  
(Name – Type or Print)

PLACE OF BUSINESS:

\_\_\_\_\_  
DATE OF THIS CONTRACT:

\_\_\_\_\_  
Clerk's Signature

Corporate Seal

This Certificate must be completed where Bidder is a Corporation and should be so completed by its Clerk. In the event that the Clerk is the person signing the Proposal on behalf of the Corporation, another Officer of the Corporation must complete this certificate.

NOTE: All bidders shall submit this certification, if a corporation, with the bid.

**Pricing Sheet- Two 1250 Gallons per Minute 750 Gallon Capacity Fire Department Pumper Trucks**

To the City of Beverly, Massachusetts, herein called the Owner, acting through its Purchasing Agent, for the purchase, delivery, and acceptance of two (2) new unused Fire Department Pumper Trucks, as specified in this Invitation to Bid.

Description:

Insert the price for **Two (2)**, 2013 model Year or Newer, New and Unused Fire Department Pumper Trucks.

Model Year of Fire Department Pumper Trucks: \_\_\_\_\_

Write out Model Year of Fire Department Pumper Trucks: \_\_\_\_\_

Price for two (2): \$ \_\_\_\_\_

Write out Price for two (2):  
\_\_\_\_\_

State availability date. The trucks must be built 280 days from the date of award. The City of Beverly shall take delivery and pay for first truck in the City's fiscal year 2014 (July1, 2013 –June 30, 2014) and the City of Beverly shall take delivery and pay for the second truck during the month of July 2015.

First Truck Delivery Time: \_\_\_\_\_ Calendar days

Second Truck Delivery Time: \_\_\_\_\_ Calendar days

All warranties and initial service guarantees are to be submitted with bid. The above price to include and cover the furnishing of all materials, except as herein otherwise specified the performing of all labor, requisite or proper, and the providing of all machinery, tools, equipment, specifications, information to bidders and bid documents. The above price to include delivery of the vehicles to Beverly Fire Department, 15 Hale Street, Beverly, MA 01915

\_\_\_\_\_  
Company

\_\_\_\_\_  
Address

\_\_\_\_\_  
Contact

\_\_\_\_\_  
Phone

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Email Address

In the event of a discrepancy between the numeral price and the written price the lower price shall prevail. In the event of a tie bid a coin toss shall decide the winner.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

**INTRODUCTION  
INVITATION FOR BID REQUIREMENTS**

**GENERAL INFORMATION**

Sealed bids will be received by the Beverly Fire Department until 11:00 A.M., on Thursday May 9, 2013 for the furnishing of all necessary labor, equipment and material for the two (2) 1250 Gallons per Minute/ 750 Gallon capacity Fire Pump Trucks as outlined in the following specifications.

It is the intent of these specifications to secure apparatus constructed to withstand the severe and continuous use encountered during emergency fire fighting services. The apparatus must be of the latest type, carefully designed and constructed with due consideration to the nature and distribution of the load to be sustained.

These specifications detail the requirements for general design criteria of cab and chassis components, aerial device, fire pump and related components, water tank, fire body, electrical components, painting, and equipment.

Apparatus and equipment must meet the specific requirements and intent of the requirements as specified herein. All items of these specifications shall conform to the character of the proposed apparatus and the purpose for which it is intended. Criteria as specified by the National Fire Protection Association Pamphlet No. 1901, latest edition, entitled "Suggested Specifications for Motor Fire Apparatus", as approved by the American Insurance Association and International Association of Fire Chiefs, are hereby adopted and made a part of these specifications the same as if they were written out in full, insofar as they apply and are not specifically modified in the following detailed specifications. Each bidder shall provide only that equipment as required in the following specifications.

The fire apparatus and equipment to be furnished in meeting these specifications must be the products of an established, reputable fire apparatus and/or equipment manufacturer. Each bidder shall furnish satisfactory evidence of the manufacturer's ability to construct, supply service parts and technical assistance for the apparatus specified. Each bidder must state the location of the factory and location for post delivery service.

**BID COMPLIANCE INSTRUCTIONS**

Each bidder must indicate his compliance with these specifications by marking "YES" or "NO" in the appropriate column for each individual paragraph of this specification. Indicating "YES" to a paragraph shall mean full compliance; indicating "NO" shall mean an exception is being taken. Any deviation from the specification, no matter how small, must be so annotated. All exceptions must be fully explained on a separate page, titled "Exceptions", giving reference to the page and paragraph where the exception is being taken. Failure to comply with this requirement shall result in the bid proposal being rejected.

The Beverly Fire Department shall be the sole arbiter as to what exceptions may be allowed or disallowed. In the event a bidder fails to make any indication of compliance for any or all provisions it will be assumed that the bidder is taking total exception to the specification and the bid shall be disallowed.

**FIRE APPARATUS DOCUMENTATION**

The contractor shall supply, at the time of delivery, at least one (1) copy of the following documents:

The manufacturer's record of apparatus construction details, including the following information:

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

- Owners name and address
- Apparatus manufacturer, model and serial number
- Chassis make, model and serial number
- Front tire size and total rated capacity in pounds
- Rear tire size and total rated capacity in pounds
- Chassis weight distribution in pounds with water and manufacturer mounted equipment, front and rear
- Engine make, model, serial number, rated horsepower, rated speed and governed speed
- Type of fuels and fuel tank capacity
- Electrical system voltage and alternator output in amps.
- Battery make, model and total capacity in cold crank amps (CCA)
- Transmission make, model and serial number. Chassis transmission PTO(s) make, model and gear ratio
- Pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
- Pump transmission make, model, serial number and gear ratio
- Water tank certified capacity in gallons or liters
- Paint manufacturer and paint number(s)
- Company name and signature of responsible company representative
- Certification of slip resistance of all stepping, standing and walking surfaces.

The pump manufacturer's certification of suction capability.

A copy of the apparatus manufacturer's approval for stationary pumping applications.

The engine manufacturers certified brake horsepower curve for the engine furnished, showing the maximum governed speed.

The pump manufacturers' certification of hydrostatic test.

The Underwriters Laboratory certification of inspection and test for the fire pump.

The certification of the test for the fixed power source.

Weight documents from certified scale - showing actual loading on the front axle, rear axles and overall vehicle (with the water tank full but without personnel, equipment and hose) shall be supplied with the complete vehicle to determine compliance with NFPA-1901.

Written load analysis and results of electrical performance tests.

The certification of water tank capacity by the tank manufacturer.

The chassis shall be certified by the apparatus manufacturer as conforming to all applicable Federal Motor Vehicle Safety Standards in effect at the date of contract. This shall be attested to by the attachment of a FMVSS certification label on the vehicle by the contractor who shall be recognized as the responsible final manufacturer.

**VEHICLE RECORDS**

The successful bidder shall be responsible for preparing and maintaining a record file of parts and assemblies used to manufacture the apparatus. These records shall be maintained in the factory of the bidder for a minimum of twenty (20) years.

File shall contain copies of any and all reported deficiencies, all replacement parts required to maintain the apparatus, and original purchase documents including specifications, contract, invoices,

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

incomplete chassis certificates, quality control reports and final delivery acceptance documents. The Beverly Fire Department shall have access to any and all documents contained in this file upon official written request.

**BIDDER INSTRUCTIONS**

Submit an original bid and three (3) copies that meet or exceed the minimum specifications herewith. Bids shall be addressed and submitted in accordance with the advertised "Bid Notice". The words "Fire Apparatus Bid", the date, and the bid opening time must be stated on the face of the bid envelope. It is the bidder's responsibility to see that their bids arrive on time. Late bids, telegram, facsimile or telephones bids shall not be considered.

Each bid shall be accompanied by a detailed description of the apparatus and equipment it proposes to furnish. It is the intent of these specifications to cover the furnishing and delivery of a complete and soundly engineered apparatus equipped as specified. Minor details of construction and materials, where not otherwise specified, are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features.

Brand names or model numbers have been specified for some items. These have been carefully selected because of their reliability and availability for replacement locally. In order to be most responsive, items named, or an item "equal to" the particular item specified by brand name or model, should be contained in the bid submittal. It is the bidder's responsibility to prove to the Beverly Fire Department that an item bid as "equal to" a particular specified item, is truly of equal quality, design, and function. The Beverly Fire Department maintains the right to make a final decision as to the acceptability of an item bid as "equal to" a particular specified item.

The competency and responsibility of Bidders will be considered in making the award. The Fire Department reserves the right to reject any or all bids, or to reject the bid of the bidder who, in the judgment of the buying authority is not in a position to perform the Contract. These specifications, together with any other documents required herein, will be included in the final contract. Each bidder will submit a copy of his proposed contract form. The purchaser reserves the right to reject a bid based on unacceptable provisions of a bidder's contract and does not obligate itself to accept the lowest or any bid.

THE CITY OF BEVERLY WILL NOT ACCEPT ANY BIDS, WHICH DO NOT MEET THESE SPECIFICATIONS. THE CITY OF BEVERLY, AT ITS SOLE DISCRETION, SHALL DECIDE WHICH IF ANY BID IS IN THE BEST INTEREST OF THE CITY OF BEVERLY.

**"TOP OF THE LINE" CHASSIS**

Bidders shall propose a custom built chassis, which is "Top of the Line" including the cab, electrical system and drive train. No exceptions. Entry level chassis such as, the Emergency One Typhoon, Ferrara Intruder, Pierce Saber and custom Contender, Spartan/ERV Metro Star and the KME Panther will not be considered.

**TIMELY BIDS**

It is the bidder's responsibility to see that their bids arrive on time. Late bids, facsimiles, telegrams, or telephone bids shall not be considered.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

**GENERAL CONSTRUCTION**

The complete apparatus, assemblies, subassemblies, component parts, etc., shall be designed and constructed with the due consideration to the nature and distribution of the load to be sustained and to the general character of the service to which the apparatus is to be subject. All parts

of the apparatus shall be designed with a factor of safety, which is equal to or greater than that which is considered standard and acceptable for this class of equipment in fire fighting service. All parts of the apparatus shall be strong enough to withstand general service under full load.

The apparatus shall be so designed that the various parts and readily accessible for lubrication, inspection, adjustment and repair.

Bidder's specifications must meet minimum requirements of N.F.P.A. Pamphlet #1901; Underwriters Laboratories, Inc.; and all State and Federal Department of Transportation vehicle regulations at time of sale of unit.

The apparatus shall be designed and constructed, and the equipment so mounted, with due consideration to distribution of the load between front and rear axles that all specified equipment, including a full complement of specified ground ladders, full water tank, loose equipment, and firefighters shall be carried without overloading or injuring the apparatus.

**PRODUCT LIABILITY INSURANCE**

Each bidder shall supply proof of product liability and facility insurance equal to or exceeding \$20,000,000.00. This shall be provided as part of the bid submittal.

Garage insurance is not acceptable.

**SINGLE-LINE RESPONSIBILITY**

Since the Beverly Fire Department desires to eliminate divided responsibility on the part of the manufacturers, only manufacturers who build their own fire apparatus cab, chassis, body and aerial device shall be considered. The apparatus must be built and painted in a facility owned and operated by the bidder by a staff that is directly employed by the bidder. At least fifteen similar units must have been sold and delivered of the type described herein. The entire apparatus (to include cab, chassis, body, pump, water tank and aerial device) **MUST** be manufactured in the United States! **NO EXCEPTION SHALL BE ALLOWED TO THIS REQUIREMENT!**

The bidder shall state if single line responsibility is being proposed.

Yes/No: \_\_\_\_\_

**ADDENDA AND INTERPRETATIONS**

No interpretation of the meaning of the specifications or other contract documents shall be made to any Bidder verbally. Every request for such interpretation shall be in writing and emailed, mailed, faxed or hand delivered to: Purchasing Agent David Gelineau, Beverly City Hall, Room 24, 191 Cabot Street, Beverly, MA 01915, emailed: [dgelineau@beverlyma.gov](mailto:dgelineau@beverlyma.gov) or via facsimile 978-921-8301, and must be received at least ten calendar days prior to the date fixed for the opening of the bids to be given consideration. Any and all such interpretations and any supplemental instructions shall be in the form of written addenda to the specifications which, if issued, shall be emailed or mailed to all prospective Bidders who have supplied the City with a Bidder Registration Form, not later than five days prior to the date fixed for the opening of bids. Failure of any Bidder to receive any such addendum or interpretation shall not relieve any Bidder from any obligation under his bid as submitted. All addenda so issued become a part of the contract documents.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

**PAINT PERFORMANCE CERTIFICATION**

The finish paint shall be certified by the apparatus manufacturer as conforming to all applicable Commercial Vehicle Paint Standards in effect at the date of contract. This shall be attested to by the attachment of a PPG certification.

**SPECIAL CONDITIONS**

No bid shall be considered unless the bidder can meet the special conditions stated herein.

The complete apparatus must be manufactured in the United States of America.

**PRICES AND PAYMENTS**

The City of Beverly shall pay for the Fire Pump Trucks as specified herein after delivery and final acceptance of the Fire Pump Trucks by the City of Beverly. The payment due shall be submitted on the enclosed Pricing Sheet and shall include the cost of two (2) Fire Pump Trucks, all fees, including but not limited to delivery and dealer prep, warranty, and in service training. No additional payments will be made to the bidder. Successful bidder shall give a minimum of 24 hours notice of delivery to the City of Beverly.

The City of Beverly shall take delivery and pay for first truck in the City's fiscal year 2014 (July1, 2013 –June 30, 2014) and the City of Beverly shall take delivery and pay for the second truck during the month of July 2015.

Total price on bidder's price sheet must include all items listed in these specifications. Listing any items contained in the specification as an extra cost item, unless specifically requested to do so in these specifications, shall automatically be cause for rejection.

**EXCEPTIONS TO SPECIFICATIONS**

Exceptions shall be referenced to the paragraph and page of these specifications where the item appears. Drawings, photographs, and technical information about the exception shall be included as necessary. Any exceptions may be considered during the evaluation process, and the decision shall be final.

Bids taking total exceptions to specifications shall not be accepted.

**"OR APPROVED EQUAL" CLAUSE**

The mention in the specifications of apparatus, equipment or material by brand name or by such specified description of same as is hereby made, is intended to convey to the bidder's understanding, the degree of excellence required. Any article, equipment, or material, which shall conform to the standards and excellence so established, and is of equal merit, strength, durability and appearance to perform the desired function, is deemed eligible for offer as a substitute. The qualifications of the offering shall be judged as to their conformance with these specifications. Any equipment offered other than herein specified shall be subject to a competitive demonstration and evaluation shall be subject to a competitive demonstration and evaluation by the using department. Such demonstration to be provided on request within ten working days after the receipt of bids.

The result of that demonstration and evaluation shall be of prime importance in the recommendation to the governing body for the final contract award.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

**TECHNICAL INFORMATION**

Bidder shall furnish free of charge, upon request, technical information, graphs, charts, photographs, engineering diagrams, steering geometry, drive train certifications, instruction guides, or other documentation as requested to show that the equipment offered fully complies with these specifications.

**PROPRIETARY PARTS**

It is the intention of the Beverly Fire Department for all bidder's to furnish the apparatus with major parts commonly used by the heavy-duty truck manufacturers and open market vendors where as replacement parts are more readily available and at reduced cost. The use of proprietary parts such as but not limited to axles, suspensions, engines, transmissions, frontal air bags, electronic controls, multiplexing systems, seats, pumps, gauges, foam systems, etc., may not be accepted by the Beverly Fire Department .

**DELIVERY TIME**

Each bidder shall state the completed apparatus delivery time based on the number of calendar days, starting from the date the sales contract is signed and accepted by the apparatus manufacturer. The trucks must be built 280 days from the date of award. The City of Beverly shall take delivery and pay for first truck in the City's fiscal year 2014 (July1, 2013 –June 30, 2014) and the City of Beverly shall take delivery and pay for the second truck during the month of July 2015.

First Truck Delivery Time: \_\_\_\_\_ Calendar days

Second Truck Delivery Time: \_\_\_\_\_ Calendar days

**BOND REQUIREMENTS**

A five (5) percent bid bond shall be included with the bid submittal. The Bond must be from a surety company licensed to do business under the laws of the Commonwealth of Massachusetts.

**PERFORMANCE AND PAYMENT BOND**

A 100% payment and a 100% performance bond shall be supplied by the successful bidder upon acceptance of the signed sales contract for the apparatus. The payment and performance bonds shall be for an amount equal to the full contract price. The bonds must be issued by a surety qualified to do business under the laws of the Commonwealth of Massachusetts and satisfactory to the awarding authority. All bonds for this bid must be from a surety licensed by the Massachusetts Division of Insurance.

**NON-COLLUSIVE BIDDING CERTIFICATION**

By submission of this bid, each bidder and each person signing on behalf of any bidder, certifies, and in the case of a joint bid, each party thereof certifies as to its own organization, under penalty of perjury, that to the best of their knowledge and belief:

- The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for purpose of restricting competition, as to any matter relating to sale price with any other bidder or any competitor.
- Unless otherwise required by law, the prices that have been quoted in this bid have not been knowingly disclosed by the bidder and shall not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor.

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**Bidder  
Complies**

**Yes      No**

- No attempt has been made by the bidder to induce any other person, partnership, or corporation to submit or not to submit a bid for the purpose of restricting competition.
- That all requirements of the law including amendatory provisions as to non-collusive bidding have been complied with.

**USER'S LIST**

Each bidder shall include a current "User's List" with a minimum of fifteen (15) units that are within 250 miles of the Beverly Fire Department. This list shall include customer name, person to contact, address and telephone number. Failure to include this list may result in rejection of your bid.

**MATERIAL AND WORKMANSHIP**

All equipment furnished shall be guaranteed to be new and of current manufacture, to meet all requirements of these specifications.

All workmanship shall be of high quality and accomplished in a professional manner so as to insure a functional apparatus with a pleasing, aesthetic appearance.

**CONTRACT AWARD**

The Beverly Fire Department reserves the right to reject any or all bids deemed to be unresponsive. The Beverly Fire Department also reserves the right to waive any informalities, irregularities and technicalities in procedure.

The Beverly Fire Department reserves the right, before awarding the contract, to require a bidder to submit evidence of his qualifications as may be deemed necessary. Documentation, which may be required, is financial soundness, technical competency, and other pertinent qualifications of a bidder, including past performance (experience) with the Beverly Fire Department.

Upon award of contract, the sales contract shall be between the city of Beverly and the manufacturer of the apparatus. Contracts between the city of Beverly and a sales representative, dealer, distributor, or agent of the apparatus manufacturer shall not be acceptable. No Exceptions.

**SALES ENGINEER**

The successful bidder shall designate an individual to perform the contractor's sales engineer functions. The sales engineer shall provide a single point interface between the Beverly Fire Department and the contractor on all matters concerning the contract.

**APPROVAL DRAWING**

A detailed drawing of the apparatus shall be provided to the Beverly Fire Department for approval before construction begins. A copy of this drawing shall also be provided to the manufacturer's representative. Upon the Beverly Fire Department 's approval, the finalized drawing shall become a part of the total contract.

The drawing shall show, but is not limited to, such items as the chassis make and model, major components, location of lights, sirens, all compartment locations and dimensions, special suction, discharges, etc. The drawing shall be a visual interpretation of the apparatus as it is to be supplied.

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**Bidder  
Complies**

**Yes      No**

**INSPECTION VISITS**

The successful bidder shall provide three (3) factory inspection trips to the apparatus manufacturer's facility. Transportation, meals, lodging, and other requisite expenses shall be the bidder's responsibility.

Accommodations shall be for four (4) Fire Department representatives per trip.

The factory visits shall occur at the following stages of production of the apparatus:

- Pre-construction / blueprint review.
- Midpoint completion of entire apparatus.
- Final inspection upon completion.

Travel arrangements more than 500 miles from the manufacturing facility shall be via commercial airline transportation.

The Beverly Fire Department maintains the right to inspect the apparatus, within normal business hours, at any other point during construction. Expenses incurred during non-specified inspection visits shall be the responsibility of the Beverly Fire Department.

During inspection visits, the Beverly Fire Department reserves the right to conduct actual performance tests to evaluate completed portions of the unit. Testing shall be accomplished with the assistance and resources of the contractor.

**DELIVERY, DELIVERY ENGINEER, AND TESTING**

Delivery of the apparatus to the Beverly Fire Department shall remain the bidder's responsibility.

On initial delivery of the fire apparatus, a qualified and responsible representative of the contractor shall demonstrate the apparatus and provide initial instruction to representatives of the customer regarding the operation, care, and maintenance of the apparatus and equipment supplied.

**DELIVERY AND FAMILIARIZATION**

Upon delivery, the manufacture shall have a certified delivery engineer with over 100 similar deliveries who is qualified and is knowledgeable and familiar with the vehicle being delivered, come to the Beverly Fire Department to demonstrate the unit and familiarize the Beverly Fire Department personnel with the apparatus. At the heart of the presentation there shall be an **AS BUILT** PowerPoint presentation of the specific apparatus as delivered that covers each and every control and feature of the unit. The program will be delivered to each Beverly Fire Department shift and maintenance personnel as the Beverly Fire Department may request. A copy of the PowerPoint program, in CD format, shall be provided to the Beverly Fire Department for future use.

**INSTRUCTION MANUALS/DRAWINGS, SCHEMATIC**

In accordance with standard commercial practices, applicable to each vehicle (including body and special equipment) furnished under the contract, the following listed manuals and schematics, in the quantity specified, shall be provided at time of delivery of each vehicle.

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**Bidder  
Complies**

**Yes      No**

The contractor shall supply at time of delivery, two (2) CD copies of a complete operation and service manual covering the complete apparatus as delivered and accepted.

The manual shall contain the following:

- Descriptions, specifications, and ratings of chassis, pump.
- Wiring diagrams.
  
- Lubrication charts.
- Operating instructions for the chassis, any major components such as a pump and any auxiliary systems.
- Instructions regarding the frequency and procedures recommended for maintenance.
- Parts replacement information.

**VEHICLE FLUIDS PLATE**

As required by NFPA-1901, the contractor shall affix a permanent plate in the driver's compartment specifying the quantity and type of the following fluids used in the vehicle:

A permanent plate in the driving compartment shall specify the quantity and type of the following fluids used in the vehicle:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Pump transmission lubrication fluid
- Pump primer fluid
- Drive axle lubrication fluid
- Air-conditioning refrigerant
- Air-conditioning lubrication oil
- Power steering fluid
- Cab tilt mechanism
- Transfer case fluid
- Air compressor system lubricant
- Generator system lubricant

**PRINCIPAL APPARATUS DIMENSIONS & G.V.W.R.**

The bidder shall include the principal dimensions, front G.A.W.R., rear G.A.W.R., and total G.V.W.R. of the proposed apparatus. Additionally, the bidder shall provide a weight distribution of the fully loaded, completed vehicle; this shall include a filled water tank, specified hose load, miscellaneous equipment allowance in accordance with NFPA-1901 requirements, and an equivalent personnel load of 250 lbs. per seating position.

**BIDDER TO SUPPLY AND FILL- IN PROPOSED DIMENSIONS:**

- OVERALL LENGTH:                    \_\_\_\_\_ "
- OVERALL WIDTH:                    \_\_\_\_\_ "
- OVERALL HEIGHT:                    \_\_\_\_\_ "
- WHEELBASE:                            \_\_\_\_\_ "

**BEVERLY FIRE DEPARTMENT  
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**Bidder  
Complies**

**Yes      No**

The axle and total weight ratings of the completed apparatus shall not be less than the following minimum acceptable weight ratings:

- MINIMUM FRONT G.A.W.R.: 20,000 lbs.
- MINIMUM REAR G.A.W.R.: 24,000 lbs.
- MINIMUM TOTAL G.V.W.R.: 44,000 lbs.

**BIDDERS BACKGROUND**

All bidders shall state the ownership of the organization which shall actually construct the apparatus. Companies which are a division, subsidiary, wholly or partially owned subsidiary or other entity which is wholly or partially owned or controlled by another entity shall state their entire ownership lineage. **Bidders from such organizations must have the bid signed by the chief executive of the parent entity.**

**PRIMARY PLANT CONSTRUCTION**

In order to insure top quality construction, maximum assembly line and engineering communication and the highest level of manufacturing supervision the entire apparatus shall be built at the bidders' primary (headquarters) manufacturing facility. Apparatus constructed at satellite plants will not be considered.

**REQUIRED BLUEPRINT**

A scale drawing of the specific apparatus being proposed shall be submitted WITH THE BID. Drawings of similar units or demo units shall not be permitted. Bidders should be clear that this provision is requiring a SCALE drawing of the truck which is actually being bid. The drawing shall be done at the manufacturer's facility by the manufacturer's engineering department in order to guarantee the accuracy of the drawing. Failure to comply with this requirement may be grounds for rejection of the bid. The City of Beverly may at its own discretion reject a bid for failure to comply with this requirement.

**BODY CONSTRUCTION LIMITATIONS**

Apparatus bodies which are either bolted together or make excessive use of adhesives shall not be considered. Similarly, body construction techniques which rely upon space consuming extrusions for structural support shall not be permitted.

**FAMA COMPLIANCE**

The apparatus manufacturer must be a current member of the Fire Apparatus Manufacturer's Association (FAMA).

**U.S.A. MANUFACTURER**

The entire apparatus shall be assembled within the borders of the Continental United States to insure more readily available parts (without added costs and delays caused by tariffs and customs) and service.

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**Bidder  
Complies**

**Yes      No**

**QUALITY MANAGEMENT**

The manufacturer shall operate a Quality Management System that is certified to ISO 9001 by an organization that is accredited by the ANSI-ASQ National Accreditation Board (ANAB). This type of business management system shall allow the manufacturer to monitor processes to ensure they are effective; keep adequate records; check output for defects, with appropriate and corrective action where necessary; regularly review individual processes and the quality system itself for effectiveness; and facilitate continual improvement.

A copy of the registration certificate must be included with the bid, NO EXCEPTIONS.

**TABLE OF CONTENTS**

As all manufacturers present their specifications in a different order, each manufacturer shall provide a table of contents for ease of bid comparison and to clearly locate all proposed items. To further enhance the ability to compare bids all bids must be submitted in the same sequence as these specifications.

**STEPPING, STANDING, & WALKING SURFACES**

All stepping, standing, and walking surfaces on the body shall meet NFPA #1901 anti-slip standards. Aluminum tread plate utilized for stepping, standing, and walking surfaces shall be Alcoa No-Slip type. This material shall be a minimum 3/16 (0.1875") in thickness. Upon request by the Beverly Fire Department, the manufacturer shall supply proof of compliance with this requirement. All vertical surfaces on the body, which incorporate aluminum tread plate material, will utilize the same material pattern to provide a consistent overall appearance.

**OVERALL LENGTH LIMIT**

During over the road operations no portion of the apparatus will exceed an overall length of 384 inches.

**AMP DRAW REPORT**

The bidder shall provide with their bid submittal and at the time of delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

A written load analysis, which shall include the following:

- The rating of the alternator.
- The minimum continuous load of each component that is specified per: Applicable NFPA-1901.
- Additional loads that, when added to the minimum continuous load, determine the total connected load.
- Each individual intermittent load.

All of the above listed items shall be provided by the bidder per the applicable NFPA-1901.

**SERVICE CENTER INFORMATION**

The center must provide a full time staff of experienced technicians with all of the required equipment to provide modern, accurate and efficient service. Bidders shall state the size of their shop and office area in square feet. They shall state the location of the facility and provide photos of both

**BEVERLY FIRE DEPARTMENT  
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**Bidder  
Complies**

**Yes      No**

the exterior and interior of the center. Accuracy of the description of the service center is of great importance.

**REGIONAL SERVICE CENTER**

The apparatus manufacturer shall maintain a comprehensive service center within 60 miles of the Beverly Fire Department. This center shall be totally dedicated to the service of fire apparatus and fire apparatus only. It shall be fully authorized by the manufacturer to conduct all levels of repair and service. The capabilities of the service center shall be at a minimum:

Authorized pump service for both Hale and Waterous  
Full hydraulic service

Full 12 volt electrical service to include multiplexed systems  
Full 120/240 volt service  
Full chassis and running gear service  
Complete body shop and paint facility which shall include:

Heated and humidity controlled 50 foot environmentally certified down draft paint booth  
Full time body shop and paint staff  
Electronic paint color mixing and matching system  
Secured paint storage area  
Apparatus service lift system

Metal fabrication center which shall include at a minimum:  
10 x 10 shear  
Press Brake  
Apron Brake  
Modern MIG and TIG welding equipment  
Plasma cutter  
Machining center

The service facility shall have sufficient indoor heated space to permit the storage of the Beverly Fire Department's apparatus inside whenever in the center's possession. No outside storage will be permitted. The center must provide a full time staff of experienced EVT technicians with all of the required equipment to provide modern, accurate and efficient service.

**SERVICE ABILITY FORM**

Service Center Location:

Distance in miles (one way) from Local Service Center Location to the Beverly Fire Department's Location  
\_\_\_\_\_ miles.

Please answer the following questions:

Is this shop an authorized warranty center for the apparatus builder?      Yes \_\_\_\_ No \_\_\_\_

Is the Service Center enclosed, heated, and capable of storing Beverly Fire Department equipment inside at all times?      Yes \_\_\_\_ No \_\_\_\_

Number of full time Service Center Employees:      \_\_\_\_\_



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**Bidder  
Complies**

**Yes      No**

- “Occupants will be seated and belted when apparatus is in motion” signs shall be visible from each seat.
- “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 subsequent section).
- A label displaying the height, length, and GVWR of the vehicle shall be visible to driver.
- This label shall indicate that the fire department will revise the dimension if vehicle height changes while vehicle is in service.

**CHASSIS DATA LABELS**

The following information shall be on labels affixed to the vehicle:

Fluid Data

- Engine Oil
- Engine Coolant
- Chassis Transmission Fluid
- Pump Transmission Lubrication Fluid
- Pump Primer 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

Manufacturers weight certification:

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

**ROLLOVER STABILITY**

The apparatus shall meet the criteria defined in 4.13.1 for rollover stability as defined in the 2009 NFPA Standard for Automotive Fire Apparatus.



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**Bidder  
Complies**

**Yes      No**

**ROOF AND SIDE LOAD TESTING**

The cab design shall include additional third party testing to ensure the safety of the cab occupants and cab integrity, proof of third party testing shall be provided. The cab shall be certified for SAEJ2422 side impact, SAEJ2420 with ECER29 cab front impact, and ECER29 cab roof strength.

The manufacturer shall provide proof that third party testing has been conducted to prove a static roof and a static side-load test has been completed. In these tests, a 120,000 pound static load was first applied to the roof. This test was followed by applying the same 120,000 pound static load to the side of the cab.

These tests will be conducted per the SAE J2422, Cab Roof Strength Evaluation, protocol and the ECE R29, Uniform provisions concerning the approval of vehicles with regard to the protection of occupants of the cab of a commercial vehicle, protocol.

During both tests, the cab shall withstand these loads without encroachment into the occupant survivable space and all doors remained closed during the test. The tests will be documented with photographs and real-time video in a report provided to the manufacturer.

**DIMENSIONS - LONG FOUR DOOR STYLE CAB**

Minimum Cab Dimensions:

- Overall width 100"
- Inside width across ceiling 92"
- Front area floor to ceiling 63"
- Top of front seat to ceiling 44"
- Seat back to steering wheel 22"
- Inside width (door to engine enclosure) 24" (driver's side, at floor)
- Inside width (door to engine enclosure) 20-1/2" (officer's side, at floor)
- Crew seat area width 92"
- Outer crew seat risers to rear wall 56-1/2"
- Centerline axle to rear wall 74-1/2"
- Floor to top of engine enclosure 30"
- Centerline axle to front of cab 74"

Glass Area Dimensions:

- Windshield (Contour) 3,400 sq. in.
- Front door window, retractable 740 sq. in. each
- Rear door window, retractable 875 sq. in. each
- Side fixed crew windows 620 sq. in. each

Cab Entry Door Width Dimensions

- Forward door opening 43" wide
- Rear door opening 40" wide

Cab Entry Step Dimensions

- Forward door recessed step 32" wide x 9" deep
- Rear door recessed step 32" wide x 9" deep

Cab Entry Door Height Dimensions



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**Bidder  
Complies**

**Yes      No**

shall not be considered due to their tendency to both rust and break. The interior door latch cables are to be designed to reduce adjustment or possible wear at the adjustment turnbuckles.

Each exterior cab door shall be equipped with keyed locks. The cab doors shall be capable of being locked from the outside with a key and from the inside with a control in each interior paddle latch.

**ELECTRIC WINDOWS**

Each side cab door shall have a tinted retractable window. The window track shall be designed into the door frame extrusion, which shall be extruded with a track groove to house a window track and seal. The window shall be capable of being removed from an access slot designed in the bottom of the door frame.

All side cab doors shall be equipped with electrically operated windows.

The driver shall have a control to operate the officer's side window and the rear cab windows, in a panel located on the dash. The officer side window control shall be in a panel on the dash.

The control for each rear door shall be a rocker type automotive style switch located on the inside door panel within easy reach.

Each side cab door window shall be designed with a custom extruded trim plate, which shall conform to the perimeter of the window opening in each door. The trim plate shall extend from the edge of the door skin to the window and shall have a silver anodized finish.

**INNER DOOR PANELS**

The cab door interior panels shall be covered with a one piece, full height, brushed aluminum panel for ease of maintenance. The panel shall be 1/8" aluminum with a brushed finish and shall be designed to allow easy access to the inner door.

Each interior cab door panel shall be equipped with reflective ScotchLite material that shall cover at least 96 in<sup>2</sup>.

**TRANSVERSE CAB COMPARTMENTS**

Two (2) compartments shall be provided, to the rear of the crew cab doors. These compartments shall be approximately 38" high, 9" wide and 27 3/4" deep in the lower area and transverse in the area above the frame rails. The transverse portion of the compartment shall be approximately 10" wide x 18" high. The transverse section shall be designed to be capable of being utilized for a seat riser. To make the compartment accessible from inside the crew area, the front wall of the transverse section shall be equipped with two (2) drop down flat panel doors.

The exposed section of the compartment in the rear crew area shall be painted with a textured paint to match the cab interior. The interior of the compartment shall be painted to match the color or material provided in the body compartments.

Compartment door shall have a 3/16" aluminum exterior skin door with a one (1) inch box pan and a stainless steel "D" ring handle. Door shall be hinged on the forward edge with a stainless steel vertical piano hinge so it opens toward the rear cab door. The door shall be held in the open position by a gas shock stay arm.

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**Bidder  
Complies**

**Yes      No**

Each compartment shall contain a light for illumination of the compartment and shall be wired to a door jamb switch to automatically come on when the door is opened. The light shall be the same style that is used in the body compartments.

**AIR CYLINDER RACK**

An air cylinder storage rack shall be provided in the driver's side exterior cab compartment. This rack shall be capable of storing at least two (2) SCBA cylinders.

**AIR CYLINDER RACK**

An air cylinder storage rack shall be provided in the officer's side exterior cab compartment. This rack shall be capable of storing at least two (2) SCBA cylinders.

**WINDSHIELD/GLASS**

A two piece, symmetrical, safety glass windshield shall be provided on the cab for the driver and officer providing a clear viewing area. The windshields shall be full width to the center of the front cab support for each side and provide the occupants with a panoramic view. To provide enhanced peripheral vision on each side of the cab, the windshield and cab structure shall be designed with radius corners, which provide a minimum of 8" of glass area, measured from the glass face to the side

edge near the door post. The windshield shall consist of three (3) layers; the outer light, the middle safety laminate and the inner light. The thick outer light layer shall provide superior chip resistance, the middle safety laminate layer shall prevent the windshield glass pieces from detaching in the event of breakage and the inner light shall provide yet another chip resistant layer.

The windshield will be a contour design with 3400 sq. in. of area for improved visibility and style. The windshield glass shall be designed so it can be used on either the driver or officer side. Single piece windshields that utilize epoxy or that are bonded to the cab structure shall not be acceptable.

**WINDSHIELD WIPERS AND WASHER**

Dual, electric operated, pantographic type windshield wipers shall be provided. One (1) electric drive motor shall be provided for each wiper.

Wipers shall have "HI/LO" and "INTERMITTENT" operating speeds. "HI/LO" speeds shall be controlled by a steering column control, within the turn signal control stem. "INTERMITTENT" operation shall be controlled by a twist switch within the control on the steering column. The wipers shall be of the self-parking type.

Windshield washers shall be electric operated wet-arm type with a 3/4 gallon washer fluid reservoir, mounted inside the engine enclosure and readily accessible through the engine hatch at the rear of the engine enclosure. The washer control shall be integral with the intermittent wiper control switch.

There shall be individual removable panels on the front face of the cab for access to the wiper motor assemblies. Wiper systems that require service access through dash openings and directional/headlight bezels will not be accepted.

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**Bidder  
Complies**

**Yes      No**

**WINDSHIELD WIPER DURABILITY CERTIFICATION**

Windshield wipers shall survive testing in excess of 3 million cycles in accordance with section 6.2 of SAE J198 "Windshield Wiper Systems – Trucks, Buses and Multipurpose Vehicles". The bidder shall certify that the wiper system design has been "Third party tested" and that the wiper system has met this criteria.

**CAB SIDE VIEWING WINDOWS**

A fixed, tinted window with minimum 620 sq. in of glass area shall be provided on each side of the cab behind the forward cab doors. This window will be the same height as the window in the rear cab door for maximum visibility.

**DARK TINTED REAR WINDOW GLASS**

The windshield and the forward cab door glass shall be provided with standard DOT green automotive tint. The side cab windows to the rear of the front doors, the rear cab door windows and any rear viewing windows shall be equipped with a dark automotive tint.

**GRAB HANDLES**

Four (4) 1-1/4" diameter x 28" long, knurled, bright anodized aluminum handrails shall be provided, one (1) at each cab door entrance. Grab rail stanchions shall be chrome plated 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.

**BUMPER GRAB RAIL**

One (1) 1-1/4" diameter x 14" long, knurled aluminum , grab rail shall be provided on the front of the cab, below the windshield. Formed rubber gaskets shall be provided between each stanchion base and the cab surface.

**INTERIOR GRAB RAILS**

Three (3) vertically mounted 12" black cast aluminum "D" style entry assist handles shall be installed, one (1) on the officer's side of the cab interior "A" post and one (1) on each side of the cab interior on the "C" post in the crew area to assist in entry and exiting of the cab.

**FRONT CAB GRILLE**

There shall be a front air intake with a minimum size of 945 square inches of open area for maximum air flow to the charge air cooler and the radiator. A custom made 37-1/2" wide x 30" high bright finish stainless steel grille shall be installed over this intake.

**AIR INTAKE/OUTLET**

A single air cleaner inlet with 43.5 square inches of area shall be located on the driver's side of the cab horizontally above the wheel well opening. This design shall permit proper ducting of air through the air cleaner system.

**ENGINE AIR INTAKE SYSTEM**

The left side inlet, used for the air intake to the air cleaner, shall be equipped with dual ember separators for separating burning embers from the air intake system. This system shall be such that particles larger than .039 inches (1 mm) in diameter cannot reach the air filter element.

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**Bidder  
Complies**

**Yes      No**

No part of the air intake system for the engine shall be lower than the top of the frame rails to ensure the vehicle can navigate pooled water without any part of the air intake system being exposed to water when the vehicle is stopped or in motion. Chassis designs, which the engine air intake system is lower than the frame rails shall not be acceptable!

**WHEEL WELL LINERS**

The front cab wheel wells shall be equipped with fully removable, bolt-in, 12 gauge stainless steel inner wheel well liners. The liners shall extend full depth into the truck frame. The completely washable wheel well liners shall be designed to protect the cab substructure, inner panels and other miscellaneous installed components from road salts, debris, dirt accumulation and corrosion.

**FENDERETTES**

The cab wheel well openings shall be trimmed with replaceable, bolt-in, polished stainless steel fenderettes. The fenderettes shall be secured to the cab with stainless steel threaded fasteners along the internal perimeter of the wheel well. Dissimilar metal tape and black vinyl trim molding shall be used where the cab and fender meet.

**FRONT MUD FLAPS**

Heavy duty, black rubber type mud flaps shall be provided behind the front wheels.

**VELVAC WEST COAST MIRRORS WITH 2010 HEADS and 6" CONVEX**

Two (2) Velvac West Coast style 2010 mirrors shall be furnished, one 708211-4 and one 708212-4 on each front cab door. Each mirror will have a 16 x 8 flat glass head mounted in a polished 300 series stainless steel outer shell and a heavy duty ABS inner housing. Both heads will be electrically heated, controlled by one (1) switch on the dash convenient to the driver. Both mirror heads will be controlled from the driver's seating position by one (1) four way switch that allows the driver to select either the officer side mirror or the driver side mirror. The mirror heads will be installed on a one piece stainless steel loop mounted to the forward portion of the door with two (2) brackets, forward of the windows.

Two (2) 6" diameter stainless steel convex mirrors will also be furnished, one on each lower loop of the mounting bracket.

All parts for installation of the West Coast Mirrors shall be supplied. Both heads will be electrically heated, controlled by one (1) switch on the dash convenient to the driver. Both mirror heads will be controlled from the driver's seating position by one (1) four way switch that allows the driver to select either the officer side mirror or the driver side mirror.

**INTERIOR CAB TRIM**

The cab interior shall be constructed to create an ergonomically designed interior to be user friendly and functional for the driver and officer.

The forward overhead panel shall be covered with a three (3) piece custom formed ABS vinyl overlay, which shall have integrated windshield defroster/heat vents and four (4) comfort vents.

All ABS formed material panels, as well as all of the interior upholstery panels shall be medium gray in color. The upholstered cab overhead and side wall portions shall utilize gray Durawear upholstery with padding underneath to provide additional insulation.

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**Bidder  
Complies**

**Yes      No**

The interior metal surfaces of the cab shall be finish painted with a textured gray paint.

**INTERIOR REAR WALL**

The interior rear wall of the cab shall be covered with gray Durawear for durability and shall match the other upholstered areas of the cab.

**UNDER SEAT STORAGE COMPARTMENTS**

There shall be a compartment provided under each front seat. Each compartment shall be accessible from the side of the seat riser when the door is opened.

The compartment under the Driver's seat shall measure 13-1/2"W x 16 "D x 7-3/4"H  
The compartment under the Officer's seat shall measure 13-1/2"W x 14 "D x 7-3/4"H

Due the driver's seat being equipped with Rolltek and being an air ride seat, the S4 pretensioner for the seat will be mount in the seat riser or compartment for the driver's seat.

Due the officer's seat being equipped with Rolltek and being an air ride seat, the S4 pretensioner for the seat will be mount in the seat riser or compartment for the officer seat.

**BARYFOL FLOORING**

The floor of the driver's compartment and the floor of the crew area shall be lined with BARYFOL vinyl composite flooring to comply with NFPA noise and heat requirements.

The material utilized for this application shall be certified to meet the NFPA 1901, 2009 revision for anti slip walking surfaces.

**CAB ACOUSTICAL INSULATION**

One (1) inch thick acoustical insulation shall be provided on the cab roof and rear and side walls of the cab. This material shall be fitted between the cab structural members and secured with adhesive to provide an insulation barrier for noise and heat.

**ENGINE ENCLOSURE**

The forward portion of the engine enclosure shall be covered with a vinyl ABS material formed overlay to match the balance of the cab interior. To allow maximum "elbow room" for the driver and officer, the forward portion of the engine enclosure shall feature a contour shape. The engine enclosure shall not significantly obstruct the driver's vision in any direction. The enclosure shall be an integral part of the cab structure, which shall be constructed from .250 5052-H32 aluminum, providing adequate strength to support radio, map boxes, etc. The engine enclosure shall be insulated to protect from heat and sound. The noise insulation shall keep the DBA level within the limits stated in the current NFPA series 1900 pamphlet.

A, hinged access door shall be provided in the top rearward portion of the engine enclosure. The door shall allow access to the engine oil, transmission fluid, power steering fluid level dipsticks and the windshield washer fluid reservoir. The access door shall be provided with two (2) flush mounted latches and gas shock holders. There shall be a gray ABS vinyl cover over the access door to give a cleaner look to the top of the engine enclosure and doghouse area.

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**Bidder  
Complies**

**Yes      No**

The rear section of the engine enclosure shall be reduced 8-1/2" in length to provide additional leg room for the forward facing seating position/s.

**ADDITIONAL ENGINE ENCLOSURE INSULATION**

Premium soundproofing/insulation material, Barymat BTRLAX3-14BY shall be installed in the engine enclosure. To ensure a clean, smooth surface, this material shall be retained by flat aluminum panels fastened to studs that are welded to cab as needed. These panels shall be removable. Any gaps in this insulation barrier shall be sealed with 3M #425 aluminized high temperature tape.

**SUN VISORS**

To provide maximum protection for the driver and officer, two (2) padded vinyl sun visors shall be mounted in the cab overhead on each side.

**ADVANCED OCCUPANT RESTRAINT SYSTEM**

The cab shall be equipped with advanced occupant restraint systems. This system shall function in the event of a side roll over and shall be compatible with occupants ranging from a 5<sup>th</sup> percentile female to 95<sup>th</sup> percentile male.

This system consists of a roll sensor, seat and occupant pretensioners; buckle pretensioners and inflatable side airbags. This system shall be functionally active while the truck is in operation.

A hybrid or pyrotechnic inflator shall inflate the side airbags. The bag should remain inflated to the extent of providing head cushioning for 10 seconds after inflation. Pretensioners should be compatible with either ABTS or body mounted seats and seat belts. Buckle pretensioners shall be used on static or power seats where there is no air suspension. The buckle pretensioners must be capable of stroking 125 mm.

**ROLL SENSOR**

The roll sensor shall continually monitors the roll rate and angle of the vehicle, and deploys safety devices when a roll event occurs. Deployment determination shall be made by a combination of vehicle angle and angular rate. Vehicle deployment angle shall never exceed 60 degrees.

The roll sensor shall perform self-diagnostics each time the vehicle is started. A dash-mounted light shall turn off after approximately 10 seconds if the sensor is functioning. During operation, the roll sensor shall monitor for proper connection to each safety device in the vehicle once per second. If improper connection is measured at any device or if an internal fault occurs, the roll sensor shall illuminate the dash-mounted light. The system shall continue to function in the event of non-critical faults. System diagnostics are on the SAE J1587 bus.

**SEAT BELT ANCHOR TESTING**

Each seat belt anchor shall be tested to withstand 3,000lbs of pull on both the lap and shoulder belt in accordance with FMVSS 210 section 4.2.

**SEAT MOUNTING TESTING**

Each seat mounting position shall be tested to withstand 20G's of force in accordance with FMVSS 207 section 4.2(c).

Both tests shall be performed and verified at a third party testing and evaluation center.

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**Bidder  
Complies**

**Yes      No**

**DRIVERS SEAT**

The driver's seat shall be a H. O. Bostrom Sierra Air-50RX/HD/ABTS LH air suspension, high back bucket seat with Side Curtain Airbag.

The Side Air Curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stored position.

A suspension seat safety system shall be included. When activated the system shall pretension the seat belt then retract the seat to its lowest travel position.

The seat shall have a tapered and padded seat cushion with lumbar support. The seat shall have a five inch fore and aft adjustment, a three inch height adjustment with heavy duty damper and a reclining seat back. The seat air ride suspension shall be pneumatically controlled from a control switch on the forward lower edge of the seat.

The seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

**OFFICERS SEAT**

The officer's seat shall be a H. O. Bostrom Tanker 450 Air-50 RX/ABTS RH series air-suspension, SCBA seat with Side curtain Airbag.

The Side Air Curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stored position.

A suspension seat safety system shall be included. When activated the system shall pretension the seat belt then retract the seat to its lowest travel position.

The seat shall have a tapered and padded seat cushion with lumbar support. The seat shall have a five inch fore and aft adjustment, a three inch height adjustment with heavy duty damper and a reclining seat back. The seat shall include a SCBA storage area with integral headrest. The seat air ride suspension shall be pneumatically controlled from a control switch on the forward lower edge of the seat.

The seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

The officer's seat shall include a H. O. BOSTROM Secure All™ SCBA Locking System. The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity. Fire fighters shall simply push the SCBA unit against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

**REAR FACING, OUTBOARD, DRIVER SIDE SEAT**

There shall not be a crew seat provided in the rear facing driver's side position to allow for mounting of compartments and/or other specified equipment.

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**Bidder  
Complies**

**Yes      No**

**REAR FACING, OUTBOARD, OFFICER SIDE SEAT**

The officer's side outboard rear facing crew seat shall be a H. O. Bostrom Tanker 450 ABTS LH series fixed base SCBA seat with Side Curtain Airbag. The seat shall have a tapered and padded seat cushion with lumbar support. The seat shall include a SCBA storage area with integral headrest.

The Side Air Curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stored position.

A suspension seat safety system shall be included. When activated the system shall pretension the seat belt around the occupant to firmly hold them in place in the event of a collision.

The seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

The officer's side rear facing outboard seat shall include a H. O. BOSTROM Secure All™ SCBA Locking System. The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity. Fire fighters shall simply push the SCBA unit against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

**CENTER FORWARD FACING CREW SEATS**

Two (2) center inboard forward facing crew seats shall be provided, each seat shall be an H. O. Bostrom Tanker 450 ABTS series fixed SCBA seat. Each seat shall have a tapered and padded seat cushion with lumbar support. Each seat shall include an SCBA storage area with integral headrest.

Each seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

The two (2) center inboard forward facing crew seats shall have standard seat.

The seats shall be space apart approximately 20 inches, but shall not to intrude into the step well.

The center forward facing seats shall include a H. O. BOSTROM Secure All™ SCBA Locking System. The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity. Fire fighters shall simply push the SCBA unit against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

**FORWARD FACING CREW SEAT RISER**

The forward facing seats shall be mounted on a full width aluminum riser that shall be welded into the cab during cab construction. The riser shall match the interior of the cab and shall have two (2) individual, painted aluminum compartment doors with latches, to provide additional storage space in the cab.

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**Bidder  
Complies**

**Yes      No**

**SEAT UPHOLSTERY MATERIAL**

The seats shall be upholstered with heavy duty gray tweed Durawear material as provided by Bostrom.

**SEAT BELT CUSHION SENSORS AND BELT SENSORS**

The apparatus shall be equipped with an Akron/Weldon seat belt warning system. The system shall consist of a Seat Belt module, dash mounted display and an audible alarm.

Seat belt and seat cushion sensors shall be provided on the five (5) specified seating positions.

**ABTS SEAT BELTS REQUIRED**

All cab seating shall be furnished with ABTS (all belts to seat) style seat belts. Seats that are attached to the cab wall shall be cause for rejection of the bid.

**CAB HELMET STORAGE**

Each seat position shall have a ZICO: Ziamatic UHH-1 Crew Cab Helmet Holder, meeting NFPA 1901, 2009 for a total of five (5) holders. The mounting location shall be determined at the pre-construction meeting.

**VEHICLE DATA RECORDER**

An Akron/Weldon Vehicle Data Recorder (VDR) system shall be provided. The system shall include an NFPA compliant "Black Box" with reporting software that shall be capable of data storage to coincide with the NFPA requirements.

Data storage capabilities shall include interfaces with the following systems:

- Display module (Master Optical Warning Device)
- VDR, date & time stamp
- Max Vehicle speed (MPH)
- Vehicle acceleration / deceleration (MPH/Sec.)
- Engine Speed (RPM)
- ABS event
- Data password protected
- Data sampled once per second, in 48-hour loop
- Data sampled min by min for 100 engine hours
- Throttle position (% of Throttle)
- Data software
- PC / Mac Compatible
- Data summary reports.

**INTERIOR CAB STORAGE COMPARTMENT**

A storage compartment shall be mounted in the cab in lieu of the driver's side rearward facing crew seat. The compartment shall be 12" high x 24" wide x 28" deep. The top of the compartment shall have a four sided open storage area 16" high x 24" wide x 28" deep.

The compartment shall be constructed of 3/16 treadplate aluminum,

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Complies**

**Yes      No**

**CAB DOGHOUSE STORAGE MODULE**

A storage module shall be installed on the center doghouse area between the driver and officer. The module shall be constructed of 1/8" aluminum and shall be painted with a scuff resistant paint to match the cab interior.

The module shall include two (2) cup holders, a pen tray, a flat open storage area for notebooks, six (6) divided storage area's for 3-ring binders, and four (4) slide in storage area's two (2) accessible from each side of the cab.

**ANTENNA INSTALLATION**

Three (3) antenna mounting base(s) model #MATM with 17' of coaxial cable shall be provided and installed on the lower cab roof, behind the light bar. The attached antenna wires shall be run to the right side cab dash area.

Beverly Fire Department shall be responsible to have the correct antenna whip installed once the apparatus is delivered.

**LAPTOP COMPUTER SLIDE OUT TRAY**

A slide out tray shall be installed for the officer to provide an area for laptop computer usage. In the closed position this area will be nest forward to allow access in and out of the vehicle.

**DASH & CENTER CONSOLE**

The driver and officer side dash, along with the center dash, shall be covered with a custom formed ABS vinyl overlay to create an ergonomically designed interior to be user friendly and functional for the driver and officer.

The dash gauge panel shall be a custom formed ABS pewter gray wrap-around design for improved visibility. A full complement of gauges shall be provided in custom formed bezels. The starter and ignition switches shall also be integrated into the upper left portion of the gauge panel for easier access.

All warning lights and indicators shall be located in either the gauge itself or in the warning light cluster located in the lower center portion of the dash. Each gauge shall be equipped with an international symbol that is easily recognizable, denoting the system being monitored. Instrumentation shall be backlit for easy identification.

The transmission gear selector and the spring brake control valve shall be located on an angled section of the center dash assembly toward the driver for easy access.

There shall be provisions for mounting a switch panel in the center of the dash between the driver and officer. The top center of the dash assembly shall contain one (1) removable panel to access the main chassis wiring circuits and breaker panels.

**DRIVERS DASHBOARD PANEL**

The main instrument panel shall be centered in front of the driver and shall be mechanically fastened to the main dash assembly. The dash panel shall be 1/8" aluminum with an anti-glare, pewter finish brushed surface. The driver's dashboard panel shall contain the gauge panel along with an instrument warning light cluster.

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Complies**

**Yes      No**

The main instrument panel shall contain the primary gauges. An ignition and engine start switch shall be located on main dash panel located in front of the driver.

Each gauge shall have a raised glass lens with polished chrome trim ring and be backlit by integral blue LED's. Each gauge shall be designed with an integral red warning light with a pre-programmed warning point. Gauges monitoring drive-train component status shall be of the direct data bus type capable of displaying information broadcast on the J 1939 data-link. Each gauge warning indicator shall be capable of activating an audible alarm inside the dashboard.

Additional auxiliary control switches and instruments (if applicable) shall be located within the center or overhead panel located near the driver's position.

The primary gauges shall consist of:

- Vehicle speedometer (0-80 mph)
- Engine tachometer (0-3000 rpm)
- Engine oil pressure (0-100 psi); low oil pressure warning
- Engine coolant temperature (100-250 °F); high engine temp warning (based on engine)
- Transmission oil temperature (100-350 °F); high transmission fluid temp warning
- Vehicle battery voltage (9-18 VDC); low voltage warning at 11.8 amps
- Front air system gauge (0-150 psi); low air pressure warning at 65 psi
- Rear air system gauge (0-150 psi); low air pressure warning at 65 psi
- Fuel level (E-1/2-F); low fuel level warning @ 1/8 tank
- Air cleaner restriction gauge (0 - 40), warning at 25" restriction.
- Diesel Exhaust Fluid level (E-1/2-F); low fuel level warning @ 1/8 tank

**INDICATOR CLUSTER**

The driver's dashboard panel shall consist of Ametek gauges, an 18 item instrument warning light cluster and a 16 item, dead front type alarm panel.

This display shall contain the system control unit that collects data from the vehicle data bus (J1939), analog sensors, and switches throughout the vehicle. This data shall be presented using gauges, telltales and the two (2) display panels. The warning light display shall include a 2 x 20 dot matrix display, 18 telltales and 2 buttons to navigate through the screen menus.

The LCD dot matrix display shall be a 2 line by 20-character display with each character being 7 dot by 5 dot configuration. FSTN technology shall be used on the display for wide viewing capability. The module shall be backlit with amber LED's. The unit shall also be supplied with a heater to ensure proper operation over the entire 40 to +85 deg. C.

This display contains a series of two (2) screens to provide information about the vehicle. To control the display of that information, the screens are divided into two (2) menus; one that can be displayed while the vehicle is in motion and one that can only be accessed when the parking brake is set.

On the Road displays include:

- Two (2) configurable displays that can show any of the parameters the unit collects. This includes odometer, trip information, fuel economy information; all gauge data, and virtually any other data available on the vehicle that the display has access to, either through the data bus or via analog inputs.
- Two (2) trip displays for miles and hours that are capable of being reset.

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Complies**

**Yes      No**

- Two (2) fuel data screens: shall be provided; one for fuel remaining until empty and one for fuel economy. The fuel economy display shall be capable of being reset so that average economy over a predetermined period can be displayed.

The displays that can be accessed when the parking brake is set include:

- Engine hours as maintained by the engine ECU
- Service Alarm screens to report miles to next service or miles past required service. These screens shall allow the operator to choose the length of the service interval and shall have the ability to reset it.
- Message screens with warning messages the display has collected during the current ignition cycle. These screens shall be divided into configured warnings such as "Low Air Pressure" and the data bus faults reported by ECU's on the vehicle. Both lists shall allow the operator to review the last 12 events that occurred on the vehicle for maintenance and troubleshooting purposes.
- Diagnostic screens shall test the instrumentation system to verify it is working correctly.
- Setup screens shall be used to select either English or metric display. They shall also allow the operator to choose the data that shall be displayed by the configurable on-the-road screens.

The system shall be configured with user defined warning messages such as Low Air Pressure or High Coolant Temperature. When these events occur the warning message shall come up on the screen and can be accompanied by a buzzer. The messages shall be prioritized so the most important messages are always displayed. Whether the message can be dismissed by pressing a button shall be configurable. Messages that have been dismissed but are still active shall be retained in the message screens for review until the ignition is turned off. Listed below are the defined telltales and their indicators.

- "Right And Left Directional" arrows      (green in color)
- "Ignition ON" Indicator      (amber in color)
- "Hi Beam" indicator      (blue in color)
- "Battery ON" indicator      (green in color)
- "Parking Brake ON" indicator      (red in color)
- "Check Transmission" indicator      (amber in color)
- "Cab Not Latched" indicator      (red in color)
- "Stop Engine" indicator      (red in color)
- "Check Engine" indicator      (amber in color)
- "ABS Warning" indicator      (red in color)
- "Low Coolant Level"      (red in color)
- "Fuel Restriction" indicator      (amber in color)
- "Water In Fuel" indicator      (amber in color)
- "Fasten Seat Belts" indicator      (red in color)
- "Fast Idle" Indicator      (amber in color)
- "Do Not Move Truck" indicator      (red in color)
- "DPF Regeneration"      (amber in color)
- "Exhaust High Temperature"      (amber in color)
- "Engine Diagnostic Fault"      (amber in color)
- "Wait To Start" indicator      (amber in color)
- "Exhaust System Fault"      (amber in color)
- "Topps System Fault"      (amber in color)
- "PTO Engaged"      (green in color)
- "Ok to Pump"      (green in color)
- "Auto Traction Control"      (amber in color)

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Complies**

- "Retarder On" (green in color)
- "Retarder Active" (amber in color)

**Yes      No**

**PUMP SHIFT CONTROL**

The pump shift control and pump engaged indicator light shall be mounted in the driver's lower left panel. This control shall be equipped with a mechanical type lock to prevent inadvertent activation or de-activation. The lever positions and indicator light shall be clearly marked.

**OFFICER DASH**

There shall be a flat surface area in front of the officer for use with such items as a lap top computer.

**CENTER OVERHEAD PANEL**

An overhead console with a removable pewter panel shall be provided on the cab interior overhead between the driver and officer to permit installation of cab stereo, intercom systems, arrow stick controls, etc. The overhead console shall be approximately 27" wide x 4" high x 13" deep and shall be integrated into the ABS overhead center panel. The overhead console shall not obstruct the driver's vision through the officer's side window.

**CLIMATE CONTROL SYSTEM**

A climate-control system shall be provided for total cab environmental comfort. This system shall provide heat, cooling and defrost capabilities to various areas in the cab. The system shall consist of a single evaporator unit, mounted in the center overhead of the cab.

The ceiling mounted evaporator/heater unit shall include the following:

- Heavy-duty, high output blower.
- High efficiency coil that includes "rifled" tubing and oversized header tubes for maximum refrigerant distribution.
- Four (4) 3" diameter, adjustable louvers; two (2) each side of the cab overhead, facing the driver and officer seat positions.
- Two (2) larger louvers located in the center of the overhead assembly, facing the windshield.
- A large center mounted multi-vent defroster louver positioned above the windshield to provide adequate airflow for windshield defrost.
- Four (4) integral 3" diameter louvers, one (1) below the driver and officer seat positions and one (1) under each outboard rear facing crew seat.
- Damper controls shall be pneumatically operated to provide air discharge to the windshield, front overhead air discharge louvers or the seat riser/floor outlets as required.
- An adjustable electric water valve to control the amount of heat.
- Housing shall be fully insulated and enclosed.
- BTU: 71,000 A/C
- BTU: 85,000 Heat
- CFM: 680 Heat as mounted in the cab
- CFM: 680 A/C as mounted in the cab

The ceiling mounted evaporator unit shall be designed to include a deep well condensate collection pan, which shall include an automatic air vacuum pump to ensure proper drainage.

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**Yes      No**

The ceiling mounted evaporator unit shall be enclosed with an ergonomically designed, custom padded ABS panel to provide maximum headroom and a pleasing appearance. Engine enclosure mounted evaporators will not be accepted.

A serviceable foam intake filter shall be installed on the rear of the evaporator.

The controls panel shall actuate the air-distribution system with air cylinders, which are to be separated from the brake system by an 85-90 psi pressure protection valve.

All defrost/heating systems will be plumbed with one (1) seasonal shut-off valve mounted near the engine.

**ROOF MOUNT CONDENSER**

A 12-volt roof top dual condenser shall be strategically positioned on the cab roof so as not to interfere with any emergency lighting systems. The condenser shall be designed with high performance, long life fan assemblies. The fan motors are to be equipped with sealed housings and shaft.

The condenser and coil design shall include rifled tubing for maximum efficiency. Each coil shall be painted black. The condenser unit must include a receiver drier with a high and low pressure switch. The wire harness shall include necessary wiring for the clutch circuit as well as a separate power relay circuit.

Mounting design shall enable easy servicing of all components and unit replacement if necessary.

**CLIMATE CONTROL SWITCHES**

The drivers overhead panel shall contain all controls for the cab climate control system. The following controls shall be provided: mode selector switch, front fan speed switch, rear fan speed switch, air conditioning on/off switch, and temperature control dial. All controls shall be clearly labeled, adequately backlit, and installed in an easily removable panel.

**CAB DEFOGGER FANS**

Two (2), six (6) inch diameter, two-speed, defogger fans shall be provided in addition to the standard windshield defroster.

**CAB TILT ASSEMBLY**

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 and valves.

The cab tilt mechanism shall be custom designed for ease of maintenance and consist of two (2) hydraulic cylinders with a maximum lift capacity of 19,625 pounds. Hydraulic lines shall be rated at 20,000 PSI burst pressure. The hydraulic cylinders shall be equipped with a velocity fuse that protects the cab from accidentally descending when the cab is in the tilt position.

Hydraulic cylinders shall be detachable to allow removal of the engine for major service. A remote cable operated mechanical cylinder stay bar and release shall be provided to insure a positive lock in the tilted position.

The two (2) rear outboard cab latches shall be of the hydraulic pressure release, automatic re-latching type, and provide an automatic positive lock when the cab is lowered. The latch shall not disengage or experience any damage when subjected to a pull apart tensile load of 6,000 lbs. The

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Complies**

**Yes      No**

hydraulic pressure required to unlock the latch shall not exceed 550 PSI. The latch shall withstand

5,000 PSI without leaks or damage and withstand 1,000 continuous cycles of operation under a load of 1,000 lbs at liftoff. The tilt pump shall be electric over hydraulic type, with a pressure rating of not less than 4,000 PSI. Additionally, the cab tilt device shall be both electrically and hydraulically interlocked to prevent inadvertent activation of the cab tilt system.

- A "CAB NOT LATCHED" indicator shall be provided in the cab dash-warning cluster.
- A dual switch control system shall be provided for the cab tilt, located on the passenger side of the vehicle. System shall consist of a three (3) position toggle switch along with a rubber covered push button switch.

**AUXILIARY MANUAL CAB LIFT**

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.

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.

**CHASSIS FRAME ASSEMBLY**

The chassis frame shall be fabricated in its entirety at the manufacturer's facility. This shall prevent any split responsibility in warranty or service.

The frame shall consist of two (2) channels fastened together by cross members. All structural fasteners used in the frame shall be Grade 8 hardware. Hardened steel washers shall be used under all bolt heads and nuts to avoid stress concentrations. Top flange shall be free of bolt heads. All spring hangers shall be machined steel castings. Weldment type chassis and the use of Huck bolts shall never be used.

Each main frame rail shall be 10-1/4" x 4" x 3/8", fabricated from 110,000 PSI minimum yield steel, with a minimum section modulus of 17.97 cu in and a resisting bending moment (RBM) of 1,976,700 inch pounds.

A full length inner frame liner shall be installed. Total section modulus of each rail, with liner, shall be 31.20 cu in and the total resisting bending moment (RBM) shall be a minimum of 3,432,000 in-lbs, per rail.

The chassis frame assembly, consisting of frame rails, cross members, axles and steering gear(s), shall be finish painted before installation of any electrical wiring, fuel system components, or air system components. All components or brackets fastened to the frame rails shall be cleaned, primed and painted prior to being attached to the frame rails.

Bid submittals including heat treated frame rails shall not be considered. Heat treating of frame rail steel produces rails that are not uniform in their mechanical and molecular properties throughout the length of the rail.

The frame rail shall be manufactured for the specific apparatus under construction, thereby eliminating any unnecessary holes in the frame. All frame holes shall be drilled with internally cooled bits. Punching of frame rail holes is a cause for immediate rejection of the apparatus. Bidders shall state if the frame holes are drilled or punched. No exceptions.

**PAINTED STEEL FRONT BUMPER**

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Complies**

**Yes      No**

A 12" high, 101" wide, painted steel front bumper shall be provided. The bumper shall be constructed from 3/8" steel, which shall be designed with 45-degree welded corners and a 2" flange on the top and bottom. The ends of the bumper shall be supported by horizontal channels, which shall extend from the frame rails to the sides of the bumper. The color of the bumper shall match the cab and body base color.

The bumper shall be extended 20" with a polished aluminum tread plate gravel shield enclosing the top and ends.

The polished aluminum tread plate gravel shield shall extend over the top bumper flange. The gravel shield shall match the contour of the front bumper.

**STORAGE WELL - CENTER**

One (1) storage well constructed of 1/8" aluminum shall be installed in the gravel shield. This storage well shall be center mounted between the chassis frame rails. The bottom of the storage well shall have a minimum of four (4) drain holes.

One (1) hinged, latched, aluminum tread plate cover shall be installed on the storage well located in the center of the bumper extension.

**FRONT TOW HOOKS**

Two (2) front painted tow hooks shall be fastened directly to the frame, below the front bumper. The tow hooks shall be fastened with grade 8 bolts and nuts.

**FRONT AXLE**

Front axle shall be a Meritor MFS-20-133 A-N, reversed Elliott "I" beam type and include low friction "Easy Steer" bushing technology for maximum steering ease and longer life.

The front axle shall be rated at 20,000 lbs.

**FRONT DISC BRAKES**

Meritor EX-225 H, 17" disc brakes shall be provided for the front axle. The front brakes shall be full air actuated with automatic slack adjustment.

**FRONT SUSPENSION**

Front suspension shall be progressive rate front leaf springs. The spring shall be permanently pinned at the front and have a shackle double pinned mounting at the rear.

The front leaf springs shall have a minimum of 9 leaves, a minimum length of 51", and a minimum width of 3-1/2". The capacity at ground shall be 20,000 lbs., or exceed the capacity of the axle, unless specified to the contrary in this specification. All springs shall be of center bolt design. All springs shall be positively restrained from rotating in brackets and shackles.

**FRONT SHOCK ABSORBERS**

The front suspension system shall be equipped with Monroe, model "Magnum - 70", double acting hydraulic shock absorbers. Shock absorbers to have a minimum bore of 1.38" and an outside diameter of approximately 3-1/4".

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Complies**

**REAR AXLE**

**Yes**

**No**

Rear axle shall be a single, Meritor RS-24-160 with a capacity of 24,000 lbs. (Minimum). Axle shall be a single reduction type and have a gear ratio as required. Oil seals shall be provided as standard equipment.

**REAR BRAKES**

Brakes shall be "S" Cam, 16-1/2" x 7" size and shall be full air actuated with automatic slack adjusters.

**REAR AXLE TOP SPEED**

The rear axle/s shall be geared for a vehicle top speed in accordance with NFPA sections 4.15.2 and 4.15.3.

Units with GVWR over 26,000 pounds shall be limited to 68 mph. If the combined tank capacity is over 1250 gallons of foam and water or the GVWR is over 50,000 pounds, the vehicle top speed shall be limited to 60 mph or the fire service rating of the tires, whichever is lower.

**TIRE CHAINS**

The vehicles rear drive axle shall be equipped with an On-Spot tire chain system. The system shall utilize the existing vehicle air compressor system. A switch shall be provided in the drivers console area to control the activation of the chains. The switch shall have a safety feature, which does not allow for inadvertent activation.

**REAR SUSPENSION**

The rear suspension shall be leaf type, variable rate with a 24,000 lb. rating. The main spring assembly shall consist of 14 leaves with the main spring measuring 60.5" L x 3" W.

There shall be a rubber block helper mounted above the leaf springs, rated at 4,500 lbs. Two (2) fully wrapped leaves shall transmit driving and braking torque. Rating shall be designed to match or exceed the rear axle weight rating. Designs allowing main pack to float are not acceptable.

**BRAKE SYSTEM**

A dual circuit, air operated braking system, meeting the design and performance requirements of FMVSS -121 and the operating test requirements of NFPA 1901 current edition shall be installed. It shall be direct air type with dual air treadle in the cab. The system shall be powered by an engine mounted, gear driven air compressor protected by a heated air dryer.

The air system shall be plumbed with reinforced, air brake tubing/hose in conformance to SAE J 844-94, Type B and U.S.D.O.T. standards. The compressor discharge shall be plumbed with stainless steel braided hose lines with a Teflon lining. Eaton Synflex Eclipse Air Brake tubing shall be run along the inside frame rails and connected with push to connect type fittings that meet or exceed all industry standards. All Synflex tubing shall be secured with non-conductive, corrosion resistant strapping mounted with standoff fasteners. Cord reinforced rubber hose lines with brass fittings shall be installed from the frame rails to axle mounted air connections.

The air system shall provide a rapid air build-up feature and low-pressure protection valve with light and buzzer, designed to meet the requirements of NFPA 1901, current edition.

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Complies**

**ABS SYSTEM**

**Yes**

**No**

An Anti-Skid Braking System (ABS) shall be provided to improve braking control and reduce stopping distance. This braking system shall be fitted to all of the axles. All electrical connections shall be environmentally sealed, water, weatherproof, and vibration resistant.

The system shall constantly monitor wheel behavior during braking. Sensors on each wheel shall transmit wheel speed data to an electronic processor which shall sense approaching wheel lock causing instant brake pressure modulation up to 5 times per second in order to prevent wheel lockup. Each wheel shall be individually controlled.

To improve service trouble shooting, provisions in the system for an optional diagnostic tester shall be provided. The system shall test itself each time the vehicle is started. A dash-mounted light shall go out once the vehicle has attained 4 mph after successful ABS start-up. To improve field performance; the system shall be equipped with a dual circuit design. The system circuits shall be configured in a diagonal pattern. Should a malfunction occur, the defective circuit shall revert to normal braking action. A warning light shall signal malfunction to the operator. The system shall consist of a wheel mounted toothed ring, sensor, sensor clip, electronic control unit and solenoid control valve.

The sensor clip shall hold the sensor in close proximity to the toothed ring. An inductive sensor consisting of a permanent magnet with a round pole pin and coil shall produce an alternating current with a frequency proportional to wheel speed. The unit shall be sealed, corrosion resistant and protected from electromagnetic interference. The electronic control unit shall monitor the speed of each wheel. A deviation shall be corrected by cyclical brake application and release. If a malfunction occurs, the defective circuit shall signal the operator and the malfunctioning portion of the system shall shut down. The system shall be installed in a diagonal pattern for side-to-side control. The system shall insure that each wheel is braking to optimum efficiency up to 5 times a second.

The system shall also control application of the auxiliary engine exhaust or drive line brakes to prevent wheel lock.

This system shall have a three (3) year or 300,000 mile parts and labor warranty as provided by Meritor Wabco Vehicle Control Systems.

**ELECTRONIC STABILITY CONTROL (ESC)**

An Electronic Stability Control (4 or 6 Channel) shall be provided as part of the Standard ABS system. The Electronic Stability Control system is capable of recognizing and assisting in both rollover and vehicle-under and over-steer situations through advanced monitoring of vehicle parameters and automatic and selective application of the chassis brakes. The Electronic Stability system uses lateral and yaw accelerometers, wheel speed sensors, ABS pressure modulator valves and an ECU to control the four corners of a vehicle. The controller monitors the vehicle response to turning and braking and adjusts or modulates the brake pressure at the wheel end to slow the vehicle in roll control, stabilize the vehicle when under or over steering, and modulate brake pressure when excessive wheel slip, or wheel lockup is detected. By these actions, the ESC system helps to maintain the vehicle's lateral and roll stability at all times, and improves braking and steer ability during heavy brake applications and during braking on slippery surfaces.

**AUTOMATIC TRACTION CONTROL (ATC)**

To further improve vehicle drive characteristics, the unit shall be fitted with automatic traction control (ATC). This system shall control drive wheel slip during acceleration from a resting point. An extra solenoid valve shall be added to the ABS system. The system shall control the engine and brakes to ensure efficient acceleration. The system shall be equipped with a dash-mounted light that





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Complies**

- Operating Cycles Four (4)
- Bore & Stroke 4.49 x 5.69 in.
- Displacement 543 cu. in.
- Compression Ratio 16.6:1
- Governor Type Limiting Speed
- Drive line Size 1710.

**Yes**

**No**

Engine oil filters shall be engine manufacturers branded or approved equal. Engine oil filters shall be accessible for ease of service and replacement.

A fuel/water separator shall be provided.

**ENGINE BASE WARRANTY**

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

**ENGINE CHASSIS CERTIFICATION**

The engine shall be installed in accordance with engine manufacturer's instructions. The apparatus manufacturer shall be able to furnish proof of engine installation approval by the engine manufacturer.

**COOLING/RADIATOR**

The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system standards.

To provide maximum corrosion resistance and cooling performance, the entire radiator core shall be constructed using long life aluminum alloy. The core shall be made of aluminum fins, having a serpentine design, brazed to aluminum tubes. The tubes shall be brazed to aluminum headers. No solder joints or leaded material of any kind shall be acceptable in the core assembly.

The radiator core shall have a height of 35.92" x a width of 37.62". Supply and return tanks made of glass-reinforced nylon shall be crimped on to the core assembly using header tabs and a compression gasket to complete the radiator core assembly. The radiator shall be compatible with commercial antifreeze solutions.

There shall be a full steel frame around the entire radiator core assembly. The radiator core assembly shall be isolated within the steel frame by rubber inserts to enhance cooling system durability and reliability. The radiator shall be mounted in such a manner as to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven ground. The radiator assembly shall be isolated from the chassis frame rails with rubber isolators.

The cooling system shall include a surge tank mounted to the top of the radiator framework that shall remove air in the system. The surge tank shall be equipped with a sight glass to monitor the level of coolant. The radiator shall be equipped with a dual seal cap that shall allow for expansion and recovery of coolant into a separate integral chamber.

The cooling system shall be designed for a maximum of fifteen (15) PSI operation.

A drain port shall be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

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Complies**

**Yes**

**No**

Extended life engine coolant shall provide anti-freeze protection to -30° F. The mixture shall be per the engine manufacture's specifications.

The engine cooling system shall have an inline coolant filter that shall have a shut off valve for ease of maintenance.

The engine cooling system shall be certified by the engine manufacturer to meet cooling index requirements for a minimum ambient temperature or 110-degrees Fahrenheit.

**TRANSMISSION COOLER**

A shell and tube transmission oil cooler shall be provided using engine coolant to control the transmission oil temperature. The cooler shall have an aluminum shell and copper tubes. The cooler shall be assembled using pressed in rubber tube sheets to mechanically create a reliable seal between the coolant and the oil. No brazed, soldered, or welded connections shall be used to separate the coolant from the oil.

**RADIATOR SKID PLATE**

The radiator installation shall include a heavy-duty radiator skid plate to protect the radiator from debris or obstructions under the chassis. The skid plate shall be designed so the angle of approach is not affected.

**CHARGE AIR COOLER**

The charge air cooler shall be constructed of aluminum with cast aluminum side tanks. To not restrict air flow to the radiator, the charge air cooler shall be designed to be an integral part of the radiator assembly, mounted directly on top of the radiator. Rubber isolators shall be used at the mounting points to reduce transmission of vibrations.

Where applicable, the charge air cooler pipes shall be constructed of appropriately sized aluminized steel tubing with 0.06" wall thickness and formed hose barbs. The connections between these pipes, the engine and charge air cooler, shall be made using high temperature silicone hoses rated for use in temperature up to 500°F, and heavy duty constant tension T-Bolt spring hose clamps. These connections shall adequately allow for movement of the engine relative to the charge air cooler.

Charge air coolers that are located in front of the radiator, that block or restrict air flow into the engine radiator or introduce above ambient temperature air into the radiator in any way shall not be used.

**COOLING SYSTEM FAN**

The engine cooling system shall incorporate a heavy duty fan, installed on the engine and include a shroud.

The fan shall be equipped with an air operated clutch fan, which shall activate at a pre-determined temperature range.

Recirculation shields shall be installed to ensure that air which has passed through the radiator is not drawn through it again.

**BEVERLY FIRE DEPARTMENT  
 SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER  
COOLANT HOSE AND PIPING**

Bidder Complies	
Yes	No

All coolant piping shall be constructed of appropriately sized powder coated steel tubing with 0.06" wall thickness and formed hose barbs. All connections between coolant pipes and chassis components shall be made using appropriately sized silicone hoses or elbows, rated for use in temperatures ranging from -60°F to +350°F, and appropriately sized stepless constant torque hose clamps. These connections shall be minimal in number to reduce the number potential leak points, and shall adequately allow for movement of the engine relative to chassis mounted components. All integral hoses supplied with the engine shall be as supplied by the engine manufacturer.

**HEATER HOSES**

Premium Goodyear Hi-Miler® blue heater hoses shall be furnished for the heater system. The Hi-Miler® hose shall have a core of black Versigard (EPDM) with spiral flextan reinforcement and blue Versigard coating. All heater hoses shall be equipped with constant torque type hose clamps. All integral hoses supplied with the engine shall be as supplied by the engine manufacturer.

**LOW COOLANT INDICATOR LIGHT AND ALARM**

A low engine coolant indicator light located in the dash instrument panel shall be provided. An audible alarm shall be provided to warn of the low coolant condition.

**ENGINE FAST IDLE**

A fast idle for the electronic controlled engine shall be provided. The fast idle shall be controlled by switches located on the smart wheel.

An electronic interlock system shall prevent the fast idle from operating unless the transmission is in "Neutral" and the parking brake is fully engaged. If the fast idle control is used in conjunction with a specified engine/transmission driven component or accessory, the fast idle control shall be properly interlocked with the engagement of the specified component or accessory.

**AIR CLEANER**

An engine air cleaner shall be provided. The air cleaner shall include a dry type element and shall be installed in accordance with the engine manufacturer's recommendations. The air cleaner shall be located to the rear of the engine, with streamline air pipes and hump hose connections from the inlet to the air cleaner and from the air cleaner to the turbo. The air cleaner shall be easily accessible when the cab is tilted. The air cleaner shall be plumbed to the air intake system that shall include a self sealing connection between the cab and air cleaner assembly to allow the cab to be tilted.

**SPARK ARRESTOR**

A spark arrestor shall be installed in the chassis air intake system. This arrestor shall be mounted behind the intake grille to filter out airborne embers. The spark arrestor housing must be easily accessible when the cab is tilted.

**ACCELERATOR CONTROL**

A floor mount accelerator pedal shall be installed on the floor in front of the driver. The pedal shall be positioned for comfort with ample space for fire boots and adequate clearance from the brake pedal control.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER  
REMOTE THROTTLE CONTROL HARNESS**

Bidder Complies	
Yes	No

An apparatus interface wiring harness for the engine shall be supplied with the chassis. The harness shall include a connector for connection to the chassis harness which shall terminate in the left frame rail behind the cab for reconnection to required throttle control harnesses. The harness shall contain necessary connectors for a pressure governor and a multiplexed gauge. Separate circuits shall be included for pump controls, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle switch and high idle indication light.

An apparatus interface wiring harness shall also be included which shall be wired to the cab harness interface connectors and shall incorporate circuits with relays to control pump functions. This harness shall control the inputs for the transmission lock up circuits, governor/hand throttle controls and dash display which shall incorporate "Pump Engaged" and "OK to Pump" indicator lights. The harness shall contain circuits for the apparatus builder to wire in a pump switch.

**ENGINE PROGRAMMING REMOTE THROTTLE**

The engine ECM (Electronic Control Module) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

**TRANSMISSION**

An Allison World Transmission, Model 3000EVSR electronically controlled, automatic transmission shall be provided. Transmission specifications shall be as follows:

- Max. Gross Input Power                      450 HP
- Max. Gross Input Torque                      1250 lb. ft.
- Input Speed (Range)                            2000- 2800 RPM
- Direct Gear (Pumping)                        4th (Lock-up)

Transmission installation shall be in accordance with the transmission manufacturer's specification. The transmission shall be readily and easily removable for repairs or replacement.

The transmission shall contain a built-in output retarder, controlled by an on/off switch on the dash, and actuated by utilizing the brake pedal.

One (1) PTO opening shall be provided on both the left and right side of the converter housing (positions four (4) o'clock and eight (8) o'clock).

The transmission shall be calibrated for five (5) forward gears and one (1) reverse gear. Each gear shall have the following ratios:

- First                      3.49:1
- Second                    1.86:1
- Third                      1.41:1
- Fourth                    1.00:1
- Fifth                      0.75:1
- Reverse                   -5.03:1

An illuminated, touch-pad type shift control shall be mounted in the cab, convenient to the driver. Shift control shall be approved by the transmission manufacturer.

**TRANSMISSION OIL LEVEL SENSOR**

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

The transmission shall be equipped with the oil level sensor (OLS); this sensor shall allow the operator to obtain an indication of the fluid level from the shift selector. The sensor display shall provide the following checks, correct fluid level, low fluid level and high fluid level.

**PARK TO NEUTRAL**

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

**RETARDER CONTROL OPTION - 1/3 THROTTLE REL. 2/3 BRAKE PEDAL**

The retarder control shall be activated 1/3 upon accelerator release, with the remaining 2/3 retarder activation in conjunction with the brake treadle.

The retarder shall be wired in such a manner so as to illuminate the chassis brake lights when the retarder is engaged and operating.

A temperature gauge and indicator light shall be provided for retarder monitoring.

**SYNTHETIC TRANSMISSION FLUID**

Castrol "TRANSYND" or an equivalent synthetic TES 295 transmission fluid shall be utilized to fill the 3000 EVS transmission.

**DRIVE LINES**

Drive lines shall be Dana (Spicer) 1710 heavy duty series or equal, with "glide coat" splines on all slip shafts. The chassis manufacturer shall utilize an electronic type balancing machine to statically and dynamically balance all drive shafts. The manufacturer shall provide proof of compliance with all drive shaft manufacturer's standards and specifications.

**DIESEL EXHAUST FLUID TANK**

A five (5) gallon diesel exhaust fluid (DEF) tank shall be provided and installed. The tank shall be mounted in the area of the battery box and shall be accessible through a door in the crew area step well.

The tank shall include an internal heater that will be fed by engine coolant directly from the engine block to ensure it is always kept at the proper temperature per EPA requirements. The tank shall include a temperature sensor to control the flow of the engine coolant from the heater valve to the DEF tank.

A DEF fluid level sensor shall be provided with the DEF tank and connected to the level gauge on the dashboard.

**EXHAUST SYSTEM**

The exhaust system shall be installed in accordance with the engine manufacturer's requirements and meet all Environmental Protection Agency and State noise level requirements. Exhaust system components shall be securely mounted and easily removable.

The diesel particulate filter/muffler shall be fabricated from stainless steel and of a size compatible with the engine exhaust discharge.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

Exhaust tubing shall be a minimum of 16 gauge stainless steel from the turbocharger on the engine to the inlet of the diesel particulate filter. Any flexible exhaust tubing shall be HDT stainless steel type. To minimize heat build-up, exhaust tubing within the engine compartment shall be wrapped with an insulating material. Exhaust shall be wrapped from the turbocharger to the entrance of the muffler. Material shall be held in place with worm gear type clamps.

An exhaust diffuser shall be provided to reduce the temperature of the exhaust as it exits the tailpipe.

Separate "regeneration" enable and prohibit switches shall be provided under the dash board on the driver's side. Each switch shall be provided with a spring loaded protective cover and shall be clearly marked as to function.

**SELECTIVE CATALYTIC REDUCTION (SCR)**

The vehicle shall be equipped with SCR technology that uses a urea based diesel exhaust fluid (DEF) and a catalytic converter to significantly reduce oxides of nitrogen (NOx) emissions.

The SCR system shall reduce levels of NOx (oxides of nitrogen emitted from engines) by injecting small quantities of diesel exhaust fluid (DEF) into the exhaust upstream of a catalyst, where it vaporizes and decomposes to form ammonia and carbon dioxide. The ammonia (NH3), in conjunction to the SCR catalyst, converts the NOx to harmless nitrogen (N2) and water (H2O).

The exhaust tailpipe extending from the SCR catalyst to the side of the vehicle shall be constructed from 16-gauge aluminized steel tubing. The exhaust discharge shall be on the officer side of the apparatus forward of the rear axle.

**FUEL TANK**

Fuel tank shall be a minimum of fifty (50) gallon capacity. It shall have a minimum fuel filler neck of 2" ID. A 1/2" minimum diameter drain plug shall be provided. The tank shall be fabricated from hot rolled, pickled and oiled steel. Provisions for an additional feed line and fuel level float shall be provided for future use.

The fuel tank shall be installed behind the rear wheels between the frame rails.

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

The fuel tank shall be able to withstand a longitudinal acceleration of -23.0g at 0.166 seconds in accordance to SAE J211 standards using a channel frequency class 600 filter. Testing shall be performed at and verified by a third party testing and evaluation center.

**FUEL TANK STRAPS**

The straps supporting the diesel fuel tank shall be made of Type 304L stainless steel with stainless steel hardware.

The fuel lines shall be textile reinforced synthetic rubber or plastic hose that is approved for use with diesel fuel and has a minimum max temperature rating of 250° F. The lines shall be sized to meet engine manufacture's requirements, and shall be carefully routed and secured along the inside of the frame rails.

A fuel line shut-off valve shall be provided on both the inlet and outlet side of the primary fuel filter to allow for easy removal of the filter.

The valves shall be labeled "Fuel Shut-Off". No reserve feature shall be included in the tank.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

**FUEL FILTER/WATER SEPARATOR**

A fuel filter/water separator shall be provided in the fuel system. A "water in fuel" indicator shall be provided on the dash.

**FUEL POCKET**

A fuel fill shall be provided in the left side rear wheel well area. A Cast Products heavy duty cast aluminum spring loaded hinged fill door shall be provided.

A label indicating "Ultra Low Sulfur Diesel Fuel Only" shall be provided adjacent to the fuel fill.

**DUAL POWER STEERING**

A dual power steering system shall be provided utilizing a Sheppard model #M110 main steering gear on the driver side of the chassis and a Sheppard model #M90 steering gear on the officer side of the chassis.

The power steering gear on the officer side of the chassis shall increase performance in turning the officer side wheel assembly, reducing loads and forces on the main gear and components.

The steering system shall be designed to maximize the turning capabilities of the front axle no matter the rating and tire size. The use of a power assist cylinder on the officer side of the chassis is NOT ACCEPTABLE on front axles of this capacity.

The system shall be designed utilizing an engine driven hydraulic pump, with a maximum operating pressure of 2000 PSI. Steering design shall permit a maximum of 5.6 turns from stop to stop. Steering system components shall be mounted in accordance with the steering gear manufacturer's instructions.

**STEERING COLUMN**

The steering column shall be a "Douglas Autotech" tilt and telescope column. A lever mounted on the side of the column shall control the tilt and telescope features.

The steering shaft from the column to the miter box shall have a rubber boot to cover the shaft slip and a second rubber boot to seal the passage hole in the floor.

There shall be a ergonomically designed, self-canceling lever, that shall control the following functions:

- Left and right turn signals
- High beam activation
- Hazard warning switch
- Two speed with intermittent windshield wiper control
- Windshield washer control

**SMARTWHEEL STEERING WHEEL**

The steering column shall be a "Smart Wheel" multiplexed steering wheel. The "Smart Wheel" shall be designed so that the driver's hands never need to leave the steering wheel once the engine is running and the parking brake is released.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

The "Smart Wheel" steering wheel shall include ten (10) multiplexed switches that control the

following functions:

- Air Horn
- Q2B
- Q2B Brake
- Master Warning Switch
- Mic (Push to talk)
- Siren
- Auxiliary Braking
- High Idle
- Throttle Up - High Idle Function
- Throttle Down - High Idle Function

The functions shall be multiplexed through a clock spring circuit board. Collector rings switch wiring is not acceptable! The steering wheel shall be 18 inches in diameter.

In addition to the Smart Wheel switches the electric horn switch shall be located in the center of the steering wheel.

**4FRONT® - FRONTAL AIR BAG PROTECTION**

The cab will be equipped with a frontal impact protection system consisting of one (1) air bag in front of the driver in the steering wheel. The steering wheel air bag shall be designed to protect the driver in the event of a frontal or oblique impact.

The driver seat shall be equipped with a S4 pretensioner for suspension seat and a seat belt pretensioner.

**4FRONT® - FRONTAL AIR BAG PROTECTION FOR OS KNEE BOLSTER**

Frontal impact protection system consisting of one (1) knee bolster air bag, in front of the officer mounted in the firewall panel below the dash panel. The officer seat will be equipped with a S4 pretensioner for a suspension seat and a seat belt pretensioner.

The officer side knee bolster air bag shall be designed to protect the legs of the occupant, when used in combination with the 3-point seat belt, in the event of a frontal or oblique impact.

The frontal air bag system shall be designed specifically for the cab configurations they are used in. The cab and chassis design shall have been subjected, via third party test facility, to a 21 MPH crash impact during frontal and oblique impact testing. Testing shall include all major chassis and cab components such as mounting straps for fuel and air tanks, suspension mounts, front suspension components, rear suspension components, frame rail cross members, engine and transmission and their mounts, pump house and mounts, frame extensions and body mounts. The testing shall provide configuration specific information used to optimize the timing for firing the air bags.

The driver side air bag shall be mounted in the steering wheel and will be designed to protect the head and upper torso of the occupant, when used in combination with the 3-point seat belt, in the event of a frontal or oblique impact. The passenger side knee bolster air bag shall be mounted in the modesty panel below the dash panel and shall be designed to protect the legs of the occupant, when used in combination with the 3-point belt, in the event of a frontal or oblique impact.

In the event of a frontal or oblique impact, the system shall deploy air bag/s, and activate the following components integrated into seating position equipped with an air bag:

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

Suspension seats will be retracted to lowest travel position. Seat belts will be pretensioned to firmly hold the occupants in place.

**ROAD SAFETY KIT**

A road safety kit shall be furnished with the following equipment:

- 2 1/2 lb. B-C fire extinguisher
- Triangle safety reflectors.

**CHASSIS ELECTRICAL SYSTEM**

All electrical wiring in the chassis shall be SXL cross link insulated type. Wiring is to be color coded and include function codes every three (3) inches on both sides. Wiring harnesses shall be routed in protective, heat resistant loom, securely and neatly installed. Two (2) power distribution centers shall be provided in central locations for greater accessibility. The power distribution centers shall contain automatic thermal self resetting breakers, power control relays, flashers, diode modules, daytime driving light module, and engine and transmission data links. All breakers and relays shall have a capacity substantially greater than the expected load on the related circuit, thus ensuring long component life. Power distribution centers shall be composed of a system of interlocking plastic modules for ease of custom construction.

The power distribution centers shall be function oriented. The first is to control major truck function. The second control center shall enable overhead switching and interior operations. Each module shall be single function coded and labeled to aid in troubleshooting. The centers will also have accessory breakers and relays for future installations. All harnesses and power distribution centers shall be electrically tested prior to installation to ensure the highest system reliability.

All external harness interfaces shall be of a triple seal type connection to ensure a proper connection. The cab/chassis and the chassis/body connection points shall be mounted in accessible locations. Complete chassis wiring schematics shall be supplied with the apparatus.

**WIRING HARNESS DESCRIPTION**

The wiring harness contained on the chassis shall be designed to utilize wires of stranded copper or copper alloy of a gauge rated to carry 125% of maximum current for which the circuit is protected without exceeding 10% voltage drop across the circuit. Wiring will be uniquely identified by color code or circuit function code, labeled at a minimum of every three (3) inches. The identification of the wiring shall be referenced on a wiring diagram. All wires conform to SAEJ1127 (Battery Cable), SAEJ1128 (Low Tension Primary Cable), SAEJ1560 (Low Tension Thin Wall Primary Cable).

The covering of harnesses shall be moisture resistant loom with a minimum rating of 289 Degrees Fahrenheit and a flammability rating of VW-1 as defined in UL62. The covering of jacketed cable shall have a minimum rating of 289 degree Fahrenheit.

All harnesses will be securely installed in areas protected against heat, liquid contaminants and damage. The harness connections and terminations shall use a method that provides a positive mechanical and electrical connection and are in accordance with the device manufacturer's instructions. No connections within the harness may utilize wire nut, insulation displacement, or insulation piercing components.

All circuits shall conform to SAEJ1292. All circuits will be provided with low voltage over current protective devices. These devices shall be readily accessible and protected against heat in excess of component rating, mechanical damage, and water spray. Star washers shall not be used for ground connections.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER  
DIRECT GROUNDING STRAPS**

Bidder Complies	
Yes	No

Direct grounding straps shall be mounted to the following areas; frame to cab, frame to body and frame to pump enclosure.

All exposed electrical connections shall be coated with "Z-Guard 8000" to prevent corrosion.

**EMI/RFI PROTECTION**

The apparatus shall incorporate the latest designs in the electrical system with state of the art components to insure that radiated and conducted electromagnetic interference (EMI) and radio frequency interference (RFI) emissions are suppressed at the source.

The apparatus proposed shall have the ability to operate in the environment typically found in fire ground operations with no adverse effects from EMI/RFI.

EMI/RFI susceptibility is controlled by utilizing components that are fully protected and wiring that utilizes shielding and loop back grounds where required. The apparatus shall be bonded through wire braided ground straps. Relays and solenoids that are suspect to generating spurious electromagnetic radiation are diode protected to prevent transient voltage spikes.

In order to fully prevent the radio frequency interference the Beverly Fire Department may be requested to provide a listing of the type, power output, and frequencies of all radio and bio medical equipment that is proposed to be used on the apparatus.

**12 VOLT ELECTRICAL SYSTEM TESTING**

The apparatus low voltage electrical system shall be tested and certified by the manufacturer. The certification shall be provided with the apparatus. All tests shall be performed with air temperature between 0°F and 100°F.

The following three (3) tests shall be performed in order. Before each test, the batteries shall be fully charged.

**TEST #1-RESERVE CAPACITY TEST**

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

**TEST #2-ALTERNATOR PERFORMANCE TEST AT IDLE**

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

**TEST #3-ALTERNATOR PERFORMANCE TEST AT FULL LOAD**

The total continuous electrical load shall be activated with the engine running up to the engine manufacturers governed speed. The test duration shall be a minimum of 2 hours. Activation of the load management system shall be permitted during this test.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

However, an alarm sounded due to excessive battery discharge, as detected by the system, or a system voltage of less than 11.7 volts DC for a 12 volt system, for more than 120 seconds, shall be considered a test failure.

**LOW VOLTAGE ALARM TEST**

Following completion of the preceding tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm is activated.

The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts shall be considered a test failure. The battery system shall then be able to restart the engine.

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

- Documentation of the electrical system performance test
- A written load analysis of the following;
- Nameplate rating of the alternator
- Alternator rating at idle while meeting the minimum continuous electrical load
- Each component load comprising the minimum continuous electrical load.
- Additional loads that, when added to the minimum continuous load, determine the total connected load.
- Each individual intermittent load.

**LOAD MANAGEMENT SYSTEM**

A load management system shall be provided. The load manager shall have 16 programmable outputs to supply warning and load switching requirements. The load management system shall be capable of offering load sequencing, load shedding, fast idle control, low voltage warning, scene mode operation and response mode operation.

Outputs 1 thru 12 shall be independently programmable to activate during the scene mode, the response mode or both. These outputs can also be programmed to activate with the ignition or master warning switch, or to sequence and shed along with the priority. Output 13 shall be designated to activate a fast idle system. Output 14 shall provide a low voltage warning for an isolated battery. Output 15 is a user configurable output and shall be programmable for activating between 10.5 and 15 volts. Output 16 shall provide a low voltage alarm that activates at the NFPA required 11.8 volts.

The load management shall have a digital display to indicate system voltage in normal operation mode and also indicate the output configuration during programming mode.

The load management shall also be protected against reverse polarity and shorted outputs, and be enclosed in a metal enclosure to enhance EMI/RFI protection.

**CHASSIS DIAGNOSTICS SYSTEM**

Diagnostic ports shall be accessible while standing on the ground and located 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.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

The diagnostic system shall include the following:

- A single port to monitor the engine, transmission and ABS system and diagnostics of the roll sensor (if applicable)
- Engine diagnostic switch (blink codes)
- ABS diagnostic switch (blink codes)
- Allison Transmission Codes (through touch pad shifter)

**ADVANCED CHASSIS DIAGNOSTICS**

A Nexiq USB Link Adapter shall be provided to interface between the chassis and a computer.

The following software shall be provided to allow technicians to view diagnostic data from the chassis components:

- Cummins Insite - Engine Diagnostic Software
- Allison Doc - Transmission Diagnostic Software
- Wabco Toolbox - ABS Diagnostic Software

**VOLTAGE MONITOR SYSTEM**

A voltage monitoring system shall be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system shall provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm shall activate if the system falls below 11.8 volts DC for more than two (2) minutes.

**INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM**

A system shall be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

**12 VOLT SEQUENCER**

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.

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.

Rear of cab Air-Conditioning and Heat shall be load managed.

**ELECTRICAL HARNESS REQUIREMENT**

To ensure dependability, all 12-volt wiring harnesses installed by the manufacturer shall conform to the following specifications:

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

- SAE J 1128 - Low tension primary cable
- SAE J 1292 - Automobile, truck, truck-tractor, trailer and motor coach wiring
- SAE J 163 - Low tension wiring and cable terminals and splice clips
- SAE J 2202 - 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 J 1939 - Serial communications protocol
- SAE J 2030 - Heavy-duty electrical connector performance standard
- SAE J 2223 - Connections for on board vehicle electrical wiring harnesses
- NEC - National Electrical Code
- SAE J 561 - Electrical terminals - Eyelet and spade type
- SAE J 928 - Electrical terminals - Pin and receptacle type A.

For increased reliability and harness integrity, harnesses shall be routed throughout the cab and 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 is never allowed at the manufacturer.

Wiring shall be run in loom or conduit where exposed, and have grommets or other edge protection where wires pass through metal. 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 3.00" intervals. All wiring installed between the cab and into doors shall be protected by a wire conduit 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:

- All holes made in the roof shall be caulked with silicon. Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.
- 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.
- 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.
- 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.
- Any lights containing non-waterproof sockets in a weather-exposed area shall have corrosion preventative compound added to the socket terminal area.
- All electrical terminals in exposed areas shall have protective coating applied completely over the metal portion of the terminal.
- Rubber coated metal clamps shall be used to support wire harnessing and battery cables routed along the chassis frame rails.
- 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.
- 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.
- All standard wiring entering or exiting the cab shall be routed through sealed bulkhead connectors to protect against water intrusion into the cab.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER  
BATTERY CABLE INSTALLATION**

Bidder Complies	
Yes	No

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

- SAE J 1127 - Battery Cable
- SAE J 561 - Electrical terminals, eyelets and spade type
- SAE J 562 - Nonmetallic loom
- SAE J 836 A - Automotive metallurgical joining
- SAE J 1292 - 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:

- Splices shall not be allowed on battery cables or battery cable harnesses.
- For ease of identification and simplified use, battery cables shall be color coded. All positive battery cables shall be marked red in color. All negative battery cables shall be black in color.
- For ease of identification, all positive battery cable isolated studs throughout the cab and chassis shall be red in color.
- For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus shall be coated to prevent corrosion.
- 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.

**ALTERNATOR**

The alternator shall be Leece Neville Model 4962PA, 320 amp, serpentine belt driven unit. The installation shall include an integral self-diagnostic regulator and rectifier for compact installation.

The alternator installation shall be designed to provide maximum output at engine idle speed to meet the minimum continuous electrical load of the apparatus as required.

**BATTERY SYSTEM**

Five (5) Exide #HP-31D, Group 31, maintenance free batteries shall be provided. Each battery shall be rated at 925 CCA at 0° F and shall have a reserve capacity of 180 minutes.

Wiring for the batteries shall be 4/0 welding type dual path starting cables for SAEJ541.

**BATTERY STORAGE**

Batteries shall be securely mounted in fixed 3/16" GR50 steel trays located on each side of the chassis frame. Complete access shall be provided when the cab is fully tilted. Batteries shall be mounted on non-corrosive matting material.

The battery tray shall be able to withstand a longitudinal acceleration of -46.5g at 0.246 seconds in accordance to SAE J211 standards using a channel frequency class 600 filter. Testing shall be performed at and verified by a third party testing and evaluation center.

**BATTERY DISCONNECT SWITCH**

The chassis batteries shall be wired in parallel to a single 12 volt electrical system, controlled through a heavy duty, rotary type, master disconnect switch. The master disconnect switch shall be located within easy access of the driver upon entering or exiting the cab.

**BEVERLY FIRE DEPARTMENT  
 SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER  
 BATTERY JUMPER STUDS**

Bidder Complies	
Yes	No

A set of Cole Hersee battery jumper studs, model #46210-02 (red) and #46210-03 (black) shall be provided to allow the battery system to be jump started or charged from an external source. The studs shall be located on the bottom of the battery box on the driver's side of the chassis. Each stud shall be equipped with both a rubber protector cap and a 2" square non-conductive plate to prevent accidental shorting.

**120 VOLT SHORELINE CONNECTION - "SUPER" AUTO EJECT**

One (1) Kussmaul "Super" Auto Eject model 091-55-20-120, automatic, 120 volt, 20 amp shoreline disconnect shall be provided for the on board, 110 volt battery charging systems.

The disconnect shall be equipped with a NEMA 5-20 P male receptacle, which shall automatically eject the shoreline when the vehicle starter is energized. A label shall be provided indicating voltage and amperage ratings.

**SHORELINE POWER INLET PLATE**

A shoreline power receptacle information plate shall be permanently affixed at or near the power inlet. The plate shall indicate the following;

- Type of Line Voltage
- Current Rating in Amps Power Inlet Type (DC or AC).

The Kussmaul auto-eject connection shall be equipped with a Red or other Department directed color weatherproof cover.

The shoreline receptacle shall be located in the area directly adjacent to the driver's side cab door.

**BATTERY CHARGER / AIR COMPRESSOR SYSTEM**

A Kussmaul model #091-187-12-REMOTE, "Auto Charge 1200" high output, fully automatic battery charger shall be provided for maintaining the vehicle battery system. Unique electronic sensing circuits sense the true battery voltage while eliminating the need for external sense wires. Output current shall be 40 amperes @ 12 volt DC.

A Kussmaul 091-9HP air compressor shall maintain the air pressure in the chassis air brake system while the vehicle is not in use. The air compressor shall have a rated input at 120 volts AC @ 3.5 amps and a maximum of 125 psi.

A LED bar graph display shall be located near the shoreline connection to monitor the battery status.

**EMERGENCY SWITCHES**

A switch control console shall be provided in the center dash panel between the driver's and officer's position. This console shall separate the emergency / auxiliary electrical functions from the regular chassis functions. A minimum of ten (10) rocker type switches with integral indicator lights shall be provided, in addition to the Load Manager indicator.

A master warning switch shall be provided, which shall allow pre-setting of emergency light switches and shall have a red integral indicator light. Next to the master switch, a total of eight (8) load manageable emergency switches shall be provided.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

The last remaining switch shall be a ground light switch. All switches, (other than the master switch), shall have switch function labeling and an amber integral indicator light.

**"LED" CAB INTERIOR LIGHTING**

Four (4) Akron 8080-8000-13 interior LED combination red/white dome lights shall be furnished in the cab, two (2) in the forward section and two (2) in the rear crew section. Each dome light shall have an integral selector switch. Each dome light shall also activate when the respective, adjacent cab door is opened.

**CAB MAP LIGHT**

A Sunnex model LS 751-20 goose neck LED map light shall be furnished and located at the right side of the cab dash.

**HAND HELD SPOTLIGHT**

An Optronics # KB-4001 "Blue Eye" hand-held spotlight shall be provided, it shall have a coil-cord, a momentary switch and a 400,000 candle power lamp. Mounting location to be determined at the pre-construction meeting.

**"DO NOT MOVE APPARATUS" WARNING LIGHT WITH AUDIBLE ALARM**

A 1" round, red flashing warning light with an integral audible alarm, shall be functionally located in the cab to signal when an unsafe condition is present such as an open cab door or body compartment door, an extended ladder rack, a deployed stabilizer, an extended light tower or any other device which is opened, extended or deployed which may cause damage to the apparatus if it is moved.

This light shall be activated through the parking brake switch to signal when the parking brake is released. This light shall be labeled "DO NOT MOVE TRUCK".

**12 VOLT POWER PORT**

One (1) 12 volt power port accessory outlet shall be installed in the cab of the truck for the fire departments accessory devices. The outlet shall be located as directed near the officer's seating position for devices such as cellular phones.

**12 VOLT ACCESSORY CIRCUIT - CAB DASH**

One (1) dedicated circuit; 12 volt, 40 Amp, power and ground on 3/8 stud and fused at battery shall be provided in the cab dash. The circuit shall be for future installation of radios or accessories.

**12 VOLT ACCESSORY CIRCUIT - CREW CAB AREA**

A dedicated 12 volt power and ground circuit shall be provided in the rear crew area as required. The circuit shall be for future installation of radios or accessories.

**HEADLIGHTS CLUSTER**

Two (2) quad, halogen headlight modules with a bright finish bezel shall be furnished, one (1) each side, on the front of the cab. Each head light module shall incorporate an individual low beam and a high beam headlight. High beam actuation shall be controlled on the turn signal lever.

**BEVERLY FIRE DEPARTMENT  
 SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER  
DAYTIME RUNNING LIGHTS**

Bidder Complies	
Yes	No

The chassis head lights shall have integrated circuitry to actuate the low beam headlights at a maximum of 80 percent of capacity whenever the chassis engine is running.

The daytime running lights shall be interlocked with the parking brake.

**SECONDARY DUAL LIGHT MODULE**

Two (2) Whelen 60A00TAR arrow shaped, amber LED turn signals shall be provided, one (1) in each side of the dual light module above the headlights.

The NFPA required, Zone "A" lower warning lights shall be incorporated into each side dual light module noted above.

**DOT MARKER LIGHTS AND REFLECTORS**

Five (5) DOT approved Whelen (or equal) Light Emitting Diode (LED) cab marker lamps shall mounted on the top front edge of the cab roof.

Amber LED marker lights with integral reflectors shall be provided on the side of the cab adjacent to the driver's door, one (1) each side.

Truck-Lite Model # 18 red LED marker lights with integral reflectors shall be provided at the lower side rear, one (1) each side.

Truck-Lite # 60115Y yellow LED side marker and turn lights shall be provided on the apparatus lower side, forward of rear axle, one (1) each side.

Truck-Lite Model #19 red LED clearance lights shall be provided on the apparatus rear upper, one (1) each side at the outermost practical location.

Truck-Lite Model # 33740R LED 3-lamp identification bar will be provided on the apparatus rear center. The lights shall be red in color.

Truck-Lite # 98034Y yellow reflectors shall be provided on the apparatus body lower side, as far forward and low as practical, one (1) each side if the apparatus is 30' long or longer.

Truck-Lite # 98034R red reflectors shall be provided on the apparatus rear, one (1) each side at the outermost practical location.

**LICENSE PLATE LIGHT - REAR**

One (1) Weldon model # 9186 license plate light shall be provided above the mounting position of the license plate. The light shall be clear and shall have a chrome finish.

**TAIL, STOP, TURN AND BACK-UP LIGHTS**

Two (2) Whelen 600 series, 4-1/8" x 6-1/2", LED red combination tail and stop lights, shall be mounted one each side at the rear of the body.

Two (2) Whelen 600 series, 4-1/8" x 6-1/2", LED amber arrow turn signal lights, shall be mounted one each side, on a vertical plane with the tail/stop lights.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

Two (2) Whelen 600 series, 4-1/8" x 6-1/2", white halogen back-up lights, shall be mounted one each side on a vertical plane with the turn/tail/stop signals. These lights shall activate when the transmission is placed in reverse gear.

Two (2) Whelen PLAST3V mounting flanges, installed one (1) on each side, shall be provided to mount the lights described above in one common mounting flange.

The lights shall be mounted in order, from top to bottom, as described above.

**AUXILIARY REVERSE LIGHTS**

Two (2) Innovative Lighting #580-0200 "Hull" lights shall be provided in the rear wheel well panels, one (1) each side. The lights shall be recessed into the wheel well panel and shall be equipped with a mirror polished housing. The lights shall be activated by the reverse light circuit when the apparatus is operating as an emergency vehicle (Primary Warning Switch On).

The hull lights shall also be switched with a separate switch located in the cab.

The hull auxiliary wheel well lights shall be activated with the turn signal circuit.

**CAB STEP LIGHTS**

Chrome plated Whelen model # 0AC0EDCR, shielded LED chassis step lights shall be provided and controlled with marker light actuation. Step lights shall be located to properly illuminate all chassis access steps and walkway areas.

**BODY STEP LIGHTS**

Chrome plated Whelen model # 0AC0EDCR, shielded LED body step lights shall be provided and controlled with marker light actuation. Step lights shall be located to properly illuminate all body access steps and walkway areas.

**DUNNAGE AREA LIGHTING**

Two (2) chrome plated Whelen model # 0AC0EDCR, shielded LED lights shall be provided in the dunnage area to provide adequate illumination of this area.

**SCENE LIGHTS - BEHIND FRONT CAB DOORS**

Two (2) Whelen # 6SC0ENZR super LED scene lights shall be provided, one on each side of the cab, directly behind the front cab entrance door in a chrome plated flange. The scene lights shall be controlled by a rocker switch in the master warning light switch console. All scene lights shall be wired through the load management system.

**CAB DOOR LIGHT SWITCHING - CAB**

Two (2) switches shall be provided in the cab warning light switch console to turn the lights at the cab doors on and off. One (1) switch shall control the driver side light and one (1) switch shall control the officer side light.

**CAB SCENE LIGHTS - ADDITIONAL ACTIVATION**

In addition to the cab mounted switch for the cab scene lights, the driver and officer cab doors shall activate the respective light when a cab door is opened.

**BEVERLY FIRE DEPARTMENT**  
**SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**  
**SCENE LIGHTS - REAR OF BODY**

Bidder Complies	
Yes	No

Two (2) Whelen # 6SC0ENZR super LED scene lights shall be provided, one on each side of the rear body panel in a chrome plated flange. The scene lights shall be controlled by a rocker switch in the master warning light switch console. All scene lights shall be wired through the load management system.

**REAR OF BODY LIGHT SWITCHING - CAB**

A switch shall be provided in the cab warning light switch console to turn the rear of body lights on and off.

**GROUND LIGHTS - CAB**

One (1) ROM V3 12" LED ground light shall be provided under each side cab door entrance step, four (4) total. The lights shall be mounted in ROM standalone aluminum mounting track with mounting slots at each end. The ground lights shall turn on automatically with each respective door jamb switch and also by a master ground light switch in the warning light switch console.

Each light shall illuminate an area at a minimum 30" outward from the edge of the vehicle.

**ROOF MOUNT 155W LED BROW LIGHT - ABOVE WINDSHIELD**

Fire Research Evolution LED model FCA800-V15 contour roof mount light shall be installed. The mounting brackets shall attach to the bottom of the lamp head and be machined to conform to the roof radius. Wiring shall extend from a weatherproof strain relief at the rear of the lamp head.

The lamp head shall have eight (8) ultra-bright white LEDs. It shall operate at 12 volts DC, draw 13 amps, and generate 15,000 lumens. The lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamp head shall incorporate heat-dissipating fins and be no more than 4" high by 11 1/2" wide. The lamp head and mounting arm shall be powder coated white. The floodlight shall be for fire service use.

The Evolution brow mounted flood light shall be located above the windshield in the center of the cab.

**BROW LIGHT SWITCHING - CAB**

A switch shall be provided in the cab warning light switch console to turn the light above windshield on and off.

**TELESCOPING LIGHTS - REAR OF CAB**

Two (2) Fire Research Evolution LED model FCA530-V15 side mount push up telescopic lights shall be mounted one (1) each side on the rear of the cab. The light poles shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 3 1/2" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

Each lamp head shall have eight (8) ultra-bright white LEDs and shall operate at 12 volts DC, draw 13 amps, and generate 15,000 lumens. Each lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamphead angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

Each lamp head shall incorporate heat-dissipating fins and be no more than 5" deep by 3 3/8" high by 11 1/2" wide. The lamp head and mounting arm shall be powder coated white. The floodlights shall be for fire service use.

**REAR OF CAB LIGHT SWITCHING - PUMP PANEL**

A switch shall be provided on the pump panel to turn the rear of cab lights on and off.

**12 VOLT BODY ELECTRICAL SYSTEM**

All electrical lines in the body shall be protected by automatic circuit breakers, conveniently located to permit ease of service. Flashers, heavy solenoids and other major electrical controls shall be located in a central area near the circuit breakers.

All lines shall be color and function coded every 3", easy to identify, oversized for the intended loads and installed in accordance with a detailed diagram. A complete wiring diagram shall be supplied with the apparatus.

Wiring shall be carefully protected from weather elements and snagging. Heavy duty loom shall be used for the entire length. Grommets shall be utilized where wiring passes through panels.

In order to minimize the risk of heat damage, wires run in the engine compartment area shall be carefully installed and suitably protected by the installation of heat resistant shielded loom.

All electrical equipment shall be installed to conform to the latest federal standards as outlined in NFPA 1901.

**BODY ELECTRICAL JUNCTION COMPARTMENT**

A weather resistant electric junction compartment shall be provided in the left or right side lower front compartment. This compartment shall be recessed through the inside rear wall of the compartment to provide an easily accessible enclosure to house all of the body wiring junction points, terminal strips, solenoids, etc. The design of this compartment shall not decrease the storage capacity area of the compartment in which it is located. A removable panel shall be provided for access to this compartment.

**PUMP ENCLOSURE WORK LIGHTS**

Two (2) Peterson model #M391 lights shall be provided inside the pump enclosure providing a minimum of 20 candlepower illumination. Each light shall have their own independent switch incorporated into the light head.

**ENGINE COMPARTMENT WORK LIGHTS**

Two (2) Peterson model #M391 lights shall be provided inside the engine enclosure that will provide a minimum of 20 candlepower illumination. Each light shall have their own independent switch incorporated into the light head.

**ROM TRACK MOUNTED COMPARTMENT LIGHTS - LED**

Each individual, equipment storage compartment shall be equipped with the ROM LED V3 lights on the forward and rear edge of each body door opening. The lights shall be mounted in an anodized aluminum track provided by ROM either as a stand alone unit or an integrated part of the roll up shutter door track.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

The lights shall be designed and manufactured to be water proof meeting the IPX7 industry standard and shall include a streamline optic lens and a fixed lumen output across 9-16vdc. Each LED module shall be of interlocking design and shall be able to be serviced/replaced without the removal of light assembly or shutter door.

**NFPA AUDIBLE AND LIGHTING WARNING PACKAGE**

The following warning light package shall include all of the minimum warning light 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**

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 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.

**WARNING LIGHT FLASH PATTERN**

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**

A Whelen # FNQLED "Edge Freedom", 82" cab roof warning light bar shall be furnished and rigidly mounted on top of the cab roof.

The light bar shall be equipped with the following:

- Clear Lenses
- Two Front Corner Red Linear LED's
- Two Red Forward Facing Linear LED's
- Two White Forward Facing Linear LED's
- Two Red End Linear LED's.

If equipped, the forward facing white lights shall be automatically disabled for the "Blocking Right of Way" mode.

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.

The Freedom light bar shall be equipped with one (1) pair of # FLDRR red LED warning lights.

**NFPA ZONE C, UPPER**

Two (2) Whelen B6TM\*\*1P rotating halogen beacon lights with integral lower level directional LED light shall be mounted one (1) each side at the rear of the body.

Each beacon shall have a red rotator lens and a red lower LED with colored lens.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

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

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

**NFPA ZONES B & D FRONT, UPPER**

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

**LOWER LEVEL LIGHTING - WHELEN**

**NFPA ZONE A, LOWER**

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 and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

The lower Zone A warning lights shall be mounted in the custom chassis headlight bezels.

**NFPA ZONE C, LOWER**

Two (2) Whelen 60R02FRR 600 super LED light heads shall be provided and installed one (1) each side directly below the DOT stop, tail, turn and backup lights.

Each light head shall be equipped with red LED's and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

**NFPA ZONES B & D FRONT, LOWER**

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 and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

The lower Zone B & D warning lights shall be mounted on the sides of the custom chassis front bumper.

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

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 and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

**BEVERLY FIRE DEPARTMENT  
 SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER  
 NFPA ZONES B & D REAR, LOWER**

Bidder Complies	
Yes	No

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 and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

**WARNING LIGHT SYSTEM CERTIFICATION**

The warning light system specified above shall not exceed a combined total amperage draw of 45 AMPS with all lights activated in either the "Clearing Right of Way" or the "Blocking Right of Way" mode.

The warning light system shall be certified by the light system manufacturer, to meet all of the requirements in the current revision of the NFPA 1901 Fire Apparatus Standard as noted in the General Requirements section of these specifications. The NFPA required "Certificate of Compliance" shall be provided with the completed apparatus.

**ALTERNATING FLASHING HEADLIGHT SYSTEM**

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.

**ELECTRIC HORN**

A single electric horn activated by the steering wheel horn button shall be furnished.

**BACK-UP ALARM**

A Code 3, model # D450C, 87dBA back-up alarm, shall be provided and installed at the rear of the apparatus under the tailboard. The back-up alarm shall activate automatically when the transmission is placed in reverse gear and the ignition is "on".

**AIR HORNS**

Two (2) chrome plated air horns shall be at the front of the vehicle. The air horns shall be mounted in full compliance with NFPA-1901. The supply lines shall be dual 1/4" lines with equal distance from each horn.

Each air horn shall be recessed in the front bumper, one (1) on the driver's side and one (1) on the officer's side.

The air horns shall be controlled by a push button located on the dash, on the officer's side and the steering horn button for the driver. An air horn/ electric DOT horn selector switch shall be furnished on the dash for the drivers steering horn button.

**ELECTRONIC SIREN AND SPEAKER**

One (1) Whelen # 295HFS2, 100 watt electronic siren shall be provided featuring: flush mount remote control head recessed in center dash panel as space allows, "Si-Test" self diagnostic feature, six (6) function siren, radio repeat and public address.

**BEVERLY FIRE DEPARTMENT**  
**SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

The electronic siren and speaker shall meet the NFPA required SAE certification to ensure compatibility between the siren and speaker.

One (1) Whelen, model # SA122FMP polished aluminum siren speakers shall be provided, recessed in the front bumper and wired to the electronic siren.

**FEDERAL Q2B MECHANICAL SIREN**

One (1) Federal Model #Q2B mechanical siren shall be provided to provide audible warning.

The Q2-B siren shall be pedestal mounted on top of the extended bumper on the driver's side. The siren shall be equipped with a Federal model #P, chrome housing and pedestal.

The Q2-B siren shall be controlled by switch on the steering wheel. A siren brake button shall also be provided in the steering wheel.

A dash mounted switch shall be provided for the officer. A push button siren brake switch shall be provided on the cab dash near the officers seating position.

**PUMP**

- **HALE QMAX-125**
- **1250 G.P.M.**
- **Single Stage**

The pump must deliver the percentage of rated capacity at the pressure listed below:

- 100% of rated capacity at 150 P.S.I. net pump pressure
- 100% of rated capacity at 165 P.S.I. net pump pressure
- 70% of rated capacity at 200 P.S.I. net pump pressure
- 50% of rated capacity at 250 P.S.I. net pump pressure.

**PUMP ASSEMBLY**

The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis, and have the capacity of 1250 gallons per minute (U.S. GPM), NFPA-1901 rated performance.

**PUMP CONSTRUCTION**

The entire pump shall be manufactured and tested at the pump manufacturer's factory.

The pump shall be driven by a drive line from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable the pump to meet and exceed its rated performance.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to performance specs as outlined by the latest NFPA-1901. Pump shall be free from objectionable pulsation and vibration.

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.

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

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

**PUMP SHAFT**

Pump shaft to be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing shall be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material.

The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super-finished under packing with galvanic corrosion (zinc foil separators in packing) protection for longer shaft life. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

**PUMP IMPELLER**

The pump shall have one double suction impeller. The pump body shall have two opposed discharge volute cutwaters to eliminate radial unbalance. (No exceptions)

Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency.

**PUMP PACKING GLAND**

The pump shaft shall have only one (1) packing gland located on inlet side of the pump. It shall be a split design for ease of repacking. The packing gland must be a full circle threaded design to exert uniform pressure on packing and to prevent cocking and uneven packing load when it is tightened. It shall be easily adjusted by hand with rod or screwdriver with no special tools or wrenches required. The packing rings shall be of a unique permanently lubricated, long life graphite composition and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion.

**PUMP DRIVE UNIT**

The drive unit shall be completely assembled and tested at the pump manufacturer's factory.

Pump drive unit shall be of sufficient size to withstand up to 16,000 lbs. ft. of torque of the engine in both road and pump operating conditions. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

The gearbox drive shafts shall be of heat treated chrome nickel steel and at least 2-3/4 inches in diameter on both the input and output drive shafts. They shall withstand the full torque of the engine in both road and pump operating conditions.

All gears, both drive and pump, shall be of the highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated, chrome-shaven and hardened, to give an extremely accurate gear for long life, smooth, quiet running and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust.

**PUMP RATIO**

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

**BEVERLY FIRE DEPARTMENT  
SPECIFICATIONS FOR 1250 GPM/750 GALLON FIRE PUMPER**

**Bidder  
Complies**

**Yes      No**

The manufacturer shall supply at time of delivery copies of the pump manufacturer's certification of hydrostatic testing, the engine manufacturer's current certified brake horsepower curve.

**PUMP SHIFT CONTROL**

The drive unit shall be equipped with a power shift. The shifting mechanism shall be a heat treated, hard anodized aluminum power cylinder with stainless steel shaft. An air operated in-cab control for rapid shift shall be provided that locks in road or pump, with a neutral position for use when manual override is required.

**MAIN PUMP - PUMP SHIFT INDICATOR LIGHTS**

For automatic transmissions, three (3) green warning lights shall be provided to indicate to the operator(s) when the pump has completed the shift for Road to Pump position. Two (2) green lights to be located in the truck driving compartment and one (1) green light on pump operator's panel adjacent to the throttle control. For manual transmissions, one (1) green warning light shall be provided for the driving compartment. All lights to have appropriate identification/instruction plates.

**TRANSMISSION LOCK**

The automatic transmission furnished in the chassis shall have a lock-up assembly which brings the transmission to direct drive and prevents the transmission from shifting gears while in the pumping mode.

**BRAKING SYSTEM**

A positive braking system shall be provided to prevent vehicle movement during pumping operations. The air brakes furnished must satisfy this requirement.

**MAIN PUMP MOUNTS**

Extra heavy duty pump mounting brackets shall be furnished. These shall be bolted to the frame rails in such a position to perfectly align the pump so that the angular velocity of the drive line joints shall be the same on each end of the drive shaft. This shall assure full capacity performance with a minimum of vibration. Mounting hardware shall utilize Grade 8 bolts.

Pumps which are not mounted directly to the frame will not be considered. Under no circumstance shall the pump function as a frame cross member.

**FIRE RESEARCH "IN-CONTROL" PRESSURE GOVERNOR**

The apparatus shall be equipped with a Fire Research In Control series TGA300 pressure governor and monitoring display kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 5 1/2" high by 10 1/2" wide by 2" deep. Inputs for monitored information shall be from a J1939 databus or independent sensors. Outputs for engine control shall be on the J1939 databus or engine specific wiring.

The following continuous displays shall be provided:

- Pump discharge; shown with four daylight bright LED digits more than 1/2" high
- Pump Intake; shown with four daylight bright LED digits more than 1/2" high
- Pressure / RPM setting; shown on a dot matrix message display
- Pressure and RPM operating mode LEDs
- Throttle ready LED
- Engine RPM; shown with four daylight bright LED digits more than 1/2" high

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**Bidder  
Complies**

**Yes      No**

- Check engine and stop engine warning LEDs
- Oil pressure; shown on a dual color (green/red) LED bar graph display
- Engine coolant temperature; shown on a dual color (green/red) LED bar graph display
- Transmission Temperature: shown on a dual color (green/red) LED bar graph display
- Battery voltage; shown on a dual color (green/red) LED bar graph display.
- The dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. All LED intensity shall be automatically adjusted for day and night time operation.

The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:

- High Battery Voltage
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Transmission Temperature
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of Water (visual alarm only)
- No Engine Response. (visual alarm only)

The program features shall be accessed via push buttons located on the front of the control panel. There shall be an USB port located at the rear of the control module to upload future firmware enhancements.

Inputs to the control panel from the pump discharge and intake pressure sensors shall be electrical. The discharge pressure display shall show pressures from 0 to 600 psi. The intake pressure display shall show pressures from -30 in. Hg to 600 psi.

The governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A throttle ready LED shall light when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

The pressure governor, monitoring and master pressure display shall be programmed to interface with a specific engine.

**AKRON INTAKE RELIEF VALVE**

An Akron Model 59 intake relief valve system shall be plumbed on the suction side of the pump to comply fully with NFPA-1901 requirements. Excess pressures shall be plumbed to discharge water under the pump enclosure away from the pump operator.

**PUMP CERTIFICATION**

The pump shall be third party performance tested to meet the requirements of NFPA-1901. To ensure top quality and integrity, the test company shall be Underwriters Laboratories (UL).

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**Bidder  
Complies**

**Yes      No**

**PRIMING PUMP**

The priming pump will be a Trident air primer system. A push in primer handle will open the priming valve and prime the pump.

**MASTER DRAIN VALVE**

A rotary type, 12 port master drain valve shall be provided and controlled at the lower portion of the side pump panel. The 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**

All lines shall drain through the master drain valve or shall be equipped with individual drain valves, easily accessible and labeled.

One (1) individual "Innovative Control" lift up drain valve shall be furnished for each 1-1/2" or larger discharge port and each 2-1/2" gated auxiliary suction.

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.

**SYNFLEX SUCTION, DISCHARGE, PRESSURE AND CONTROL LINES**

Small lines within the pump enclosure shall be constructed from Synflex hose. Uses include, but are not limited to such lines as priming control, gauge lines, drain lines, air control valves, pump shift, supplemental cooling, foam flush and air bleeder valves.

**HALE ANODE BLOCKS - ALLOY - 2 TOTAL**

Two (2) Hale Alloy Anode blocks shall be provided and located one (1) on the suction side and one (1) on the discharge side of the pump to protect the pump from corrosion.

The Anodes shall be painted Safety Yellow for identification purposes.

**PUMP MODULE**

The pump module shall be a self-supported structure mounted independently from the body and chassis cab. The design must allow normal frame deflection without imposing stress on the pump module structure or side running boards. The pump module shall be securely mounted to the chassis frame rails.

The pump module shall be a welded frame work utilizing structural steel components properly braced to withstand the rigors of chassis frame flex.

**DUNNAGE AREA**

A dunnage area shall be provided above the pump enclosure for equipment mounting and storage. This area shall be furnished with a removable 3/16" aluminum tread plate floor and shall be enclosed on the sides.

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**Bidder  
Complies**

**Yes      No**

**SUCTION INLETS**

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.

**PUMP SUCTION ENDS**

The main pump suction inlets shall be furnished with a short suction end, terminating with only the suction threads protruding through the side panel to minimize the distance an exterior appliance protrudes beyond the pump panel.

A 6" NST chrome plated long handle pressure vented cap shall be installed on each main inlet of the pump.

**AUXILIARY SIDE SUCTION(S)**

One (1) 2-1/2" auxiliary suction shall be provided at the driver side pump panel, to the front of the main inlet. 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.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve shall be provided for the driver's side front auxiliary suction. 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 1/4 turn swing control handle shall be provided on the driver side front auxiliary suction valve.

All side gated inlet valves shall be recess mounted behind the side pump panels or body panels. No Exceptions.

**TANK TO PUMP**

One (1) 3" tank to pump line shall be piped through the front bulkhead of the tank with a 90 degree elbow down into the tank sump. This line shall be plumbed directly into the rear of the pump suction manifold for maximum efficiency.

A check valve shall be provided to prevent accidental pressurization of the water tank through the pump connection. Connection from the valve to the tank shall be made by using a non-collapsible flexible rubber hose.

An Akron Brass 3" Generation II Swing-Out™ Valve 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 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 push/pull control handle shall be located on the operator's panel with function plate.

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**Bidder  
Complies**

**Yes      No**

**TANK FILL**

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 2" high pressure hose for tank connection to accommodate flexing between components. (NO EXCEPTIONS)

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

**DRIVER'S SIDE MAIN DISCHARGE #1**

A discharge shall be provided and located at the driver's side pump panel. The driver's side discharges # 1 shall terminate with NST threads, through the left panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve shall be provided for the driver's side #1 discharge. 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.

The discharge valve shall be equipped with a straight 2 1/2" NST adapter that shall be equipped with a 2 1/2" NST, 30-degree, chrome plated elbow.

One (1) 2-1/2" NSTF X 1-1/2" NSTM reducer with cap shall be provided on the driver's side # 1 discharge.

The driver's side # 1 discharge valve shall be controlled by a push/pull handle located on the operator's panel.

The driver's side # 1 discharge shall be equipped with a Class One Sub-Z II, 2 ½" diameter silicone filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face shall be white with black numerals.

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**Bidder  
Complies**

**Yes      No**

**DRIVER'S SIDE MAIN DISCHARGE #2**

A discharge shall be provided and located at the driver's side pump panel. The driver's side discharges # 2 shall terminate with NST threads, through the left panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve shall be provided for the driver's side #2 discharge. 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.

The discharge valve shall be equipped with a straight 2 1/2" NST adapter that shall be equipped with a 2 1/2" NST, 30-degree, chrome plated elbow.

A 2-1/2" NSTF X 1-1/2" NSTM reducer with cap shall be provided on the driver's side # 2 discharge.

The driver's side # 2 discharge valve shall be controlled by a push/pull handle located on the operator's panel.

The driver's side # 2 discharge shall be equipped with a Class One Sub-Z II, 2 1/2" diameter silicone filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face shall be white with black numerals.

**OFFICER'S SIDE MAIN DISCHARGE #1**

A discharge shall be provided and located at the officer's side pump panel. The officer's side discharges #1 shall terminate with NST threads, through the officer's side panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass 4" Generation II Swing-Out™ Valve shall be provided for the officer's side #1 discharge. 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.

The discharge valve shall be equipped with a straight 4" NST adapter that shall be equipped with a 4" NST, 30-degree, chrome plated elbow.

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**Bidder  
Complies**

**Yes      No**

A 4" NSTF X 4" Storz Kochek S37S straight adapter with cap shall be provided on the officer's side # 1 discharge.

The officer's side # 1 discharge Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

The officer's side # 1 discharge shall be equipped with a Class One Sub-Z II, 2 ½" diameter silicone filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face shall be white with black numerals.

**OFFICER'S SIDE MAIN DISCHARGE #2**

A discharge shall be provided and located at the officer's side pump panel. The officer's side discharges #2 shall terminate with NST threads, through the officer's side panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve shall be provided for the officer's side #2 discharge. 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.

The discharge valve shall be equipped with a straight 2 1/2" NST adapter that shall be equipped with a 2 1/2" NST, 30-degree, chrome plated elbow.

A 2-1/2" NSTF X 1-1/2" NSTM reducer w/cap shall be provided on the officer's side #2 discharge.

The officer's side #2 discharge valve shall be controlled by a push/pull handle located on the operator's panel.

The officer's side #2 discharge shall be equipped with a Class One Sub-Z II, 2 ½" diameter silicone filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face shall be white with black numerals.

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**Bidder  
Complies**

**Yes      No**

**DRIVER SIDE REAR DISCHARGE**

A 2 1/2" NST rear discharge shall be provided at the rear of the vehicle, plumbed from the pump.

The rear discharge shall terminate on the rear body panel, on the driver side of the body.

The driver side rear discharge pipe shall be equipped with a chrome 2 1/2" NSTM thread adapter.

The driver side rear discharge shall be plumbed utilizing 2 1/2" schedule 10 stainless steel piping, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the rear of the vehicle.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve shall be provided for the driver's side rear discharge. 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.

The driver side rear discharge valve shall be controlled by a push/pull handle located on the operator's panel.

One (1) 2-1/2" NSTF X 1-1/2" NSTM reducer w/cap shall be provided on the driver's side rear discharge.

The driver side rear discharge shall be equipped with a Class One Sub-Z II, 2 1/2" diameter silicone filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face shall be white with black numerals.

**OFFICER SIDE REAR DISCHARGE**

A 2 1/2" NST rear discharge shall be provided at the rear of the vehicle, plumbed from the pump.

The rear discharge shall terminate on the rear body panel, on the officer side of the body.

The officer side rear discharge pipe shall be equipped with a chrome 2 1/2" NSTM thread adapter.

The officer side rear discharge shall be plumbed utilizing 2 1/2" schedule 10 stainless steel piping, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the rear of the vehicle.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

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Complies**

**Yes      No**

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve shall be provided for the officer's side rear discharge. 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.

The officer side rear discharge valve shall be controlled by a push/pull handle located on the operator's panel.

One (1) 2-1/2" NSTF X 1-1/2" NSTM reducer with cap shall be provided on the officers side rear discharge.

The officer side rear discharge shall be equipped with a Class One Sub-Z II, 2 1/2" diameter silicone filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face shall be white with black numerals.

**DECK GUN DISCHARGE**

A deck gun discharge shall be plumbed from the pump to an area on top of the vehicle. The deck gun piping shall be firmly supported and braced.

The deck gun discharge shall be located in the dunnage area above the pump module on the officer's side of the vehicle. A pedestal type, 1/4" steel plate support assembly shall be provided to stabilize deck gun plumbing below deck gun mount flange.

The deck gun discharge pipe shall terminate with 3" NPT threads.

The deck gun piping shall be designed so the overall height of the deck gun in the mounted/stowed position does not exceed the tallest point on the cab/body.

The deck gun discharge shall be plumbed utilizing 3" schedule 10 stainless steel piping, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the deck gun location.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass 3" Generation II Swing-Out™ Valve shall be provided for the deck gun discharge. 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.

The deck gun discharge valve shall be controlled by a push/pull handle located on the operator's panel.

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**Bidder  
Complies**

**Yes      No**

The deck gun discharge shall be equipped with a Class One Sub-Z II, 2 ½" diameter silicone filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face shall be white with black numerals.

**AKRON MANUAL DECK GUN**

An Akron model # 3431 "HI-RISER" deck gun shall be supplied and mounted on the deck gun discharge of the unit to provide the maximum travel clearance. The monitor shall be equipped with a portable ground base with one 4" Storz inlet. The monitor shall come equipped with a set of stack tips and an Akron model # 5160 "AKROMATIC" 1250 GPM nozzle. The monitor shall also include the following: Pressure gauge on the monitor, carry handle for portable usage, grease fittings for maintenance, safety chains, hardened steel ground spikes and Pyrolite construction.

**FRONT DISCHARGE**

A 1 1/2" front #1 discharge shall be plumbed to the front bumper of the vehicle.

The front #1 discharge shall terminate on the top center of the front bumper extension gravel shield with a chrome 1 1/2" NSTM chicksan swivel adapter.

The front #1 discharge shall be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the front of the vehicle.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability. Automatic discharge drains shall be provided at all low points in the plumbing.

An Akron Brass 2" Generation II Swing-Out™ Valve shall be provided for the front #1 discharge. 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.

The front #1 discharge valve shall be controlled by a push/pull handle located on the operator's panel.

A 1 1/2" NST chrome plated pressure vented cap shall be installed the front #1 discharge.

The front #1 discharge shall be equipped with a Class One Sub-Z II, 2 ½" diameter silicone filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face shall be white with black numerals.

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**Bidder  
Complies**

**Yes      No**

**HORIZONTAL CROSSLAY #1**

A crosslay hose bed shall be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment. The crosslay hose bed flooring shall be designed to be removable, constructed from brushed finish, perforated aluminum material.

Crosslay #1 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1-3/4" fire hose.

Crosslay #1 hose bed shall be designed to accommodate the fire hose in a single stack configuration.

The crosslay discharge shall terminate below the hosebed floor with a 1 1/2" NSTM chicksan swivel adapter. The crosslay hose bed floor shall be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

The crosslay #1 discharge shall be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to crosslay hose bed.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass 2" Generation II Swing-Out™ Valve shall be provided for the crosslay #1 discharge. 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.

The crosslay #1 discharge valve shall be controlled by a push/pull handle located on the operator's panel.

The crosslay #1 discharge shall be equipped with a Class One Sub-Z II, 2 1/2" diameter silicone filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face shall be white with black numerals.

**HORIZONTAL CROSSLAY #2**

A crosslay hose bed shall be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment. The crosslay hose bed flooring shall be designed to be removable, constructed from brushed finish, perforated aluminum material.

Crosslay #2 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1-3/4" fire hose.

Crosslay #2 hose bed shall be designed to accommodate the fire hose in a single stack configuration.

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**Bidder  
Complies**

**Yes      No**

The crosslay discharge shall terminate below the hose bed floor with a 1 1/2" NSTM chicksan swivel adapter. The crosslay hose bed floor shall be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

The crosslay #2 discharge shall be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to crosslay hose bed.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass 2" Generation II Swing-Out™ Valve shall be provided for the crosslay #2 discharge. 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.

The crosslay #2 discharge valve shall be controlled by a push/pull handle located on the operator's panel.

The crosslay #2 discharge shall be equipped with a Class One Sub-Z II, 2 1/2" diameter silicone filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face shall be white with black numerals.

**HORIZONTAL CROSSLAY #3**

A crosslay hose bed shall be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment. The crosslay hose bed flooring shall be designed to be removable, constructed from brushed finish, perforated aluminum material.

Crosslay #3 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 2 1/2" fire hose.

Crosslay #3 hosebed shall be designed to accommodate the fire hose in a single stack configuration.

The crosslay discharge shall terminate below the hosebed floor with a 2 1/2" NSTM chicksan swivel adapter. The crosslay hose bed floor shall be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

The crosslay #3 discharge shall be plumbed utilizing 2 1/2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to crosslay hosebed.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

**BEVERLY FIRE DEPARTMENT  
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**Bidder  
Complies**

**Yes      No**

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve shall be provided for the crosslay #3 discharge. 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.

The crosslay #3 discharge valve shall be controlled by a push/pull handle located on the operator's panel.

The crosslay #3 discharge shall be equipped with a Class One Sub-Z II, 2 1/2" diameter silicone filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. The gauge face shall be white with black numerals.

The crosslay hose bed floor will be approximately 42" above the side running board and no more than 66" above ground level.

**PUMP ENCLOSURE HOSEBED HOSE RETENTION**

A 3/16" polished aluminum tread plate cross lay cover shall be provided with a full length stainless steel hinge at the front of the cover.

Vinyl flaps shall be provided at each side of the transverse cross lay compartment secured to the tread plate cross lay cover by quarter turn fasteners, and equipped with a strap to each end.

The crosslay end flap shall be red in color.

**PUMP PANEL - SIDE MOUNT**

The pump operator's control panel shall be located on the driver side of the apparatus. The pump enclosure side panels shall be completely removable and designed for easy access and servicing.

**PUMP PANEL MATERIAL**

The left side operator's panel, gauge panel, right side pump panel and right side access door shall be fabricated from 12-gauge 304L stainless steel with a #4, (150/180 grit), standard brushed finish.

**HINGED GAUGE PANEL**

A full width, vertically hinged gauge access panel shall be provided at the operator's position. Chrome plated positive locks shall be provided along with chain holders to prevent the front of the gauge panel from coming in contact with other panels when open.

**VERTICALLY HINGED, SPLIT PUMP PANEL OFFICER SIDE**

The officer's side pump panel shall be split, vertically hinged, to provide complete access to the pump and plumbing on the officer side of the pump enclosure. The panels shall be equipped with

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**Bidder  
Complies**

**Yes      No**

stainless steel hinges and secured with push type locks to hold the panels closed. The drains located on the officer's side panel shall be fastened to the lower panel, which shall be stationary.

**PANEL FASTENERS**

Stainless steel machine screws and lock washers shall be used to hold these panels in position. The panels shall be easily removable to provide complete access to the pump for major service.

**CAPS AND ADAPTERS SAFETY TETHER**

All applicable discharge and suction caps, plugs and adapters shall be equipped with chrome plated ball chain and secured to the vehicle.

**PUMP PANEL TRIM PLATES**

A high polished trim plate shall be provided around each discharge port and suction inlet opening to allow accessibility to the respective valve for service and repairs.

**DISCHARGE GAUGE TRIM BEZELS**

Each individual discharge gauge shall be installed into a decorative chrome-plated mounting bezel that incorporates valve-identifying verbiage and color labels.

**COLOR CODED IDENTIFICATION TAGS**

Color coded identification tags shall be provided for all gauges, controls, connections, switches, inlets and outlets.

**PUMP OPERATOR'S PANEL LIGHT SHIELD AND STEP**

The pump operator's panel shall be equipped with a light shield/step that shall be full width of the control panel, and shall be positioned to cover the lights and prevent glare. The light shield shall be fabricated from aluminum tread plate, which shall also serve as a step. The step shall be a minimum of 8" deep X the width of the pump panel.

The light shield shall be equipped with the following lights:

- Amdor Luma Bar H2O super bright led strip lights

**OFFICER SIDE PUMP PANEL LIGHT SHIELD AND STEP**

The officer side pump panel shall be equipped with a light shield/step that shall be full width of the panel, and shall be positioned to cover the lights and prevent glare. The light shield shall be fabricated from aluminum tread plate, which shall also serve as a step. The step shall be a minimum of 8" deep X the width of the pump panel.

The light shield shall be equipped with the following lights:

- Amdor Luma Bar H2O super bright led strip lights.

The lights shall be switched with the operator panel lights.

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Complies**

**Yes      No**

**PUMP OPERATOR'S PANEL**

Particular attention is to be given to functional arrangement of all controls. The pump operator's panel shall accommodate the following:

- Hinged gauge panel
- Water tank fill valve
- Auxiliary suction valve control
- All discharge valve controls
- Auxiliary engine cooler controls
- Water tank suction control valve
- Pump primer valve
- Engine throttle control
- Master compound vacuum gauge
- Master pressure gauge
- Individual discharge gauges
- Pump shift engaged indicator light
- Water tank water level indicator
- Engine tachometer
- Engine oil pressure gauge with audible alarm
- Engine water temperature gauge with audible alarm
- Low voltage light and audible alarm
- Pump panel light switch
- Speed counter (Underwriters)
- Pump performance plate (Underwriters)
- Pump serial No. plate
- Master pump drain valve
- Individual drains
- Voltmeter
- Air inlet/outlet at lower driver side panel
- Pump panel air horn actuation button.
- Fire Research #TGA300 "IN CONTROL" pressure governor control.

**PUMP TEST PORTS**

The pump panel shall be equipped with Vacuum & Pressure test plugs to allow for test equipment to monitor pump pressure and vacuum levels. Chrome plugs and labels shall be provided for the test ports.

**MASTER GAUGES**

One (1) 4-1/2" diameter pressure gauge (labeled: "PRESSURE") and one (1) 4-1/2" diameter compound vacuum gauge (labeled: "INTAKE") shall be provided. The master gauges shall be Class One Sub-Z II, silicone filled. The gauge faces shall be white with black numerals.

**PRESSURE & COMPOUND GAUGE RANGES**

All applicable pressure gauges shall have a range of 0 - 400 P.S.I., and the compound gauge shall have a range of -30" - 0 - 400 P.S.I.

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Complies**

**Yes      No**

**ENGINE COOLER**

An auxiliary cooler or heat exchanger shall be installed in the engine compartment between the engine and the chassis radiator. The cooler shall permit the use of water from the pump for cooling system. The cooling shall be done without mixing engine and pump water.

**TANK LEVEL GAUGE**

A Fire Research, model #WLA200-A00, "TANKVISION" gauge that shows the actual volume of water in the tank shall be provided on the pump operator's panel. The "TANKVISION" gauge is designed for both ease of operation and installation. The "TANKVISION" gauge utilizes ultra bright LEDs for sunlight readability and also uses 2 specially designed wide-viewing lens for 180° of clear viewing. The "TANKVISION" gauge utilizes a pressure sender to measure the liquid volume. The gauge shall be equipped self-calibration feature allows the LED's TANKVISION gauge to be used on tanks of different shapes and sizes.

**Features:**

- Flashes warning when the volume is less than 25%. Rapid down scrolling LED's alert the operator when the tank is almost empty. Remote audio warning available.
- One size fits all'. The self-calibration feature allows for easy calibration of any shape or size tank.
- Multiple displays are possible with a single sender through the FRC data bus.
- Rugged waterproof cast aluminum housing.
- No fitting needed for poly tank.
- Special fittings available for other tank materials.
- Connector disconnects at back of display.

The gauge shall use a pressure transducer installed near the bottom of the water tank to determine the correct volume in the tank.

**WATER TANK**

The water tank shall have a capacity of 750 gallons, constructed from Poly material.

**TANK CONSTRUCTION**

The Poly water tank shall be constructed of PT3 polypropylene material. This material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum protection. Tank shell thickness may vary depending on the application and may range from 1/2 to 1" as required. Internal baffles are generally 3/8" in thickness.

The tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include PolyProSeal technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The top of the booster tank is fitted with removable lifting assembly designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" PT3 polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength as part of the tank's unique Full Floor Design. Tolerances in design allow for a maximum variation of 1/8" on all dimensions.

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Complies**

**Yes      No**

**CAPACITY CERTIFICATION**

All tanks shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. Each Poly-Tank's III is delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on weight.

**TANKNOLOGY TAG**

A tag shall be installed on the apparatus in a convenient location and contain pertinent information including a QR code readable by commercially available smart phones. The information contained on the tag shall include the capacity of the water and foam (s), the maximum fill and pressure rates, the serial number of the tank, the date of manufacture, the tank manufacturer, and contact information. The QR code will allow the user to connect with the tank manufacturer for additional information and assistance.

**ISO CERTIFICATION**

The tank must be designed and fabricated by a tank manufacturer that is ISO 9001:2000 certified in each of its locations. The ISO certification must be to the current standard in effect at the time of the design and fabrication of the tank.

**TANK LID**

The tank cover shall be constructed of 1/2" thick PT3 polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" minimum polypropylene dowels spaced a maximum of 40" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowers shall accommodate the necessary lifting hardware.

**TANK FILL TOWER**

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT3 polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall be located in the left front corner of the tank unless otherwise specified by the tank manufacturer to the the Beverly Fire Department . The tower shall have a 1/4" thick removable polypropylene screen and a PT3 polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901 so as to not interfere with rear tire traction.

**OVERFLOW AND VENT PIPE**

The fill tower shall be fitted with an integral 4" I.D. schedule 40 P.V.C. combination overflow/vent pipe running from the fill tower through the tank to a 4" coupling flush mounted into the bottom of the tank to allow water to overflow behind the chassis rear axle.

**TANK SUMP**

The tank sump shall be a minimum of 10" wide x 10" long x 3" deep. An anti-swirl plate shall be mounted inside the sump, approximately 1" above the bottom of the sump.

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Complies**

**Yes      No**

**TANK SUMP CONNECTION**

The front bulkhead of the water tank shall be fitted with one (1) tank sump.

A 3" drain plug shall be provided.

**OUTLETS**

There shall be two (2) standard tank outlets; one for tank-to-pump suction line which shall be a minimum of 4" coupling and one for a tank fill line which shall be a minimum of a 2" N.P.T. coupling. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

**WATER TANK MOUNTING**

The tank shall rest on the body cross members spaced a maximum of 22" apart, and shall be insulated from these cross members with a minimum of 3/8" nylon webbing or 1/2" rubber, 2-1/2" wide. The tank shall sit cradle-mounted using four (4) corner angles of 6 x 6 x 4 x 0.250 welded directly to the body cross members. The angles shall keep the tank from shifting left to right or front to rear. The tank is designed on the free-floating suspension principle and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure. The body or hose bed cross braces shall act as water tank retainers.

**WATER TANK SLEEVES**

Two (2) 4" inside diameter, water tank sleeves shall be provided to accommodate rear discharge or suction plumbing to the rear of the unit. The tank sleeves shall be provided as part of the tank assembly by the tank manufacturer to allow installation of piping.

**DIRECT TANK FILL - DRIVER SIDE PUMP PANEL**

One (1) 2-1/2" NST direct tank fill shall be provided on the driver side pump panel. The direct tank fill shall be located in the lower section of the panel, behind the main suction inlet. The direct tank fill shall be gated with a 2-1/2" Akron ball valve with a swing handle. The fill shall terminate with a 2-1/2" NST female swivel connection. A quarter turn drain valve shall be supplied to bleed off excess pressure with a drain hose routed beneath the running board.

**APPARATUS BODY DESIGN CONSTRUCTION**

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

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 electric corrosion. The body design shall also incorporate removable panels to access spring hangers, rear body mounts and fuel tank sending units.

The body assembly shall be an all-welded configuration. The body shall be completely isolated from the cab and pump module structure.

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.

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Complies**

**Yes      No**

**COMPARTMENT TOPS**

Compartment ceilings shall be a fully welded design as part of the body construction process. Compartment designs that do not have a welded in ceiling and utilize the stepping surface overlay as the ceiling shall not be acceptable.

The top of the welded in compartment ceiling shall be overlaid with aluminum treadplate to provide an NFPA compliant stepping surface.

**COMPARTMENT DRIP MOLDING**

Compartment doors shall have an integral drip molding built into the door header to provide protection against water runoff.

**REAR BODY PANEL**

The rear body panel shall extend the full width between the body side compartments. This panel shall be full height from the rear step to the hose bed floor. The panel shall be bolted on and removable, with no part of the rear panel attached to the booster tank. The rear body panel material shall be aluminum treadplate as standard. If Chevron striping is specified for the rear of the body then smooth aluminum shall be utilized.

**BODY AND COMPARTMENT FABRICATION - 3/16" ALUMINUM**

All compartment panels and body side sheets shall be fabricated entirely of 3/16" aluminum (5052-H32). Each side compartment assembly shall be both plug welded and stitch welded to ensure proper weld penetration on all panels while avoiding the possible warping caused by a full seam weld. The side compartments shall be welded on a fixture to ensure true body dimensions of all door openings. The side compartments and body side panels are then set into a body squaring fixture where the super structure is installed and the entire body is aligned to be completely symmetrical. The super structure is then welded to the compartment side panels and reinforcement plates are inserted which allows the compartment panels to become an integral component of the body support structure. A full seam weld shall not be used due to the applied heat which shall distort sheet metal and remove the protective coating from the perimeter of the welded area. All seams shall be caulked prior to finish paint to ensure proper compartment seal.

**SUB STRUCTURE - ALUMINUM**

The body sub structure shall be an all welded configuration utilizing a combination of 3" x 1-1/2" 6061-T6 thick walled structural tubing and 6061 structural channel.

This structure shall be designed to totally support the full length and width of the body and shall be welded to the body side compartments by use of reinforcement plates to incorporate the compartments into an integral part of the body weldment.

The sub structure shall be bolted to the sides of the chassis frame at four (4) points. The two (2) forward mounting points shall utilize a spring mount to help isolate the body from chassis deflection.

This design shall provide storage capacity in each side compartment for a minimum of 500 lbs of equipment, and a minimum of 1000 lbs of equipment in the rear step compartment.

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**Bidder  
Complies**

**Yes      No**

**FIRE BODY WIDTH**

The fire body shall be 100" wide to provide the maximum amount of usable hose bed and compartment space. The side body compartments shall be 29" deep in any full depth areas, and 14" deep in any split depth areas.

**BODY FENDER**

The body fender shall be 64" long, this shall allow for the suspension and related components to be contained within the fender, preventing any intrusion into the body compartment storage area. Bodies with notches in the front and/or rear compartment for suspension components are not acceptable.

**DRIVER SIDE - FRONT SECTION OF FENDER**

A storage compartment shall be inserted into the fender to provide a storage area for three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size). The storage area shall be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius), and shall be 26" deep. The compartment shall have a non-abrasive lined cradle storage area for each of the three (3) devices.

This storage compartment shall provide a minimum of 2.3 cubic feet of storage space.

**DRIVER SIDE - REAR SECTION OF FENDER**

A storage compartment shall be inserted into the fender to provide a storage area for two (2) customer supplied SCBA cylinders (or fire extinguishers of similar size). The storage area shall be sized as tall and wide as possible in the fender (minimum of 15" wide x 8" tall), and shall be 26" deep. The compartment shall have a non-abrasive lined cradle storage area for each of the devices.

This storage compartment shall provide a minimum of 1.6 cubic feet of storage space.

**OFFICER SIDE - FRONT SECTION OF FENDER**

A storage compartment shall be inserted into the fender to provide an open storage area for customer supplied devices such as salvage tarps, rope bags, wheel chocks, etc. The storage area shall be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius), and shall be 26" deep.

This storage compartment shall provide a minimum of 2.3 cubic feet of storage space.

**OFFICER SIDE - REAR SECTION OF FENDER**

A storage compartment shall be inserted into the fender to provide an open storage area for customer supplied devices such as salvage tarps, rope bags, wheel chocks, etc. The storage area shall be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius), and shall be 26" deep.

This storage compartment shall provide a minimum of 2.3 cubic feet of storage space.

**FENDER STORAGE DOORS**

The fender storage area(s) shall be enclosed by a hinged door fabricated from mirror finish stainless steel. Each door shall be tied into the compartment door ajar/do not move apparatus warning system.

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Complies**

**Yes      No**

**DRIVER SIDE BODY COMPARTMENTATION**

One full height/split depth compartment shall be provided forward of the rear wheels. The compartment dimensions shall be 35" wide x 68" tall x 29" deep in the lower 30" tall area, and 14" deep in the upper 38" tall area.

One high side compartment shall be provided above the rear wheels. The compartment dimensions shall be 64" wide x 37" high x 14" deep.

One full height/split depth compartment shall be provided behind the rear wheels. The compartment dimensions shall be 56" wide x 68" tall x 29" deep in the lower 30" tall area, and 14" deep in the upper 38" tall area.

The driver side compartments shall provide approximately 95 cubic feet of storage space.

**OFFICER SIDE BODY COMPARTMENTATION**

One full height/full depth compartment shall be provided forward of the rear wheels. The compartment dimensions shall be 35" wide x 68" tall x 29" deep.

One high side compartment shall be provided above the rear wheels. The compartment dimensions shall be 64" wide x 37" high x 29" deep.

One full height/full depth compartment shall be provided behind the rear wheels. The compartment dimensions shall be 56" wide x 68" tall x 29" deep.

The driver side compartments shall provide approximately 144 cubic feet of storage space.

**REAR STEP COMPARTMENT**

An equipment storage compartment shall be provided on the rear of the body at the rear step area. The rear step compartment shall be 42" Wide x 40" High x 29" Deep.

The rear step compartment shall provide approximately 28 cubic feet of storage space.

The rear step compartment shall have full side panels which shall isolate this storage area from the side body compartments.

The rear step compartment shall be equipped with a rollup style door.

**RECESSED REAR STEP**

The rear step shall be a total of 16" deep, with 12" recessed and 4" extended.

The recessed area of the step shall be 12" deep, recessed between the rear portion of the rear side compartments. The step shall be 42" wide in the recessed area, and 100" wide in the extended area. The step shall be fabricated from 3/16" polished aluminum treadplate, and shall be rigidly reinforced.

The recessed design of the rear step shall not affect the compartment depth.

The rear edge of the step shall be designed to accommodate the rear clearance lights, recessed for protection in the step reinforcement channel. The step shall be bolted into place with a minimum 1/2" clearance gap between the step and rear body panel.

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Complies**

**Yes      No**

**BEAVERTAILS**

The rear body beavertail area shall be furnished with a squared off appearance to maximize the available compartment area, while providing added support to the rear step support structure. The beavertail panels shall be assembled in conjunction with the rear body corner panels. This assembly shall provide a vertical mounting surface for tail lights at the rear most portion of the body and additional storage space.

The inside of the beavertails shall be furnished with polished aluminum tread plate overlays.

**HOSE BED (72" WIDE)**

The hose bed shall be located directly above the booster tank and shall be free from all sharp objects such as bolts, nuts, etc., to avoid damage to fire hose.

For added strength, the hose bed side walls shall be approximately 2" thick, this shall provide a mounting surface for devices like warning lights and scene lights. The inner hosebed side walls shall be brushed aluminum panels, which shall prevent damage to painted surfaces when deploying hose. The front wall shall be flanged inward 2" with a 1" downward return to provide additional rigidity to the front wall.

**HOSE BED CAPACITY**

The hose bed shall be designed with enough storage capacity to carry the following customer specified hoseload:

- 800 Feet of 4" supply hose
- 1100 Feet of 2-1/2" attack hose

**HOSE BED FLOORING**

Flooring to be constructed from extruded aluminum and be properly spaced for ventilation. The flooring shall be smooth and free from sharp edges to avoid hose damage. The hose bed floor shall be removable to provide access to inner body framework.

**HOSE BED PARTITION**

Three (3) fully adjustable 3/16", aluminum hose bed partitions shall be provided. Partitions shall be easily adjustable by means of channels located at the front and rear of the hose bed. Partitions shall be removable for access to the booster tank.

**HOSE BED COVER, ALUMINUM TREAD PLATE**

An aluminum tread plate hose bed cover shall be mounted to the side body flanges utilizing a full length stainless steel hinge on each side. The cover shall be constructed of 3/16" aluminum tread plate with aluminum extrusion frame. The cover shall be supported by a fixed center partition which shall be 1-1/2" higher than the side body flanges to allow water runoff.

Handles shall be provided at the rear for lifting. Gas springs and cables shall be provided at the front to hold open the doors.

Switches shall be provided on each side cover, which shall be tied into the "Do Not Move Apparatus When Light Is On" warning light in the cab.

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**Yes      No**

A hinged access door shall be provided over the water tank fill tower area to allow access to the fill tower when the hose bed cover is in the closed position. The access door shall be hinged to the front to help prevent the door from opening when the apparatus is in motion.

One (1) hat section storage area shall be provided, constructed from 1/8" aluminum tread plate, located on top of the officer side tread plate hose bed cover. The storage area shall accommodate storage of one (1) Little Giant model 17 ladder. Approximate dimensions shall be 6" high x 25" wide x 60" long.

**VINYL FLAPS**

Two (2) vinyl flaps at the rear of the tread plate hose bed cover. They shall be secured to the hose bed cover with quarter turn fasteners and to the rear body with bungee cords.

The Hypalon material shall be red in color.

**ROLL-UP DOORS**

Roll-up doors shall be provided on all compartments. The roll-up doors shall be constructed from aluminum extruded slats which shall have a flexible seal between each slat for proper sealing of the door.

A synthetic rubber seal shall be provided at each side, top and bottom edge of the door to prevent entry of dirt into the compartment.

The door shall be equipped with a lift bar style latch mechanism which shall latch at the bottom of the door mounting extrusion.

The roll-up door assembly shall be furnished with a spring-loaded, counter balance assembly to assist in door actuation.

All running board and high side compartments shall be equipped with roll-up doors.

**ROBINSON ROLL-UP DOORS**

The roll-up doors shall be Robinson (ROM) brand roll-up doors, equipped with a brushed aluminum finish, with a PVC inner seal to prevent metal to metal contact and to repel moisture. The slats shall be double-wall extrusion 1.366" high by .315" thick with interlocking end shoes to prevent the slats from moving side-to-side and binding the door. All slats are to have interlocking joints to prevent penetration by sharp objects.

**SWEEP-OUT COMPARTMENT FLOORS**

Compartment floors shall be welded to the compartment walls and have a sweep out design for easy cleaning.

Compartments with hinged doors shall have the door opening flanges bend down to produce the sweep-out design.

Compartments with roll-up style doors shall have the external floor flange stepped down, 1/2" high x 2" deep, to produce a sealing surface for the roll-up doors below the compartment floor. The sweep out design shall also permit easy cleaning.

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Complies**

**Yes      No**

**COATED FASTENERS**

All exterior fasteners shall be coated stainless steel screws. Screw threads shall be coated with reusable, self-locking, sealing material to provide vibration resistance. Screw heads shall be coated with a sealing element to prevent galvanic corrosion between dissimilar metals. Non-coated screws shall only be provided as part of vendor supplied component installations.

**COMPARTMENT LOUVERS**

Ventilation between compartments to atmosphere shall be provided and located to avoid water entry into compartments.

**ACCESS PANELS**

Removable access panels shall be provided to access fuel tank sender, electrical junction compartment and rear body mounts.

Protective panels shall be located in the rear compartments providing access to the lights and associated wiring. The covers shall also serve as protective covers to prevent inadvertent damage to lights or wiring from tools or equipment located in the compartment.

**BODY PROTECTION PANELS**

The front face of the side compartments, next to the driver and officer pump panels shall be overlaid with full height aluminum tread plate protection panels. The overlays shall cover the front face of the compartments only, they shall not wrap around to the door opening.

**REAR STANCHIONS - CAST ALUMINUM**

Two (2) Cast Products model #LB0029-1, polished stanchion brackets with wiring protectors, shall be provided at the rear of the body for upper rear warning light mounting, one (1) each side. These brackets shall be bolted to the sides of the body to minimize rear vehicle height.

**BODY RUB RAILS**

Sacrificial C-Channel style rub rails shall be mounted at the base of the body, extend outward from the body. The rub rails shall extend the full length of the main body. Rub rails shall be designed to bolt to the body from the bottom side of the compartment area, so as not to damage the body side panels on initial impact and to provide for ease of replacement.

**RUNNING BOARD STEPS**

The driver and officer running board steps shall be fabricated of 3/16" polished aluminum tread plate. The outside edge on each step shall be fabricated with a double break, return flange. The steps shall be rigidly reinforced with a heavy duty support structure. The running boards shall not form any part of the compartment design, and shall be bolted into place with a minimum 1/2" clearance gap between any panel to facilitate water runoff.

**INTERMEDIATE REAR STEP**

An eight (8) inch deep, bolt on intermediate rear step, fabricated from 3/16" aluminum tread plate, shall be installed. The step shall be approximately 8" deep x 48" wide.

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Complies**

**Yes      No**

**GRAB RAILS**

All hand rails shall be 1-1/4" outer diameter, knurled bright anodized aluminum extrusion, designed to meet NFPA 1901 requirements.

Molded gaskets shall be installed between the handrail stanchion castings and body surfaces to prevent electrolytic reaction between dissimilar metals and to protect paint.

**GRAB RAIL LOCATIONS:**

Two (2) vertical rails shall be mounted on the rear edge of the beavertails, one (1) each side.

One (1) horizontal, full width handrail shall be installed on the rear, below the level of the hose bed.

**FOLDING STEPS-FRONT OF BODY**

Four (4) Cast Products model SP4401-1-CH-A-BL LED lighted large folding steps with RG0005 gasket, with a textured chrome plate finish, minimum of 42 in<sup>2</sup> surface, conforming to NFPA-1901 requirements, shall be provided on the front face of the running board compartments, above running board steps, two (2) each side. 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 body hose bed area with a maximum of 18" height between each step.

**FOLDING STEPS-REAR OF BODY**

Four (4) Cast Products model SP4401-1-CH-A-BL LED lighted large folding steps with RG0005 gasket, with a textured chrome plate finish, minimum of 42 in<sup>2</sup> surface, conforming to NFPA-1901 requirements, shall be provided on the rear of the body, two (2) each side. The steps shall be mounted to accommodate access to the body hosebed area with a maximum of 18" height between each step. Each step shall have an LED light at the top and bottom of each step to illuminate the stepping areas.

**SAFETY SIGN(S) AT REAR STEP AND CROSS WALKWAY(S)**

Safety sign(s) shall be located on the vehicle at the rear step, and at any cross walkway(s), to warn personnel that riding in or on these areas while the vehicle is in motion is prohibited.

**REAR WHEEL WELL LINERS**

Fully removable, bolt-in, 12 gauge stainless steel fender liners shall be provided. The wheel well liners shall extend from the outer wheel well body panel, into the truck frame. Removable vertical splash shields, inward of the wheels, shall be provided to give access to the hydraulic components. The completely washable fender liners shall be designed to protect the front and rear compartments and main body supports from road salts, dirt accumulation and corrosion.

**REAR FENDERETTES**

The single rear fenders shall be equipped with easily replaceable, polished stainless steel fenderettes. The fenderettes shall be equipped with a rubber gasket molding between the body panel and the fender. Integral welded crown type liners shall not be acceptable.

**REAR MUD FLAPS**

Heavy duty mud flaps shall be provided behind the rear wheels.

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**Bidder  
Complies**

**Yes      No**

**REAR TOW EYES**

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.

**ADJUSTABLE SHELVING**

Compartment shelving shall be constructed of 3/16" brush finish aluminum with a 2" upward bend at front and rear, and side supports. Shelving shall be vertically adjustable with spring nuts in aluminum strut channel.

Adjustable shelves shall be located as follows:

- Two (2) in the driver side front compartment
- Two (2) in the officer side front compartment
- Two (2) in the driver side rear compartment
- Two (2) in the officer side rear compartment
- One (1) in the driver side over the wheel high side compartment
- One (1) in the rear step compartment

**500 POUND FLOOR MOUNTED ROLL OUT TRAYS**

Floor mounted roll-out trays shall consist of heavy duty, roller bearing slide tracks with an end load rating of 500 pounds, securely fastened to the compartment floor. The tray shall be fabricated from 3/16" brushed aluminum with a minimum 2" high flange on each of the four sides to assist in retaining the equipment stored on each tray. The slide tracks shall have a 100% extension, allowing the tray to extend out of the compartment completely.

The 500 pound floor mounted roll out trays shall be located as follows:

- One (1) in the driver side front compartment
- One (1) in the officer side front compartment
- One (1) in the officer side rear compartment
- One (1) in the rear step compartment

**ROLL-OUT/ DROP DOWN TRAYS**

The roll out/tilt tray shall consist of a 3/16" brushed aluminum finished aluminum tray with a minimum 2" lip on all four sides. Heavy duty aluminum Unistrut "C" channel tracking material shall be utilized to securely fasten the slide tracks to the compartment walls, while allowing height adjustment.

The slide mechanism shall consist of a low-weight high-strength plastic to create a robust front bracket to support the aluminum tray. The rear of the tip down tray shall be mounted on a slider with an integral pivot plate. This slider and pivot plate shall be mounted inside an aluminum rail for

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**Bidder  
Complies**

**Yes      No**

maximum strength. The tray shall be released from the stowed position with the use of a push button and shall be capable of auto latching to the stowed position.

The front handle/latch shall be designed with a double hand hold to control the tray when deployed or stowed. The roll out/tilt tray shall be rated for 330# capacity.

Roll out/Tilt trays will be located as follows:

One (1) in the officer side over the wheel high side compartment

**120/240 VOLT ELECTRICAL SYSTEM TESTING**

All line voltage wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for one minute. The test shall be conducted between live parts and the neutral conductor and between live parts and the vehicle frame with any switches in the circuits closed. The test shall be conducted after all bodywork has been completed. The dielectric tester shall have a minimum 500 VA transformer with a sinusoidal output voltage that can be verified.

Electrical polarity verification shall be made of all permanently wired equipment and receptacles to determine that connections have been properly made.

**OPERATIONAL TESTING**

The apparatus manufacturer shall perform the following operation test and shall certify that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order.

The generator shall be started from a cold start condition and the line voltage electrical system shall be loaded to 100 percent of the nameplate voltage rating.

The following items shall be monitored and documented every 15 minutes:

- The cranking time until the generator starts and runs.
- The voltage, frequency, and amperes at continuous full rated load.
- The generator oil pressure, water temperature, transmission temperature, hydraulic temperature, and the battery rate charge, as applicable.
- The ambient temperature and altitude.

The generator shall operate at 100 percent of its nameplate wattage for a minimum of two (2) hours.

**HARRISON 6000-WATT HYDRAULIC DRIVEN GENERATOR**

One (1) Harrison Hydraulic Driven Generator model number 6.0MAS-16R rated at 6000 watts, 50/25 amps, 120/240VAC, 60 Hz, 1-phase shall be provided.

The system shall be designed and assembled by a company with no less than 10 years experience in the manufacture of hydraulic driven generators. The system shall be tested at the full nameplate load prior to shipping and be accompanied with the test report. The test report shall document the generators performance at various loads from no load to full load to ensure reliable power delivery at those loads.

The motor/generator shall be placed in a frame which affords protection to the components and provides a unitized mounting module containing the motor/generator, reservoir, oil cooler, filtration, on/off manifold containing a cross port check valve allowing unit to be started and shut down remotely.

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**Bidder  
Complies**

**Yes      No**

The generator shall be a commercial type with a heavy-duty bearing and of brush less design to ensure low maintenance. No brushes or slip rings shall be allowed. The reservoir shall include an oil level sight gauge, oil temperature gauge; fill cap, oil filter, and a venturi boost unit to provide positive pressure to the pump suction port.

The generator and motor shall be close coupled and aligned using a Morse taper with a through bolt to secure the motor to the generator. No two (2) bearing generators shall be permitted.

The system must be capable of producing the full nameplate power when driven from the vehicle PTO from idle to maximum engine speed.

The generator system must be able to operate on either a Constant Engaged PTO or a Hot Shift PTO. The generator shall be able to be used while vehicle is either stationary or in motion.

The hydraulic motor and pump shall be of axial piston design to provide low internal leakage and a high degree of frequency stability. No gear pumps or motors shall be used. The pump shall match the system with the proper orifice, pressure compensator, and load sense settings to provide stable output regardless of engine rpm or electrical load demands.

The system shall be capable of normal operations using a commonly available ATF fluid, such as GM Dextron III or equivalent. All fluid service points shall be in close proximity to the reservoir for ease of scheduled maintenance.

When properly installed, the system shall be warranted for a period of not less than two (2) years or 2000 hours, whichever should come first.

The generator shall be remotely turned on/off by using a 12 VDC switch mounted on the cab dash.

A weatherproof digital Quadra meter containing the volt, amp, and frequency shall be installed near the breaker panel.

**GENERATOR PTO**

A hot shift PTO shall be provided on the transmission for the Harrison generator. The PTO shall be controlled from the cab. The control shall include a PTO engagement switch and a PTO engaged indicator light.

**GENERATOR WARRANTY**

The specified generator shall have a two (2) year or two thousand (2000) hour warranty as provided by the generator manufacturer. A copy of the generator warranty shall be provided at time of delivery.

**GENERATOR LOCATION**

The generator shall be mounted above the pump enclosure on the officer side.

**120/240 VOLT LOAD CENTER**

The generator output line conductors shall be wired from the generator output connections to a Square D, model #QO112L125G breaker panel. The breaker panel shall be equipped with a properly sized main breaker using two (2) of the twelve (12) spaces which leaves a total of ten (10) available spaces.

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**Bidder  
Complies**

**Yes      No**

The generator output conductors shall be sized to 115% of the main breaker rating and shall be installed as indicated in the wiring section.

Ten (10) appropriately sized, 120 volt, circuit breakers shall be provided.

The breaker panel shall be located on the rear wall of the driver side upper compartment.

**120/240 VOLT WIRING METHODS**

Wiring/conduit shall not be attached to any chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components or low voltage wiring.

All wiring shall be installed at a minimum of 12 inches away from any exhaust piping and a minimum of 6 inches from any fuel lines.

All wiring shall be securely clamped within 6 inches of any junction box and at a minimum of every 24 inches of run. All supports shall be of nonmetallic material or corrosion protected metal. All supports shall not cut or abrade conduit or cable and shall be mechanically fastened to the vehicle.

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent amperage rating and shall be sized to carry not less than 115% of the main breaker rating.

All Type SO or Type SEO cable not installed in a compartment shall be installed in wire loom. Where Type SO or Type SEO cable penetrates a metal surface, a rubber or plastic grommet or bushing shall be provided.

The installation of all 120/240 wiring shall meet the current NFPA-1901 Standards .

**120/240 VOLT WIRING IDENTIFICATION**

All line voltage conductors located inside the main breaker panel box shall be individually and permanently identified. When pre-wiring for future power wiring installations, the non-terminated ends shall be labeled showing function and wire size.

**120/240 VOLT GROUNDING**

The neutral conductor of the power source shall be bonded to the vehicle frame only at the power source.

The grounded current carrying conductor (neutral) shall be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor shall be colored white or gray.

In addition to the bonding required for the lower voltage return current, each body and driving/crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor. The conductor shall have a minimum amperage rating of 115 percent of the name plate current rating of the power source specification label.

**120/240 VOLT CIRCUIT BREAKER / RECEPTACLE INSTALLATION**

The system shall be installed by highly qualified electrical technicians to assure the required level of safety and protection to the fire apparatus operators. When multiple circuit are required, the

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**Bidder  
Complies**

**Yes      No**

circuits shall be wired to the breaker panel in a staggered configuration to minimize electrical loads on each breaker or generator (leg) circuit.

The wiring, electrical fixtures and components shall be to the highest industry quality standards available on the domestic market. The equipment shall be the type as designed for mobile type installations subject to vibration, moisture and severe continuous usage.

**ELECTRIC CABLE REEL**

One (1) Hannay Model #ECR-1618-17-18, 120 volt, electric rewind cord reel shall be provided and wired to the breaker panel. The reel shall be securely mounted and equipped with a rewind control adjacent to the reel.

The cord reel shall be mounted above the pump enclosure on the driver side.

The circuit breaker used to protect any device attached to the cord reel shall be sized to the smallest electrical connection used.

**ELECTRIC CABLE**

Two hundred-fifty (250) feet of Type SO yellow 12/3 heavy duty electric cable shall be provided on the reel.

One (1) NEMA L5-20R, 20 amp, three prong twist-lock receptacle shall be provided on the end of the cable.

**JUNCTION BOX(ES)**

One (1) Akron Model EJB, four (4) outlet junction box with four (4) NEMA L5-20R twist-lock receptacles with a 12" pigtail with a NEMA L5-20P twist-lock plug shall be provided.

**CABLE ROLLER ASSEMBLY**

One (1) four (4) roller assembly shall be provided adjacent to each cord reel to provide un-obstructed deployment and rewinding of the cable.

One (1) cable ball stop shall be installed on the cable to keep the cable end from passing through the roller assembly.

One (1) holder constructed from 1/8" aluminum tread plate shall be provided for each cord reel junction box. The location of the holder shall be adjacent to the cord reel roller assembly or as directed by the Beverly Fire Department.

**LADDER STORAGE**

The ground ladders shall be stored vertically next to the water tank, behind the side body compartments, on the driver side of the apparatus.

The ladder storage area shall be provided with a black vinyl coated polyester deflector at the forward opening to deflect road debris from entering the ladder storage area.

**BACKBOARD STORAGE**

The ladder storage area shall be designed to accommodate storage for a standard size backboard. The storage area shall have nylon material on the bottom surface to protect the backboard.

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**Bidder  
Complies**

**Yes      No**

**GROUND LADDERS**

The following Alco-Lite ground ladder compliment shall be provided:

- One (1) Alco-Lite model PEL-24; 24', aluminum, two (2) section extension ladder shall be provided.
- One (1) Alco-Lite model PRL-14; 14', aluminum, straight roof ladder with folding hooks shall be provided.
- One (1) Alco-Lite model FL-10; 10', folding, aluminum, attic ladder shall be provided.
- One (1) Little Giant model 17 ladder system with mounting hardware shall be provided. This ladder has an extension height ranging from 9'-0" to 15'-0"

**PIKE POLE STORAGE**

Two (2) pike pole tubes shall be provided. Each holder shall be equipped with a spring type holder and shall be accessible from the rear of the apparatus. Each pike pole holder shall be labeled to indicate the pike pole length.

The pike pole tubes shall be mounted in the ladder storage compartment.

**ADDITIONAL ITEMS SUPPLIED WITH THE VEHICLE**

- 1 - Pint of touch up paint for each color
- 1 -Bag of assorted stainless steel nuts and bolts

**LOOSE EQUIPMENT**

The following items shall be provided and shipped loose with the completed apparatus at the time of delivery:

**WHEEL CHOCKS**

Two (2) ZICO #SAC-44 folding wheel chocks shall be mounted forward of the rear wheels on the driver side below the side running board compartments.

**PAINT, PREPARATION AND FINISH**

The PPG Delta, Low V.O.C., polyurethane finishing system, or equal, shall be utilized. A "Clear Coat" paint finish shall be supplied to provide greater protection to the quality of the exterior paint finish.

All removable items, such as brackets, compartment doors, etc. shall be painted separately to insure finish paint behind mounted items. All compartment unwelded seams exposed to high moisture environments shall be sealed using permanent pliable caulking prior to finish paint.

**BODY PRIMER & PREPARATION**

All exposed welds shall be ground smooth for final finishing of areas to be painted. The compartments and doors are totally degreased and phosphatized. After final body work is completed, grinding (36 and 80 grit), and finish sanding shall be used in preparation for priming.

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**Bidder  
Complies**

**Yes      No**

**BODY FINISH PAINT**

The body shall be finish sanded and prepared for final paint. Upon completion of final preparation, the body shall be painted utilizing the highest quality, state of the art, low V.O.C., polyurethane base paint. Finish paint shall be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

The entire body shall be buffed and detailed.

**BODY PAINT**

The inside and underside areas of the complete body assembly shall be painted black, prior to the installation of the body on the chassis or torque box. The body paint finish will be PPG Delta System in a single color, to match customer furnished paint codes and requirements.

**COMPARTMENT PAINT**

The interior of the compartments shall be finish painted with Zolatone #20-63 Marble Stone scuff resistant paint to provide a protective application over all of the compartment interior surfaces.

**BODY PAINT**

The body paint finish shall be PPG Delta System in a single color, to match customer furnished paint codes and requirements.

**PUMP / PIPING PAINT**

The pump enclosure and pump/plumbing within the pump enclosure shall be painted black.

**CAB PRIMER & PREPARATION**

The cab primer shall be a two (2) stage process. First stage shall be a coating with a two part component, self etching, and corrosion resistant primer to chemically bond the surface of the metal for increased adhesion. Second stage shall be multiple coats of a catalyzed, two component, polyurethane primer applied for leveling of small imperfections and top coat sealing.

**CAB FINISH PAINT**

The entire cab shall be finish sanded and prepared for final paint. Upon completion of final preparation, the cab shall be painted utilizing the highest quality, state of the art, low V.O.C., polyurethane base paint. Finish paint shall be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

The cab exterior shall be painted with PPG Delta system to match the Beverly Fire Department 's furnished paint codes. A two-tone paint finish shall be provided with the two-tone break line located approximately 3" below the cab side windows.

The entire exterior finish of the cab shall be buffed and detailed.

**CAB INTERIOR PAINT**

The interior metal surfaces of the cab shall be finish painted with a textured gray paint.

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**Bidder  
Complies**

**Yes      No**

**CHASSIS PAINT**

The chassis frame rails, suspension and axles shall be painted black with a Polyurethane base paint prior to installation of any air lines or electric systems to ensure proper serviceability.

**PAINT CODES**

The paint shall match Beverly Fire Department furnished paint codes and layout. The paint codes shall be as indicated below:

- **PRIMARY PAINT COLOR**

*Single Color:*                      *BLACK*                      *Paint Code#*      *PPG 9000*

- **SECONDARY PAINT COLOR**

*Two/Tone Color:*                      *RED*                      *Paint code#*      *PPG 911659*

**TOUCH-UP PAINT**

One (1) pint of each exterior color paint for touch-up purposes shall be supplied when the apparatus is delivered to the end user.

**FINALIZATION & DETAILING**

Prior to delivery the vehicle, the interior and exterior be cleaned and detailed. The finalization process detailing shall include installation of NFPA required labels, checking fluid levels, sealing and caulking required areas of the cab and body, rust proofing, paint touch-up, etc.

**RUST PROOFING**

The entire unit shall be thoroughly rust proofed utilizing rustproof and sound deadening materials applied in manufacturer recommended application procedures. Rust proofing shall be applied during the assembly process and upon completion to insure proper coverage in all critical areas.

**COMPUTER GENERATED LETTERING**

The lettering and striping shall be custom designed utilizing state of the art computer software and computerized cutting machines. The manufacturer shall employ a full time artist / designer to generate all lettering, decals, and striping to meet the requirements of the Beverly Fire Department. The artwork for the lettering and striping shall be kept on record by the apparatus manufacturer to allow for ease in duplication for the Beverly Fire Department.

**FRONT CAB DOOR LETTERING**

Gold leaf, "Sign Gold", with dual drop shadow lettering shall be provided on the cab driver's and officer's doors per the fire department requirements. The design of the lettering on the cab doors shall be designed to fit in the 496 sq. inches available.

Lettering provided on the driver's and officer's cab doors shall be 3" high.

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**Bidder  
Complies**

**Yes      No**

**REAR CAB DOOR LETTERING**

Gold leaf, "Sign Gold", with dual drop shadow lettering shall be provided on the cab crew doors per the fire department requirements. The design of the lettering on the cab doors shall be designed to fit in the 496 sq. inches available.

Lettering provided on the crew cab doors shall be 3" high.

**LETTERING ON FRONT BUMPER**

Scotch-Lite with drop shadow lettering shall be provided on the front bumper per the fire department requirements.

Lettering provided on the front bumper shall be 8" high.

**REAR BODY LETTERING**

Scotch-Lite with drop shadow lettering shall be provided on the rear roll up door per the fire department requirements.

Lettering provided on the rear roll up door shall be 12" high.

**BODY SIDE SHEET LETTERING**

Gold leaf, "Sign Gold", with dual drop shadow lettering shall be provided on the body side sheet per the fire department requirements. The design of the lettering on the body side sheet shall be designed to fit in the 2500 sq. inches available.

Lettering provided on the body side sheet shall be 6" high.

**LETTERING FONT**

The lettering shall be designed to match the requirements of the Beverly Fire Department

**SCOTCH-LITE STRIPE**

A four (4) inch high "Scotch-Lite" stripe shall be provided. The stripe shall be applied on a minimum of 60 percent of each side of the unit, 60 percent on the rear of the unit and 40 percent on the front of the unit. The Scotch-Lite stripe layout shall be determined by the Beverly Fire Department.

The Scotch-Lite shall be white in color.

**SCOTCH-LITE ACCENT STRIPES**

A 1" high Scotch-Lite material accent stripe shall be incorporated into the Scotch-Lite scheme to border the primary Scotch-Lite stripe on the top and bottom edges. Final layout of this configuration shall be determined by the Beverly Fire Department.

**REAR CHEVRON STRIPING**

At least 50% of the rear facing vertical surface shall be covered with alternating strips of reflective striping.

The striping shall be 6" Diamond Grade Scotch-Lite.

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**Bidder  
Complies**

**Yes**

**No**

The Diamond Grade Scotch-Lite shall be Red #983-72 and Fluorescent Yellow Green #983-23 in color.

**FRONT BUMPER CHEVRON STRIPING**

The striping shall be 6" diamond grade Scotch-Lite.

The Diamond Grade Scotch-Lite shall be red #983-72 and fluorescent yellow green #983-23 in color.

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**Bidder  
Complies**

**Yes      No**

**VEHICLE WARRANTY**

The Beverly Fire Department requires a five (5) year new vehicle warranty to be provided, upon delivery and acceptance of the vehicle. The warranty shall ensure that the vehicle has been manufactured to the contract specifications and shall be free from defects in material and workmanship that may appear under normal use and service within the warranty period. The warranty may be subject to different time and mileage limitations for specific components and parts. This warranty is issued to the Beverly Fire Department.

The manufacturer shall either repair or replace any defective components or parts. Repair or replacement of the defective item shall be at the sole discretion of the manufacturer. All components and parts are covered by the Basic Vehicle Warranty unless specifically covered by other descriptions or otherwise excluded herein. Repair or replacement of components shall be done without cost to the Beverly Fire Department when performed within the warranty period. Warranty repairs shall not constitute an extension of the original warranty period, either for the entire apparatus or any specific components or parts.

The warranty shall be inclusive and in lieu of all other warranties whether written, oral or implied, including but not limited to any warranty of merchantability or fitness for purpose. The warranty shall be void and the manufacturer shall not be obligated to repair or replace any component or part where the necessity of such replacement or repair, in the opinion of the manufacturer, is due in whole or in part to loads in excess of factory rated capacities, modification or alteration, accident or other misuse or abuse of the vehicle. In no event shall the manufacturer be liable for special or consequential damages including but not limited to injuries to persons or damage to property or loss of vehicle use.

**OVERALL UNIT AND CUSTOM CHASSIS**

All components and parts of the vehicle shall be warranted for a period of five (5) years from acceptance of the vehicle, unless excluded elsewhere in this warranty or described as having longer time limitations.

**COMPONENT WARRANTY INTERVALS**

**WARRANTY - ENGINE**

The specified fire service rated engine shall be provided with a five (5) year engine manufacturer's warranty. A copy of the manufacturer's warranty shall be supplied to define additional details of the warranty provisions.

**WARRANTY - TRANSMISSION**

The specified Allison transmission shall be provided with a five (5) year warranty. A copy of the Allison transmission warranty shall be supplied to the Beverly Fire Department to define additional details of the warranty provisions.

**WARRANTY - CUSTOM CHASSIS FRAME RAILS**

The Beverly Fire Department requires that the custom chassis frame shall be warranted for an unlimited time period.

**CROSSMEMBERS WARRANTY**

A lifetime warranty shall be provided on all chassis frame cross members.

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**Bidder  
Complies**

**Yes      No**

**WARRANTY - STEERING UNIT**

The proposed Sheppard steering gear shall be warranted for a period of three (3) years from the first date of service or 150,000 miles (241,401 kilometers), whichever occurs first. The product shall be free from defects in material and workmanship under normal use in applications approved in advance by Sheppard.

**WARRANTY - FRONT AXLE**

The Meritor axle/s shall be furnished with a five (5) year warranty; the first two (2) years shall be parts and labor, the remaining three (3) years shall be parts only. Wheel seals, gaskets and wheel bearings will be covered for one (1) year providing that Meritor supplies and assembles the wheel end equipment. A copy of the warranty from Meritor shall be supplied to define additional details of the warranty provisions.

**WARRANTY - REAR AXLE**

The Meritor axle/s shall be furnished with a five (5) year warranty; the first two (2) years shall be parts and labor, the remaining three (3) years shall be parts only. Wheel seals, gaskets and wheel bearings will be covered for one (1) year providing that Meritor supplies and assembles the wheel end equipment. A copy of the warranty from Meritor shall be supplied to define additional details of the warranty provisions.

**WARRANTY - ABS**

The Meritor ABS shall be provided with a three (3) year warranty, parts and labor. A copy of Meritor's warranty shall be supplied to define additional details of the warranty provisions

**WARRANTY - CAB STRUCTURE**

The cab shall be warranted against structural defects for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions shall be included in the specific warranty document.

**WARRANTY - BODY STRUCTURE**

The body shall be warranted against structural defects for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

**WARRANTY - CORROSION**

The cab and body shall be warranted against rust-through or perforation, due to corrosion from within, for a period of ten (10) years. Perforation is defined as a condition in which an actual hole occurs in a sheet metal panel due to rust or corrosion from within. Surface rust or corrosion caused by chips or scratches in the paint is not covered by this warranty.

**WARRANTY - PAINT**

The paint finish shall be warranted for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions shall be included in the specific warranty document.

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**Bidder  
Complies**

**Yes      No**

**WARRANTY - STAINLESS STEEL PLUMBING WARRANTY**

The stainless steel plumbing shall be warranted for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions shall be included in the specific warranty document.

**WARRANTY - REAR SUSPENSION**

The manufacturer shall warrant to the Beverly Fire Department, that leaf spring products installed shall be free of defects in material and workmanship for five (5) years. The "Warranty Period" commences on the date the Beverly Fire Department takes delivery of the product from the manufacturer.

**WARRANTY - WATER TANK**

The water tank shall be warranted by the water tank manufacturer for the "Lifetime" of the unit. A copy of the manufacturer's warranty shall be supplied to define additional details of the warranty provisions.

**WARRANTY - FIRE PUMP**

Hale Products, Incorporated ("Hale") shall warrant to the Beverly Fire Department that products manufactured by Hale shall be free of defects in material and workmanship for a period of five (5) years from the date product is first placed into service or five and one-half (5 1/2) years from date of shipment by Hale, whichever period shall be first to expire. Within this warranty Hale shall cover parts and labor for the entire warranty period.

**WARRANTY - HEAVY DUTY VALVES**

Akron Brass shall warrant Heavy Duty Swing-Out Valves for a period of ten (10) years after purchase against defects in material or workmanship. Akron Brass shall repair or replace any Heavy Duty Swing Out Valve which fails to satisfy this warranty.

**WARRANTY - SEATING**

HO Bostrom shall warrant each new seat manufactured, to be free from defects in materials and workmanship when delivered to the original the Beverly Fire Department for a period of five (5) years.

Labor to remove or reinstall and transportation of defective items will not be covered by, or any allowance made for said cost under this warranty.

**WARRANTY - GENERATOR**

The specified generator shall have a two (2) year or two thousand (2000) hour warranty as provided by the generator manufacturer. A copy of the generator warranty shall be provided at time of delivery.

**DEALER PICK-UP AND DELIVERY DURING WARRANTY PERIOD**

Dealer shall furnish pick-up and delivery service to and from The Beverly Fire Department during specified warranty period.