

**BOROUGH OF NARBERTH**

**MONTGOMERY COUNTY**

**PENNSYLVANIA**



**SPECIFICATIONS  
AND  
CONTRACT DOCUMENTS  
FOR**

**CONTRACT TO**

**PURCHASE OF A 1500 GPM PUMPER TRUCK**

**Sean Metrick  
Borough Manager**

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## **NOTICE TO BIDDERS**

The Borough of Narberth will receive sealed bids for the manufacture and purchase of a 1,500 GPM Pumper Truck until 1:00 pm local time, Wednesday November 1, 2017. The bids will be opened publicly and read aloud in the Council Room, 100 Conway Ave, Narberth PA 19072 at 1:00 pm local time.

Bid Contract Documents are available on the Borough of Narberth website [www.narberthpa.gov](http://www.narberthpa.gov). There is no charge for these documents.

Each bid shall be accompanied by a Bid Bond, cash or certified check equal to ten percent (10%) of the total amount of the bid made payable to Borough of Narberth. The said surety shall be bound to furnish a Performance Bond in the amount of equal to one hundred percent (100%) of the Contract price thereafter on the specified bond forms included in the Contract Documents. Bids shall be effective for a period of forty-five (45) days from the date of the bid opening.

The Borough reserves the right to accept or reject any or all bids, to waive any informalities, and to accept the bid which, in its judgment, best serves the interest of the Borough.

### **BOROUGH OF NARBERTH**

Sean Metrick  
Borough Manager

**INFORMATION FOR BIDDERS**  
**CONTRACT TO:**  
**PURCHASE OF A 1500 GPM PUMPER TRUCK**

**1. Receipt and Opening of Bids**

Borough of Narberth invites bids on the bid form provided with these contract documents. Bidders are advised that the Bid Form and all other required documents must be completed appropriately. Bids will be received by the Borough of Narberth at the Administration Building on or before 1:00 p.m., November 1, 2017. and then publicly opened and read aloud at 1:00 p.m. in the Council meeting room. The envelope containing the bids must be sealed and addressed to the Borough Manager, Borough of Narberth, 100 Conway Avenue, Narberth, Pennsylvania 19072, and marked as "Bid for Purchase of a 1500 GPM Pumper Truck." 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 proposals arrive on time. Late proposals, telegram, facsimile or telephone bids will not be considered.

The Borough may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any or all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized for postponement thereof. **Any bid received after the time and date specified, shall not be considered under any circumstances.** No Bidder may withdraw a bid within forty-five (45) days after the actual date of the bid opening.

**2. Preparation of Bid**

Bid Form shall be completed in ink or typewritten, and prices shall be completed in both words and figures.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, address, and the name of the contract for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in the Bid Form.

**3. Documents Required with the Bid**

Each bidder must submit, with his bid, the following documents in a sealed envelope, bearing outside the name of the bidder, address, and name of the contract for which the bid is submitted:

- a) Bid Form
- b) Bid Bond or other acceptable bid security, as specified in Paragraph 4 below
- c) Descriptive literature that completely describes all of the equipment proposed to be furnished under the Contract.
- d) Completed Bidders Check List
- e) Weight Load Analysis of the proposed truck

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Bids shall be prepared as follows:

- a) Bids by corporations shall be executed in the corporate name by the president or vice president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal, if any, shall be affixed and attested to by the secretary or assistant secretary. The corporate address and state of incorporation shall be shown below the signature.
- b) Bids by partnerships shall be executed in the partnership name and signed by a partner. The signer's title shall appear under his signature and the official address of the partnership shall be shown below the signature.
- c) Bids by proprietorships shall be executed in the business' name and signed by the owner or another person by whom power of attorney has been given. (A copy of the power of attorney shall be attached to the bid.) The business address shall be shown below the signature.
- d) All names shall be typed or printed below the signature.
- e) The bid shall contain an acknowledgment of receipt of all Addenda (if any) and any exceptions taken with the Technical Specifications.

**4. Bid Security**

Each bid shall be accompanied by security in the form of cash, certified check, or bid bond (in the form set forth in the Contract Documents) in the amount of ten percent (10%) of the total amount of the bid. The bid security shall guarantee that the successful bidder will furnish a performance bond to the Borough and enter into a contract with the Borough in accordance with the Contract Documents. Bonds submitted as security shall be executed by a surety company(s) legally authorized to do business in Pennsylvania.

Attorneys-in-fact who sign bid bonds must file with each bond a certified copy of their power of attorney to sign said bonds, bearing the same date as the bonds. Bid bonds shall be signed by an agent for the bonding company and a person authorized to sign for the bidder.

Within twenty (20) days after the opening of bids, the bid security of all bidders, except that of the successful bidder, will be returned. The bid security of the successful bidder will be returned only after execution of the Contract and delivery of the requisite performance bond. NOTE: See Paragraph 6 below for the Performance Bond requirements. The bid security shall be forfeited to the Borough as liquidated damages in the event that any bidder, upon award of the Contract, shall fail to execute said Contract and comply with requirements as to bonds guaranteeing the performance of the Contract.

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With respect to the qualifications of proposed sureties, your bonding company must meet the following minimum requirements:

**5. Addenda and Interpretations**

All questions about the meaning or intent of the bidding and Contract Documents shall be submitted to: Sean Metrick, at [smetrick@narberthpa.gov](mailto:smetrick@narberthpa.gov). in writing prior to close of business on October 13, 2017. All bidders desiring answers to all questions must submit an email requesting the same prior to October 13, 2017.

Any and all such interpretations, and any supplemental instructions will be in the form of written addenda to the specification which, if issued, will be emailed to all prospective bidders at the respective addresses (furnished for such purposes), not later than two (2) days prior to the date fixed for the opening of bids. All Addenda so issued shall be part of the Contract Documents. Failure of any bidder to receive such Addenda shall not relieve the bidder from the obligations under the bid as submitted. Oral interpretations or clarifications of the Contract Documents shall be without legal effect.

**6. Security for Faithful Performance**

Each bidder, upon receiving written notice from the Borough, shall within ten (10) days of such notice furnish to the Borough an executed Performance Bond in the form described in the Contract Documents and dated the effective date of the Contract.

The following bond(s) are required:

a) Performance Bond – A bond in the sum equal to one hundred percent (100%) of the Contract award to the Borough of Narberth to insure the delivery of the contracted purchase in accordance with the Contract Documents within the time specified.

Should any surety upon Contract be deemed unsatisfactory at any time to the Borough of Narberth, notice will be given to the Contractor to that effect, and the Contractor shall forthwith substitute a new surety or sureties satisfactory to the Borough without any additional cost or expense to the Borough.

**7. Method of Award**

The bid submission with the lowest total price will be evaluated by the Borough, and if the bid is found acceptable under the conditions as set forth within, the bidder will be awarded the Contract. If the lowest bidder is not found to be acceptable, then the next lowest bidder will be evaluated in the same manner stated above. **Failure to list any and all exceptions to the specifications may be considered grounds by the Borough to reject the bid.**

The Borough reserves the right to reject any or all bids or to waive any informalities therein, as may be deemed to be in the best interest of the Borough. Bids which contain any omission, alteration, addition not called for, conditions not invited, irregularity of any kind or which are

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otherwise not accompanied by bid security will be rejected. In the event of a difference between the words and the numbers for amounts, the words will be considered correct.

**8. Bid Evaluation**

Bids received will be evaluated based on the following criteria:

1. Commitment for expedient delivery.
2. Commitment to the general conditions contained herein, including warranty.
3. Completeness of the proposal, i.e., The degree which it responds to all requirements and requests for information contained herein.
4. Manufacturing and delivery schedule.
5. Contractor's demonstrated capabilities and qualifications.
6. Equipment supplier's demonstrated capabilities and qualifications.

**9. Exceptions to Specifications**

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

Proposals taking total exceptions to specifications will not be accepted.

**10. Obligation of Bidder**

At the time of the opening of bids, each bidder will be presumed to have read and to be thoroughly familiar with the Contract Documents (including any Addenda). The failure of any bidder to examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect to his bid.

**11. Sales Tax Exemption**

Narberth Borough is exempt from PA State sales tax. Upon request, the successful low bidder(s) will be issued with a Sales Tax Exemption Certificate for the applicable exempt items.

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**12. Bidders Present**

At the time fixed for the opening of bids, their contents will be made public for the information of bidders and others who may be present either in person or by representative.

**13. Award of Contract**

The Borough will either award the Contract within forty-five (45) days of the opening of bids or reject all bids. The successful bidder, within fourteen (14) days following notification by the Borough, shall deliver to the Borough Manager an executed agreement in the form set forth in these Contract Documents along with a properly executed Performance Bond. Failure of the bidder to deliver said agreement and other documents within such time period, shall constitute grounds for the Borough to declare forfeiture of the bid security and award to the next lowest qualified bidder.

**14. Bids to Remain Open**

Except as otherwise permitted by law, no bid or part thereof may be withdrawn, cancelled or modified for a period of forty-five (45) days after the time designated for the opening of the bids.

**15. Liability**

The bidder, if their bid is accepted, shall defend any and all suits and assume all liability for the use of any patented device or article forming part of the apparatus or any appliance furnished under the contract.

**16. Quality, Material and Workmanship**

All equipment furnished will be guaranteed to be new and of current manufacture, to meet all requirements of these specifications, and to be in intended use condition at time of delivery.

The design of the Apparatus must embody the latest approved automotive engineering practices.

The workmanship must be of the highest quality in its respective field. Special consideration will be given to the following points: Accessibility of the various units which require periodic maintenance operations, ease of operation (including both operation and driving) and symmetrical proportions.

Construction shall be rugged and ample safety factors shall be provided to carry loads as specified and to meet both on and off road requirements and to speed conditions as set forth under "Performance tests and requirements".

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



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**17. Approval Drawings**

Detailed blue prints shall be approved by the purchaser prior to any metal being sheared or cut for the unit. The purchaser, manufacturer's representative and the apparatus manufacturer shall each have a copy of this blue print. This print shall then become a part of the total contract. Drawing must show, but not limited to such items as the chassis being utilized, lights, sirens, all compartment locations and dimensions, special suction, discharges, etc. Blue print shall be a visual interpretation of the unit as it is to be supplied.

**18. Vehicle Fluids Plate**

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

- (a) Engine oil
- (b) Engine coolant
- (c) Chassis transmission fluid
- (d) Pump transmission lubrication fluid
- (e) Pump primer fluid, if used
- (f) Drive axle lubrication fluid

**19. The Following Information Shall Be Shipped With Each Completed Apparatus**

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

- Owner's name and address;
- Apparatus manufacturer, model, and serial number;
- Chassis make, model, and serial number;
- GAWR of front and rear axles;
- 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 (if applicable) and manufacturer mounted equipment (front and rear);
- Engine make, model, serial number, number of cylinders, bore, stroke, displacement and compression ratio, rated horsepower and related speed per SAE J690, Certificate of Maximum Net Horsepower for Motor Trucks and Tractors, and no-load governed speed;
- Type of fuel and fuel tank capacity;
- Electrical system voltage and alternator output in amps;
- Battery make and model, capacity in CCA;
- Paint numbers;
- Company name and signature of responsible company representative;
- Weight documents from a certified scale-showing actual loading on the front axle, rear axle(s), and overall vehicle (with the water tank full (if applicable) but without personnel, equipment, and hose);
- Written load analysis and results of the electrical system performance tests;

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**20. FIRE PUMP, The Following To Be Provided**

- Transmission make, model, and type;
- Pump to drive through the transmission (yes or no);
- Engine to pump gear ratio and transmission gear ratio used;
- Pump make, model, rated capacity in gallons per minute, serial number, number of stages, and impeller diameter in inches;
- Pump manufacturer's certification of suction capability;
- Pump manufacturer's certification of hydrostatic test;
- Pump manufacturer's certification of inspection and test for the fire pump;
- Copy of the apparatus manufacturer's approval for stationary pumping applications;
- Pump transmission make, model and serial number;
- Priming device type;
- Type of pump pressure control system;
- The engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum no-load governed speed;
- Certification of water tank capacity;

**21. Warranty**

Manufacturer will warrant new apparatus against defective workmanship and materials for a period of two (2) year from date of acceptance by the purchaser.

The manufacturer will warrant the chassis and cab for a period of ten (10) years covering any structural defects, workmanship or structural integrity of the cab assembly.

The manufacturer will warrant the firebody assembly of its own manufacture for a period of ten (10) years covering any structural defects, workmanship or structural integrity of the body assembly.

A ten (10) year anti-rust warranty will be provided upon delivery of the unit covering both the cab, chassis, ladder assembly and the firebody to ensure proper steps have been taken to protect the unit against premature corrosion problems. The ten (10) year anti-rust warranty will be underwritten by a third party insurance company licensed in all fifty (50) states to guarantee full coverage throughout the duration of the warranty period.

Under this warranty, the manufacturer's liability is limited to furnishing purchaser, without cost, parts and labor required to replace defective material or workmanship when there is no indication of misuse, neglect, improper maintenance, accident or

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overloading of apparatus. Defects will be reported to seller in writing by the purchaser within the warranty period. Parts and labor will be supplied after inspection by an authorized agent of the manufacturer. Examination of defective part(s) will insure compliance with all provisions of the warranty as described in these specifications.

**22. Technical Information/Exceptions**

Bidder will 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.

**23. Instruction Manuals/Drawings, Schematic**

The following sets of manuals will be provided at time of delivery one (1) sets, per vehicle, in accordance with standard commercial practices applicable to the vehicle (including body and special equipment) furnished under to contract. Each set will be composed of one (1) operator's manuals, and one (1) parts and service manuals.

**24. Delivery**

Delivery of the vehicle shall be provided within 365 calendar days from date of award of bid.

Apparatus, to insure proper break-in of all components while still under warranty, shall be delivered under its own power (rail or truck freight is not acceptable). A qualified delivery engineer representing the contractor shall instruct the Fire Department Personnel in the proper operation, care and maintenance of the equipment delivered.

Before final acceptance of the apparatus, it will be tested in the presence of authorized representatives of the purchaser.

In the event the apparatus fails to meet the test requirements on first trial, second trial may be made within thirty (30) days of the date of the first trial. Housing of apparatus will not constitute acceptance until testing is successfully completed.

**25. Sales Engineer**

The successful bidder will designate a competent individual acceptable to the purchaser to perform the contractor's sales engineer function. The sales engineer will provide a single point interface between the purchaser and the contractor on all matters concerning the contract.

**26. Preconstruction Conference**

Covered in the technical specifications.

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**27. Midconstruction Inspection Conference**

Covered in the technical specifications.

**28. Final Inspection of Completed Apparatus**

Covered in the technical specifications.

**29. User's List**

Each bidder shall include a current "User's List" with a minimum of fifteen (15) units. This list shall include customer name, person to contact, address and telephone number. Failure not to include this list will result in rejection of the bid.

**30. Service Location**

The bidder shall provide with the bid the name and location of the authorized service organization responsible for warranty service.

**31. Training**

The successful bidder shall provide a factory-trained technician to provide the following training:

Covering nomenclature of components, proper operation of the apparatus, daily operational maintenance checks, and other information necessary for a firefighter/driver-engineer to properly operate and maintain the apparatus.

The firefighter/operator training shall be conducted within one week after the vehicle is fully accepted and readied for service by the "Purchaser" or at a time mutually agreed upon by the "Purchaser" and "Supplier".

**BID FORM**  
**CONTRACT TO:**  
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Bid of: \_\_\_\_\_  
(Name)

(hereinafter called "Bidder") a proprietorship, a partnership, a corporation (delete titles not applicable), incorporated in the

State of \_\_\_\_\_, doing business as:

\_\_\_\_\_

presents this Bid for the furnishing and delivering of a 1500 GPM Pumper Truck as described in the Contract Documents of which this Bid is a part, for the Borough of Narberth, Montgomery County, Pennsylvania.

Bidder warrants that he has carefully examined the Contract Documents governing the work, including the information for Bidders, the Bid Form, the Agreement, the Bonds, the General Provisions, which are hereby made part of this Bid, and thoroughly understands their stipulations, requirements, and provisions.

Bidder has examined the legal requirements (Federal, State and Local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the work and has made such independent investigations as he deems necessary.

Bidder acknowledges receipt of the following addenda (if any):

Addendum No. \_\_\_\_\_ Date Received \_\_\_\_\_

Addendum No. \_\_\_\_\_ Date Received \_\_\_\_\_

Addendum No. \_\_\_\_\_ Date Received \_\_\_\_\_

Bidder now therefore offers to furnish and deliver a 1500 GPM Pumper Truck, including all specified accessories, in compliance with the provisions of the Technical Specifications for the total price of \_\_\_\_\_

\_\_\_\_\_ dollars(\$ \_\_\_\_\_);  
(Figures)

**BID FORM**  
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Note: If the Bidder takes exception to any of the provisions of the Contract Documents, the exceptions are to be detailed in the space provided below, and the proposed substitution described in accordance with Paragraph 6 of the General Conditions. If no exceptions are taken, then "None" should be indicated. If insufficient space has been provided, then add as many pages to the Bid Form as required to fully describe the exceptions and proposed substitutions.

**Exception(s) Taken:**

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The successful Bidder shall, within ten (10) days of the Borough's Notice of Award, furnish to the Borough a Performance Bond in the form set forth in these Contract Documents, executed by the Bidder and by the Surety or Sureties authorized to do business in Pennsylvania and satisfactory to the Borough, and execute the Contract in the form set forth in the Contract Documents.

Bidder proposes to obtain bonds from the following surety(ies):

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**BID FORM**  
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Bidder declares that this bid is made without any connection with any other bidder making a bid for the work, and is in all respects fair and without collusion or fraud. The Bidder further certifies that the Bidder has not entered into an agreement or otherwise taken any action in restraint of free competitive bidding in connection with bid proposal. The Bidder agrees that the bid information will not be communicated to other bidders prior to the official opening of said bid.

Bidder declares that no member, officer, or employee of the Borough is directly or indirectly interested as principal, surety or otherwise in this bid, or in any portions of the profits to be derived therefrom.

Bidder declares that this bid is accompanied by cash, certified check, or Bid Bond in the amount of \_\_\_\_\_ dollars,  
(\$ \_\_\_\_\_), as Bid Security, to guarantee that he, if awarded contract, will  
(Figures)

present the required bond and enter into the Contract as shown.

Bidder understands that the Borough reserves the right to reject any or all bids and to waive any informalities in the bidding.

Bidder agrees that this bid shall be good and may not be withdrawn for a period of forty-five (45) days after the scheduled time for opening the bids.

(SEAL)(If by a Corporation)

Respectfully submitted,

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

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
Address

\_\_\_\_\_  
Date

**BID BOND**  
**CONTRACT TO:**  
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KNOW ALL MEN BY THESE PRESENTS: That \_\_\_\_\_  
(Bidder)

\_\_\_\_\_ (hereinafter called "Principal") as Principal, and \_\_\_\_\_  
(Bonding Company)

\_\_\_\_\_ a corporation authorized to transact business in the State of \_\_\_\_\_,

and having its principal office at \_\_\_\_\_

\_\_\_\_\_ (hereinafter called "Surety") as Surety, are

held and firmly bound unto the Borough of Narberth (hereinafter called "Obligee") as Obligee, in

the sum of \_\_\_\_\_

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_), lawful money of the United States of America; for payment of which we bind ourselves, and each of our respective heirs, legal representatives, successors and assigns jointly and severally, by these presents.

WITNESS our hands and seal this \_\_\_\_\_ day of \_\_\_\_\_, 1999.

WHEREAS, Principal is herewith submitting to Obligee a bid for the Obligee's proposed furnishing and delivering of a 1500 GPM Pumper Truck pursuant to Contract Documents incorporated into said proposal by reference. A condition of the Obligee's receipt and consideration of said proposal is that the proposal be accompanied by bid security to be held by the Obligee on terms incorporated herein.

THEREFORE, the condition of this obligation is such that if said Principal shall, upon the request of Obligee, furnish a performance bond dated the date of the award of the contract on the required form, and, upon Obligee's acceptance of Principal's proposal and award of contract to him, enter into such contract, and furnish insurance certificates and other bonds as may be required by said Contract Documents, within ten (10) days after notice of award, then this obligation shall be void. Otherwise, it shall remain in full force, and the Principal and Surety will pay to the Obligee the full amount of this bid bond as liquidated damages incurred by the Obligee by reason of default of the Principal.



**BID BOND**  
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IN WITNESS WHEREOF, Principal and Surety, intending to be legally bound, have executed this bond the day and year aforementioned.

ATTEST:

(SEAL)

\_\_\_\_\_

\_\_\_\_\_  
Corporation-Contractor

\_\_\_\_\_  
President

OR

WITNESS:

\_\_\_\_\_

\_\_\_\_\_  
Proprietorship-Contractor

OR

WITNESS:

\_\_\_\_\_

\_\_\_\_\_  
Partnership-Contractor

By: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
Partners

AND

WITNESS:

\_\_\_\_\_

\_\_\_\_\_  
Surety Company

By: \_\_\_\_\_ (SEAL)  
Attorney-in-Fact

**AGREEMENT  
CONTRACT TO:  
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THIS AGREEMENT is entered into this \_\_\_\_\_ day of \_\_\_\_\_, 1999 by and between the Borough of Narberth, 100 Conway Avenue, Narberth, Montgomery County, Pennsylvania (hereinafter called "BOROUGH") and

a Corporation known as \_\_\_\_\_,  
organized and existing under the laws of the State of \_\_\_\_\_,

OR

a Partnership Known as \_\_\_\_\_,  
consisting of the following members:

\_\_\_\_\_

OR

a Proprietorship doing business as \_\_\_\_\_  
(hereinafter called "CONTRACTOR").

WITNESSETH, that BOROUGH and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK

Contractor shall complete all work as specified and indicated in the contract for the delivery of a 105' Aerial Ladder Truck.

Article 2. CONTRACT TERM

The term of this Contract is 365 days from the date of the notice to Award. Delivery is required within 365 days from the date of the Notice of Award.

Article 3. CONTRACT PRICE

Borough shall pay Contractor for performance of the work in accordance with the Contract Documents in lawful money of the United States of America in accordance with Contractor's unit price of \$ \_\_\_\_\_, as specified on Contractor's Bid Form dated \_\_\_\_\_.

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Article 4. PAYMENT

The Fire Company agrees to pay the Contractor in lawful money of the United States of America for the performance of the Contract, subject to additions and deductions, as provided in the General Conditions of the Contract, and to make payment as provided in Paragraph 7 of the General Conditions and in accordance with the following schedule:

<u>Item</u>	<u>Cumulative Percent of Contract Amount</u>
1. Within 7 days after delivery of equipment	90%
2. Start-up, testing, training, & placing in service, [not to exceed thirty (30) days after Item No. 1]	100%
3. It is the intent of the Borough/Fire Company to begin training operators on this truck upon delivery. It is understood that if there is still an outstanding retention due on the pumper truck, the Borough will show proof of insurance to the manufacturer on amount at least equal to 100% of the value of the truck. The Borough/Fire Company will not place the truck into active fire service until this contract has been paid in full, but desires to be able to train on the truck and check out the truck as far as compliance with the specifications. To accomplish this it is necessary to operate the truck on the road, and to operate the various components. The Fire Company requires the ability to perform these tasks even though final payment may not have been made.	

Article 5. NON-DISCRIMINATION

The Contractor agrees:

- a. That in the hiring of employees for the performance of work under this contract or any subcontract hereunder, no contractor, subcontractor, nor any person acting on behalf of such contractor or subcontractor shall, by reason of race, creed, color, national origin, ancestry, or gender, discriminate against any citizen of the United States who is qualified and available to perform the work to which the employment relates;
- b. That no contractor, subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this Contract on account of race, creed, color, national origin, ancestry, or gender;
- c. That there may be deducted from the amount payable to the Contractor under this contract a penalty for five dollars (\$5.00) for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of this Contract; and

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d. That the Contract may be cancelled or terminated by the Borough and all money due or to become due hereunder may be forfeited for a second or any subsequent violation of the terms or conditions of this paragraph.

**Article 6. CONTRACT DOCUMENTS**

The Contract Documents which comprise the entire Contract between BOROUGH and CONTRACTOR are attached to this Agreement by reference, made a part hereof and consist of the following: (a) Notice to Bidders; (b) Information for Bidders; (c) Bid Form (Bidder's Proposal); (d) Bid and Performance Bonds; (e) Agreement; (f) General conditions; (g) Technical Specifications; (h) Addenda numbers \_\_\_\_\_through\_\_\_\_\_, inclusive; and (i) Any modifications, including Change Orders, duly authorized after execution of Agreement.

The Contract Documents may only be altered, amended, or repealed by a written modification signed by both parties.

**Article 7. GENERAL PROVISIONS**

a. Terms used in this agreement are defined in the General Conditions section of the Contract Documents.

b. The Contractor shall comply with all Federal, State, and Local laws, ordinances, and regulations which may pertain to the work, and Contractor shall be responsible to have knowledge of all applicable Federal, State, and Local laws, ordinances and regulations.

c. If this Contract entails any work involving the employment of labor, the Contractor agrees to accept the provisions of the Pennsylvania Worker's Compensation Act insofar as the work is concerned, and the Contractor will insure its liability thereunder or file with the Borough a Certificate of Exemption from insurance from the Pennsylvania Bureau of Workers' Compensation. If the contractor shall sign this Contract in violation of the preceding sentence, this Contract shall be void and of no force or effect against the Borough until the required proof is presented to the Borough, and the Borough shall be deemed to have not signed this Contract until such time.

d. Upon the breach or anticipatory breach of any one or more of the terms of this Contract by the Contractor, the Borough shall have the right to assert any remedy available at law or in equity therefor, and shall not be confined solely to those remedies which may be specifically provided in the Contract.

The Borough's remedies shall include, but are not limited to: (1) withholding from the Contractor as much of the accrued payments or advances as the Borough may consider necessary to cover any consequential damages caused in whole or in part by the acts, omissions, or

**AGREEMENT  
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PURCHASE OF A 1500 GPM PUMPER TRUCK**

Threatened acts or omissions of the Contractor, his agents or assigns, after written notice thereof to the Contractor; (2) termination of this Contract; (3) completion of this Contract by the Borough or by any of its agents, employees, or designated independent contractors (whether designated by the Borough or any bonding company); (4) suit for damages for breach of contract; (5) suit upon the bond(s), if any, provided by the Contractor; (6) any other legal or equitable remedy which the law would provide the Borough for the enforcement of, or for the Contractor's breach of any of the provisions of this Contract. The remedies available to the Borough shall be cumulative so that if the Borough pursues one remedy against the Contractor with respect to any breach or anticipatory breach, the Borough shall not be excluded from pursuing any other available remedies for such breach.

e. Words used herein, regardless of the number and gender specifically used, shall be deemed and construed to include any other number, singular or plural, and any other gender, masculine, feminine, or neuter, as the context requires.

f. Changes in law, statutes, or regulations by a governmental agency of proper jurisdiction affecting the Borough's ability to purchase the equipment may invalidate this contract in part, or in its entirety.

g. The invalidity or unenforceability of any particular provision of this Contract shall not affect the validity or enforceability of the other provisions hereof, and this Contract shall be construed in all respects as if such invalid or unenforceable provisions were omitted.

h. Indulgences extended by the Borough to the Contractor shall not be construed as a waiver of any breach by the Contractor, nor shall any waiver of one breach be construed as a waiver of any rights or remedies with respect to any subsequent breach.

i. This Contract shall be binding upon the parties hereto and their respective heirs, personal representatives, successors, and permitted assigns.

**AGREEMENT  
CONTRACT TO:  
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IN WITNESS WHEREOF, the parties hereto, intending to be legally bound, have executed this Agreement the day and year first above written.

(SEAL)

BOROUGH OF NARBERTH

Attest: \_\_\_\_\_  
(Secretary)

By: \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
100 Conway Avenue

\_\_\_\_\_  
Narberth, Pennsylvania 19072

(SEAL)

Attest: \_\_\_\_\_

By: \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Date)

**PERFORMANCE BOND**  
**CONTRACT TO:**  
**PURCHASE OF A 1500 GPM PUMPER TRUCK**

KNOW ALL MEN BY THESE PRESENTS: That \_\_\_\_\_  
\_\_\_\_\_  
(Contractor)

\_\_\_\_\_ as  
Principal, and

\_\_\_\_\_  
(Bonding Company)

of \_\_\_\_\_ as Surety, are held and firmly bound  
(City/State)

unto the Borough of Narberth, Montgomery County, Pennsylvania, as Obligee, in the sum of

\_\_\_\_\_  
\_\_\_\_\_  
Dollars

(\$ \_\_\_\_\_), to be paid to the Obligee aforesaid, its certain attorneys, successors or assigns, to which payment, well and truly to be made, we do bind ourselves, our heirs, executors and administrators, and every one of them, jointly and severally, firmly by these presents.

WITNESS our hands and seals this \_\_\_\_\_ day of \_\_\_\_\_, 1999.

WHEREAS, the Principal is about ready to enter into a written Contract with Borough of Narberth for furnishing and delivering of a 1500 GPM Pumper Truck in accordance with the Technical Specifications and other related documents, constituting the Contract Documents, which are incorporated herein by reference.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall promptly and faithfully perform said Contract awarded to him then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Whenever Contractor shall be declared by Obligee to be in default under the Contract, the Obligee having performed Obligee's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

- 1) Complete the Contract in accordance with its terms and conditions, or
- 2) Obtain a bid or bids for submission to Obligee for completing the Contract in accordance with its terms and conditions and, upon determination by Obligee and Surety of the lowest responsible bidder, arrange for a Contract between such bidder and obligee and make available

**PERFORMANCE BOND**  
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as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay for the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "Balance of the Contract Price" as used in this paragraph, shall mean the total amount payable by Obligee to Contractor under the Contract and any amendments thereto, less the amount paid by Obligee to Contractor.

Provided, that said Surety, for value received, hereby stipulates and agrees that no change, extension, alterations or additions to the terms of this contract shall in any way release the Principal and the Surety, or either of them, his, their or its heirs, executors, administrators, successors or assigns, from their liability hereunder, and said surety does hereby waive notice of any such change, extension, alterations or additions.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the contract falls due.

(Proprietorship or Partnership Principal(s) sign here)

In the presence of:


(Corporate Principals sign here)

Attest:

	(SEAL)

(Surety sign here)

Witness:


By: \_\_\_\_\_ (SEAL)  
Attorney-in-fact



**GENERAL CONDITIONS**  
**CONTRACT TO:**  
**PURCHASE OF A 1500 GPM PUMPER TRUCK**

**1. Contract and Contract Documents**

The Contract Documents are defined below. The Table of Contents, Titles, Headings, Running Headlines, and Marginal Notes contained herein and in said documents are solely to facilitate reference to various provisions of the Contract documents and in no way affect, limit, or cast light on the interpretation of the provisions to which they refer. These documents collectively form the entire Contract between parties and supersede all prior written or oral negotiations, understandings, agreements or contracts, and may not be modified except in writing and signed by both parties.

**2. Definitions**

Whenever in the Contract Documents the following terms are used, they shall have the meaning given here:

- a. "Borough" – shall mean Borough of Narberth
- b. "Contract" – the written agreement executed by and between the Borough and the successful bidder, including collectively all of the Contract Documents covering the performance of the Contract.
- c. "Contractor" – shall mean an individual, partnership, or corporation with whom the Contract is made by the Borough and primarily liable for the acceptable performance of the work and for the payment of all debts pertaining to the work.
- d. "Contract Documents" – the Contract Documents consist of the Agreement, Addenda (if any), Bid Form (Bidder's Proposal), Performance Bond, Notice to Bidders, Information for Bidders, Technical Specifications, and these General Conditions. In addition, any change orders duly authorized and executed are considered a part of the Contract Documents.
- e. "Fire Company" – shall mean that person, firm or organization designated by the Borough as designer of the apparatus, acting directly or indirectly through authorized representatives.
- f. "Notice" – shall mean a written notice.
- g. "Surety or Sureties" – corporate body or bodies, legally authorized to do business in Pennsylvania and approved by the Borough, who are bound with and for the Contractor and who are primarily liable for the satisfactory and acceptable execution and fulfillment of this Contract.

**GENERAL CONDITIONS**  
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- h. "Subcontractor" – shall mean any individual, firm, or corporation who contracts with the Contractor to perform work related to the Contract, for or on behalf of the Contractor, in a matter and/or in addition to furnishing materials, plans and equipment or only labor. All references to Contractor in the Contract shall apply equally to subcontractors of the Contractor also, for the performance of work at the site.
- i. "Work" – shall mean all matters, services, and items herein agreed to be furnished or done by or on the part of the Contractor by employees of the Contractor and any subcontractor.

**3. Obligations of the Contractor**

a. The Contractor shall be deemed and considered an independent contractor in respect to the work covered by this Contract and shall assume all responsibility and expense for the work, for risks and casualties of every description arising out of the nature of work, the action of the elements or unforeseen or unusual difficulties. The Contractor shall assume all liability for loss by reason of neglect or violation of Federal, State, or Local laws, ordinances or regulations, loss by fire due to work necessary to conform to the laws, ordinances and regulations referred to and included in this Contract. In case any injury be done to any person or to any public or private property by, or as a consequence of, or during the progress of any operation under this Contract, or any act or omission on the part of the Contractor or its agents or employees, the Contractor shall, at its own expense and cost, make good such damage in such manner as may be required. In case of failure on the Contractor's part to promptly make good such damage, the Borough shall have the right to deduct the cost of such work or expenses from any monies due or which may thereafter be due to the Contractor under this Contract; or to recover the same from the Contractor or his surety.

b. The Contractor shall furnish all labor and materials and transportation necessary or proper for performing and completing work in the manner and within the time period specified and shall do at his own expense everything mentioned as his duty under this Contract and all instance of work. The Contractor shall pay all fees for permits, all royalties and fees for products or processes used and all other incidental expenses, assume all loss or damage arising out of the work. The Contractor shall complete the work in accordance with this Contract and any work necessary to be performed after regular hours, shall be performed without additional expense to the Borough.

c. The Contractor agrees that the documents and specifications involve no danger to person or property, if the work be done without fault or negligence on their part. No verbal agreement or conversation with any officer, agent, or employee or the Borough either before or after the execution of this Contract shall effect or modify any of the terms or obligations contained herein.

**GENERAL CONDITIONS**  
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d. The successful bidder will be responsible for preparing and maintaining a record file of parts and assemblies used to manufacture the apparatus. These records will be maintained in the factory of the bidder for a minimum of twenty (20) years. File will contain copies of any and all reported deficiencies, all replacement parts required to maintain the apparatus, and original purchase documents including specifications, contract, invoices, incomplete chassis certificates, quality control reports and final delivery acceptance documents, the purchaser will have access to any and all documents contained in this file upon request.

e. No exception will be allowed for any of the aforementioned instructions. Bids not submitted in accordance with these instructions will be rejected.

f. Each bid will be accompanied by a detail 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 will be solely responsible for the design and construction of all features.

g. Some items have been specified by brand name or model number. These have been carefully selected because of their reliability and availability or replacement locally. In order to be responsive, items named will be contained in bid proposals.

**4. Sub-Contracts**

a. The Contractor shall, at all times and all respects, be primarily responsible to the Borough for the performance of the Contract. The Contractor shall not sell, transfer, assign or otherwise dispose of to anyone his obligation to the Borough or any payment or payments which may accrue hereunder without prior written consent of the Borough.

b. The Contractor shall notify the Borough in writing the names of subcontractors proposed for the work and shall not employ any that the Borough may object to as incompetent or unfit.

c. The Contractor agrees that he is as fully responsible to the Borough for the acts of omissions of his subcontractors, and of persons directly or indirectly employed by them, as he is for the acts and omission for the persons directly employed by him.

d. Nothing contained in the Contract Documents shall be interpreted as creating any contractual relation between any subcontractor and the Borough.

**5. Members and Authorized Representative of the Borough Not Liable**

No claim of any type shall be made by the Contractor against any member, officer, agent, or employee of the Borough by reason of this Contract or any of its provisions.

**GENERAL CONDITIONS**  
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**6. "Or Equal" Clause**

Any reference to an item of equipment or material by specific manufacturer's brand name or trade name in these Contract Documents is intended merely as standard of quality, workmanship, configuration and suitability for the intended use. Products or materials of other manufacturers which, in the opinion of the Borough are equal to that specified will be acceptable. Any bidder intending to supply a product which is not that which is specified shall provide, with his bid, documentation, descriptive literature, and pictures which will assist the Borough in its evaluation and shall identify the differences from the product specified.

**7. Payment**

Payment will be made in full upon the completion of all work identified in the Technical Specifications in accordance with any payment schedule contained in the Agreement, a written acceptance by the Manager of the Borough, the presentation of a complete and correct invoice, submission of the Maintenance Bond or warranty, and the approval of the invoice by the Borough Council at its first regular meeting following the presentation of the complete and correct invoice.

The Borough is exempt for both Federal and Pennsylvania State sales taxes. Exemption certificates will be furnished to the Contractor, if requested.

**8. Termination**

This Contract may be terminated at any time by the mutual consent of both parties.

**9. Notices**

The Contractor shall provide an address to the Borough where formal notices can be sent. The Contractor shall notify the Borough if this address changes during the term of the Contract.

**10. Applicable Laws and Court Jurisdiction**

The Court of Common Pleas of Montgomery County shall have exclusive jurisdiction regarding any matters or disputes arising from the operation of this Contract, and the Contract shall be governed by the laws of the Commonwealth of Pennsylvania.

**11. Contractor's Liability Insurance**

The following insurance coverages shall be not less than the following amounts or greater where required by laws and regulations.

**GENERAL CONDITIONS**  
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a. Workers' Compensation:

- |  |               |
|--|---------------|
| 1. State:                                      | Statutory     |
| 2. Applicable Federal<br>(e.g. Longshoreman's) | Statutory     |
| 3. Employer's Liability:                       | \$100,000     |
|  | Each Accident |
|  | \$500,00      |
|  | Disease       |
|  | Policy Limit  |
|  | \$100,000     |
|  | Disease       |
|  | Policy Limit  |
|  | Each Employee |

b. Contractor's Liability Insurance

- |  |                |
|--|----------------|
| 1. General Aggregate*<br>(Except Products Completed Operations): | \$1,000,000.00 |
|--|----------------|

"General Liability Policy General Aggregate Limit shall be amended by endorsement to apply on a "Per Project" basis.

- |  |                |
|--|----------------|
| 2. Products – Completed Operations Aggregate:  | \$1,000,000.00 |
| 3. Personal and Advertising Injury (Per Person/Organization):  | \$1,000,000.00 |
| 4. Each Occurrence (Bodily Injury and Property Damage):  | \$1,000,000.00 |
| 5. Property Damage Liability Insurance will provide Explosion, Collapse, and Underground coverages where applicable. |                |

c. Automobile Liability:

- |                   |               |                |
|-------------------|---------------|----------------|
| 1. Bodily Injury: | Each Person   | \$1,000,000.00 |
|                   | Each Accident | \$1,000,000.00 |
| Property Damage:  | Each Accident | \$1,000,000.00 |

or

- |  |                |                |
|--|----------------|----------------|
| 2. Combined single Limit (Bodily Injury and Property Damage) |                |                |
|  | Each Accident: | \$1,000,000.00 |

**GENERAL CONDITIONS**  
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d. Additional Insured

The following entities shall be listed as additional insured:

1. Owner: Borough of Narberth  
100 Conway Avenue  
Narberth, PA 19072
  
2. Fire Company: Narberth Fire Company  
100 Conway Avenue  
Narberth, PA 19072

e. Substitutions

The attached truck specification is simply a guideline of the type of truck that the Fire Company is intending to purchase. The Fire Company recognizes that all manufacturers' items may not be 100% compatible with these specifications. We therefore ask all bidders to propose items as close to these specifications as possible. Your bid must include a detailed schedule comparing the items specified to those which you intend to provide. BIDS RECEIVED WITHOUT THIS COMPARISON WILL NOT BE CONSIDERED FOR AWARD. Any reference to a manufacturer is for comparison purposes, and therefore the Fire Company will equally accept an "or APPROVED EQUAL" at their discretion.

Substitutions of equal or greater capability and quality may be incorporated in the bid proposal as long as the material is clearly identified, described in the bid documentation, and is approved by Narberth Borough, or its representative, will make the final determination of substitute components suitability, although the bidder will assume all responsibility associated with component substitutions.

Any prospective truck manufacturer bidding on other than "as specified" shall be required to supply complete and descriptive literature on the component (s), including all packaging and technical data, so that fair and impartial consideration may be granted. The discretion of what constitutes an equal will remain with Narberth Borough, and such a decision will be final.

# Technical Specifications, Delivery, and Manufacture Instructions

## 1500 GPM Custom Pumper Truck

### 1. INTENT OF SPECIFICATIONS

Unit will be protected by permanent Anti-Freeze for operation between -30 degrees F to +235 degrees F and shall have all fluid levels filled prior to delivery.

Unit will be designed and constructed to follow the requirements of the following:

FMVSS; DOT; ICC; NFPA Pamphlet 1901; SAE; TRA; ULI; TBEA; and State Motor Vehicle regulations, latest editions (1901 equipment not requested is not included).

Unit will be quality control inspected and documented at each step of manufacturing, and will be fully road tested. Unit will be fully covered by manufacturer's insurance until delivery and acceptance is made.

Unit will be designed and assembled so that all recommended daily maintenance checks can be performed easily by the operator without the need for hand tools. Apparatus components that interfere with removal or repair of other major components will be attached with fasteners and installed with normal hand tools. These components will not be welded or otherwise permanently secured into place.

A test data plate will be provided at the pump operator's position which gives the rated discharges and pressures, together with the speed of the engine as determined by the manufacturer's test for this unit.

A manufacturer's certification of GVWR and GAWR on a nameplate will be affixed to the completed vehicle.

A permanent plate mounted in the driver's compartment will be supplied. It will 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 (if used), and drive axle lubrication fluid.

A permanent plate in the driver's compartment will be installed, specifying the seating capacity of the included cab.

Signs that state "OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION" will be provided. They will be visible from each seated position.

An accident prevention sign will be located at the rear step area of the apparatus. It will warn personnel that standing on the step while the vehicle is in motion is prohibited.

A nameplate indicating the chassis transmission shift selector position to be used for pumping will be provided in the driving compartment and located so that it can be easily read from the driver's position.

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

The front to rear weight distribution of the fully loaded vehicle will be within the limits set by the chassis manufacturer. The front axle loads will not be more than the maximum axle loads specified by the chassis manufacturer, under full load and all other loading conditions.

The difference in weight on the end of each axle, from side to side, when the vehicle is fully loaded and equipped will not exceed 7 per cent.

Any special tools that are required to service any component will be provided with the completed apparatus. (When applicable)

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

The apparatus when fully loaded will be capable of the following performance on dry, level paved roads in good condition, item (d) not included.

(a) From a standing start the vehicle will attain a true speed of 35 mph within 25 seconds.

(b) From a steady pace of 15 mph, the vehicle will accelerate to a true speed of 35 mph within 15 seconds. This will be accomplished without moving gear selector.

(c) The vehicle will attain a Maximum speed of 58 mph.

(d) The apparatus will be able to maintain a speed of at least 20 mph on any grade up to and including 6 degrees.

The GAWR and GVWR of the chassis will be adequate to carry the fully equipped apparatus including water and other tanks filled, the specified hose load, unequipped personnel weight, ground ladders, and a miscellaneous equipment allowance per NFPA criteria as well as additional equipment and personnel specified by purchaser. The GAWR and GVWR of the chassis is to be calculated using 8 personnel at 200 lbs. and an additional equipment allowance of 1,000lbs.

## **2. BID DRAWINGS**

Drawings including, but not limited to, the overall dimensions, wheelbase, and overall length of the proposed apparatus shall be required with the bid. The drawing shall include right, left, front, top and rear views of the apparatus.

## **3. APPARATUS TEST BY UNDERWRITERS LABORATORIES**

The following Apparatus shall comply with all NFPA 1901 applicable regulations in effect as of the contract signing date. There shall be multiple tests performed by the contractor and Underwriter's Laboratories when the apparatus has been completed. The manufacturer shall furnish the completed Test Certificate(s) to the purchaser at time of delivery. Since the inspection services of Underwriters Laboratories are available to all bidders on an equal basis, no other third party testing service shall be acceptable. The tests conducted on the apparatus shall include, but not be limited to:

## **4. PUMP & PLUMBING PERFORMANCE TEST**

The apparatus pump and plumbing system shall be tested and certified.

## **5. 12 VOLT ELECTRICAL TEST**

The apparatus low voltage electrical system shall be tested and certified.

## **6. SUPPLIED INFORMATION & EXTRAS**

The apparatus manufacturer shall supply one (1) copy of apparatus manuals with all manufactured apparatus. The manuals shall include, but not be limited to: all component warranties, users manuals and information for supplied products, apparatus engineering information including drawings as built prints, and whatever other pertinent information the apparatus manufacturer can supply to its customer regarding the said apparatus.

Included in the delivery of the unit, the apparatus manufacturer shall also include spare hardware and extra fasteners, paint for touch-up, information regarding washing and care procedures, as well as other recommendations for care and upkeep of the general apparatus.

The apparatus manufacturer shall also supply a manufacturer's record of apparatus construction details, including the following information:

Owner name and address;

Apparatus manufacturer, model, and serial number;

Chassis make, model, and serial number;

GAWR of front and rear axles;

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 (if applicable) and manufacturer mounted equipment (front and rear);

Engine make, model, serial number, number of cylinders, bore, stroke, displacement and compression ratio, rated horsepower and related speed per SAE J690, Certificate of Maximum Net Horsepower for Motor Trucks and Tractors, and no load governed speed;

Type of fuel and fuel tank capacity;

Electrical system voltage and alternator output in amps;



Battery make and model, capacity in CCA;

Paint numbers;

Turning ratio specs

Transmission make, model, and type;

Pump to drive through the transmission

Engine to pump gear ratio and transmission gear ratio used;

Pump make, model, rated capacity in gallons per minute, serial number, number of stages, and impeller diameter in inches;

Pump manufacturer's certification of suction capability;

Pump manufacturer's certification of hydrostatic test;

Pump manufacturer's certification of inspection and test for the fire pump;

Copy of the apparatus manufacturer's approval for stationary pumping applications;

Pump transmission make, model and serial number;

Priming device type;

Type of pump pressure control system;

The engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum no load governed speed;

Certification of water tank capacity;

Company name and signature of responsible company representative;

Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall vehicle (with the water tank full but without personnel, equipment, and hose);

Written load analysis and results of the electrical system performance tests;

## **7. PRE-CONSTRUCTION CONFERENCE**

The factory authorized Distributor shall be required to have a pre-construction meeting at the Narberth Fire station within 45 days after the bid is awarded. This meeting is with the Officers of the Fire Company and will be a general question and answer type meeting

Prior to manufacturing, there will be a pre-construction conference at the site of the manufacturing facility with four (4) individuals from the apparatus committee to finalize all construction details.

The factories authorized distributor shall, at his expense, provide transportation, lodging, and meals. Any distance greater than 200 miles shall be by commercial air travel.

## **8. MID-CONSTRUCTION INSPECTION CONFERENCE**

The factory authorized Distributor shall be required, during manufacturing, to have a mid-construction conference at the site of the manufacturing facility with four (4) individuals from the apparatus committee to inspect the apparatus during construction.

The "Purchaser" shall designate the stage of construction at which the visit will be conducted.

The factories authorized distributor shall, at his expense, provide transportation, lodging, and meals. Any distance greater than 200 miles shall be by commercial air travel.

## **9. FINAL INSPECTION CONFERENCE**

The factory authorized Distributor shall be required, during manufacturing, to have a final completion inspection conference at the site of the manufacturing facility with four (4) individuals from the apparatus committee to inspect the apparatus after construction.

The factories authorized distributor shall, at his expense, provide transportation, lodging, and meals. Any distance greater than 200 miles shall be by commercial air travel.

## **10. ON-LINE CUSTOMER INTERACTION**

The manufacturer shall provide the capability for online access through the manufacturer's web site. There shall be a dedicated section of the web site for customers to access the status of their apparatus during the construction phases. In this secured area customers will be able view specified digital photos of their apparatus during the construction phases. The following photos will be provided with this service:

1. Chassis (front, rear, left and right side)
2. Body, pre-paint (front, rear, left and right side)
3. Body and pump module mounted (front, rear, left and right side)
4. Final (front, rear, left and right side)

## **11. DELIVERY**

A factory-authorized individual shall deliver the unit under its own power. The unit will remain insured by the apparatus manufacturer until the department accepts the unit.

The factories authorized distributor shall, at his expense, shall have the completed unit PA state inspected.

“Accepts” shall be defined as the fire apparatus will be delivered to the Narberth Fire Company at their station. Upon delivery, the Fire Company will inspect the apparatus and compare it to the specifications for any deficiencies. The Fire Company will also do a complete test of the apparatus to confirm that it meets the specifications. The Fire Company will be allowed to operate the apparatus for testing and training purposes during this period of acceptance. This acceptance period shall not exceed sixty (60) days from the date of delivery. Any deficiencies found in the apparatus will be corrected by the truck manufacturer, either at the firehouse (if minor in nature), or at a place as designated by the truck manufacturer, which includes returning the apparatus to the point of manufacture, at no additional cost to the Fire Company.

## **12. TRAINING**

After the initial inspection of the apparatus by the truck committee, and their confirmation that the truck is in compliance with the specifications, the apparatus manufacturer shall perform the following training of fire company personnel.

1. Four (4) hours of maintenance training will be given to the designated personnel of the fire company by a factory authorized representative of the truck manufacturer familiar with the proper maintenance of the fire apparatus.
2. Four (4) hours of operator training will be conducted either following the above training, or at a later time as agreed upon by the fire company and the apparatus manufacturer.
3. An additional four (4) hours of operator training will be given at a date and time agreed to by the fire company and the apparatus manufacturer. The day could be a weekday, weekend or an evening.

## **13. GENERAL WARRANTY**

The warranty on the fire apparatus shall be for a period of two (2) years from the date of delivery, except for the chassis and certain other components, as noted in paragraph three.

Under this warranty, manufacturer agrees to furnish any parts to replace those that have failed due to defective material or workmanship where there is no indication of abuse, neglect, unusual or other than normal service , providing that such parts are, at manufacturers option, made available for manufacturers inspection, and at manufacturers request, returned to apparatus manufacturers factory, or other location designated by manufacturer, with transportation prepaid, within thirty days after the date of failure, or within two (2) years from the date of acceptance (not to exceed sixty days) of the apparatus to the original purchaser, whichever occurs first, and inspection indicates that the failure was attributed to defective material or workmanship.

The warranty on the chassis, engine, transmission, tires, storage batteries, generators, electrical lamps, and other devices subject to deterioration is limited to the warranty of the manufacturer thereof, and adjustments for the same are to be made directly with the manufacturer through the apparatus manufacturer.

The warranty shall not apply to any fire apparatus which has been repaired, or altered outside of the factory in any way, unless prior written authorization has been received from the apparatus manufacturer.

The warranty shall not apply to those items which are usually considered normal maintenance and upkeep services.

The Manufacturer will provide the location of the service center's to be used for warranty repair with the bid.

## **14. CAB WARRANTY**

The cab shall be warranted for a period of ten (10) years. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

## **15. SPECIFIC WARRANTY'S**

The manufacturers' bid shall contain an individual warranty statement for the following items- Structural, Pump, Tank, Multi-plexed electrical, Chassis, Cab and Paint. Warranty shall clearly state the period of the warranty, what is included, i.e., parts, replacement, labor, and who is responsible for long warranty period items.

### **16. MAXIMUM OVER ALL LENGTH REQUIREMENT**

The Apparatus specified shall be constructed as detailed and shall have an approximate Over All Length of 360 Inches.

### **17. MAXIMUM WHEEL BASE REQUIREMENT**

The Apparatus specified shall be constructed as detailed and shall have an approximate Wheel Base of 182 Inches.

### **17a. MAXIMUM WIDTH REQUIREMENT**

The Apparatus specified shall be constructed as detailed and shall have a maximum width of 96 inches.

### **18. MAXIMUM OVER ALL HEIGHT REQUIREMENT**

The Apparatus specified shall be constructed as detailed and shall have an approximate Over All Height of 125 Inches.

Bidders shall include accurate dimensions for each of the above four items with their bids. A drawing of the truck with the required dimensions is acceptable.

### **19. CAB AND CHASSIS**

The cab and chassis shall be the manufactures top of the line model.

The cab and chassis shall be a flat floor, Medium extended four door with a 10" raised roof, aluminum tilt cab, capable of seating eight (8) persons, built specifically for the fire service. The cab and chassis shall meet the requirements of the National Fire Protection Association Standard 1901, (latest edition).

### **STATIONARY VIEWING WINDOWS**

Two (2) stationary viewing windows shall be provided on the rear wall of the cab, one (1) each side, at the outboard edge. Each window shall be installed with an aluminum flange.

### **20. CAB CRASH TEST**

Bidders will provide a copy of any Cab Crash Tests which they may have conducted for evaluation by the Apparatus Committee.

### **21. FRAME**

The apparatus manufacturer shall specify the frame details in their bid. This shall include specific details of the frame side rails, cross members, method of frame assembly, and strength of steel components, Bending Moment of members, and the section modulus of the frame. Manufacturer's Warranty shall also be included for the Frame Assembly.

### **22. PAINT FRAME AND CHASSIS UNDER CARRIAGE**

The chassis under carriage consisting of frame, axles, driveline running gear, battery boxes, air tanks and other assorted chassis mounted components shall be painted with standard black paint. Paint shall be applied before airlines and electrical wiring is installed.

### **23. FUEL TANK**

The fuel tank shall have a minimum capacity of fifty (50) gallons. The baffled tank shall be made of 14 gauge phosphate coated steel with chromate epoxy exterior finish.  
The fuel tank shall be mounted under the frame, behind the rear axle on strap hangers with a "U" strap bolted front

and rear so the tank can be easily dropped and removed. Tank shall have vent port to facilitate rapid filling without "blow-back". A roll over ball check vent shall be installed.

Dual draw tubes and dual sender ports shall be installed. A 2" NPT fill port shall be available for left hand fill. A 1/2" NPT drain plug shall be centered in the bottom of the tank.

The standard fuel line for ISC and ISL engines will be nylon material rated for diesel fuel.

#### **24. ADDITIONAL FUEL GAUGE**

An additional fuel gauge will be installed on the pump panel.

#### **25. FRONT BUMPER**

A solid steel bumper painted job color with red and white reflective chevron striping.

#### **27. TOW HOOKS**

Two (2) heavy duty red painted tow hooks shall be installed under the bumper and bolted directly to the chassis frame with grade "8" bolts.

#### **28. AIR HORNS**

Dual Grover Stuttertone 24" chrome plated air horns shall be recessed in the front bumper one (1) each on the driver and officer inboard mounting locations. A 3/8" airline "teed" equal distance from each horn shall be installed.

#### **29. AIR HORN ACTUATION**

Air horn actuation shall be accomplished by the steering wheel horn button and a right side officer's ceiling pull lanyard.

#### **30. ELECTRONIC SIREN & SPEAKERS CPI**

A Whelen Model BETA112R shall be installed. Two (2) 100 watt speakers shall be recessed in the front bumper, one on each side. The speakers shall blend in with the bumper.

#### **31. SIREN 10" ELECTRIC (ELECTRO-MECHANICAL)**

A Federal Q2B 10" chrome plated electro-mechanical siren shall be mounted in the center front bumper. Siren shall be activated with foot switch for the officers side. A siren-brake switch shall be installed in the officers side switch panel. Siren shall only be operational when truck is in response mode

#### **32. BATTERY CHARGING SYSTEM**

A battery charger and air pressure leakage compensator shall be furnished and installed. The battery charger shall have a 15 amp output to the batteries with several "battery saver" outputs, allowing up to 3 amps of 12 volt rechargeable items to be wired through the charger, only allowing charging when the shoreline is plugged in. There shall be a bar graph display, to indicate battery condition, mounted near the shoreline.

The air compressor shall be 120 volts, maintaining brake pressure to a minimum 75 psi. The components shall be manufactured by Kussmaul Electronics and be model Pump Plus 1000.

There shall be a Kussmaul "Super Auto-Eject" 110 volt, 20 amp shoreline receptacle furnished and installed. When the ignition switch is activated, the electrical current shall be interrupted before the plug is automatically eject to prevent arcing. The plug for the receptacle shall be shipped loose to be installed on the shoreline cord.

The shoreline connection shall be installed above the left front wheel well in the side of the chassis cab.

A Dual port USB (Kussmaul # 09-219-4) shall be mounted on the officers side dash. This should have power all the time.

#### **110 VOLT PRE WIRING IN CAB**

There shall be a dual outlet wall mounted behind the driver's seat connected to the shore line.

### **12 VOLT PRE WIRING IN CAB**

There shall be a 12 volt power point located in the dash and in the rear of the cab at a location specified at the pre-construction conference .

Customer provided light 12 volt chargers will be factory mounted and wired at locations specified at the pre-construction conference.

### **33. FRONT AXLE**

The front axle shall be an ArvinMeritor to be specified by manufacturer to meet GVW requirements. The springs shall be a taper type, three (3) leaf, 54" long and 4" wide with a Berlin wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counterbore and lubrication land off crossbore with grease fitting. The spring capacity shall meet or exceed the capacity of the front axle.

The hydraulic power assist steering gear shall be specified by manufacturer.

### **34. CHASSIS ALIGNMENT**

The chassis frame rails shall be cross checked for length and squareness. Front and rear axles shall be laser aligned. Tires and wheels shall be aligned and toe-in set on the front tires at the chassis manufacturer's facility.

The completed apparatus should be rechecked for proper alignment after the chassis has been fully loaded.

### **35. FRONT AXLE CRAMP ANGLE**

Manufacturer is to specify the cramp angle.

### **36. FRONT TIRES**

The front tires shall be GoodYear All Weather specified by manufacturer to meet specified GVW.

### **37. FRONT WHEELS - STEEL**

The front wheels shall be polished aluminum.

### **38. FRONT WHEEL BEARINGS OIL LUBRICATED**

The front axle wheel bearings shall be oil lubricated and come equipped with an oil level visual inspection window.

### **39. FRONT SHOCK ABSORBERS**

Two (2) monotubular design, nitrogen gas charged shock absorbers shall be part of the front axle suspension. The manufacturer shall warranty the shock for a period of five (5) years.

### **40. STEERING COLUMN AND WHEEL**

The Douglas Autotech or equal steering column shall be a seven (7) position tilt and 2.25" telescopic type with an 18" steering wheel. The steering wheel shall be covered with black absorbite padding. The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp high beam low beam switch.

### **41. DISC BRAKES**

The front axle shall have ArvinMeritor (Rockwell) disc type brakes with vented rotors and automatic slack adjusters.

#### **42. REAR AXLE**

The rear axle shall be an ArvinMeritor with single reduction gearing and shall have a fire service rated capacity to meet GVW. The rear axle shall be lockable by a switch located on the drivers side dash.

#### **43. TOP SPEED**

The top speed of the vehicle shall be approximately 58 MPH +/-2 MPH at governed engine RPM.

#### **44. REAR BRAKES**

The rear brakes shall be ArvinMeritor (Rockwell) disc type brakes with vented rotors and automatic slack adjusters.

#### **45. REAR TIRES**

The rear tires shall be GoodYear tubeless radial XDE M/S mud and snow tread Manufacture to specify size to meet GVW

#### **46. REAR WHEELS**

The rear wheels shall be polished aluminum.

#### **47. PAINTED WHEELS**

#### **49. REAR SUSPENSION**

The rear suspension shall be a Reyco 79KB or equal vari-rate, captive slipper type, with 57.5" x 3" springs. One (1) adjustable and one (1) fixed torque rod shall be provided. The spring capacity must meet or exceed the capacity of the rear axle.

#### **50. ABS BRAKE SYSTEM**

A Meritor Wabco four sensor four modulator anti-lock braking system shall be installed on the front and rear ArvinMeritor axles for safer vehicle control during braking and reduced stopping distance in skid conditions.

The electronic monitoring system shall incorporate diagonal circuitry to monitor wheel speed during braking through a sensor and tone ring on each wheel.

A dash mounted vacuum formed ABS composite lamp shall be provided to notify the driver of a system malfunction. A momentary test switch shall be installed to test the system for diagnostic codes.

The vacuum formed ABS composite system shall automatically disengage the auxiliary braking system device when required.

The Meritor Wabco vacuum formed ABS composite system shall have a three (3) year or 300,000 mile warranty provided by Meritor Wabco Vehicle Control Systems.

#### **51. AXLE COVER KIT STAINLESS STEEL (ALL WHEELS)**

None

#### **52. TIRE CHAINS**

On Spot, automatic ice chains shall be installed on the rear axle of the chassis to provide instant traction on ice and snow at speeds below 35 mph. The system shall include a switch on the dash with a lift-up cover to prevent accidental activation.

#### **53. SINGLE REAR AXLE AIR BRAKE SYSTEM**

A FMVSS 121 and NFPA rapid build-up, compliant air brake system shall be provided. It shall include three (3) air reservoirs with a total of 4136 cubic inch of air capacity.

A Bendix E6 floor mounted tread valve shall be mounted in the cab for service brake control.

A Bendix PP1 control valve shall operate the parking brake system.

Emergency braking shall be controlled through the Bendix treadle valve and modulated through a Meritor Wabco inversion valve.

The rear axle spring brakes are to automatically apply in case of air pressure loss below 60 psi with a mechanical means for releasing the spring brake chambers.

The parking brake control is to be center mounted within easy reach of the driver and officer seating positions.

#### **54. AIR DRYER**

A Meritor Wabco system saver 1200 spin-on desiccant air dryer with a 12-volt, 100-watt automatic heated moisture ejector shall be installed in the air brake system.

The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure.

The Meritor Wabco air dryer shall come with a three (3) year or 300,000 mile warranty provided by Meritor Wabco Vehicle Control Systems.

#### **55. MANUAL DRAINS ON AIR TANKS**

Manual drains shall be installed on all reservoirs of the air brake system.

#### **56. HEATED AUTOMATIC MOISTURE EJECTORS ON AIR TANKS**

Heated, automatic moisture ejectors shall be installed on all air tanks in addition to the manual drain valves.

#### **57. NYLON AIR LINE TUBING**

A dual air system plumbed with color coded reinforced nylon tubing air lines shall be installed. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall be fiber reinforced neoprene covered hoses.

#### **58. ADDITIONAL AIR RESERVOIR**

An additional 1200 cubic inch air reservoir shall be installed and isolated to prevent depletion of the air to the air brake system and to act as a supply tank for operating air equipment. It shall be plumbed with a 90 psi pressure protection valve on the reservoir supply side.

#### **59. AIR COMPRESSOR**

The air compressor on the engine shall be a Wabco capable of producing a minimum of 18.7 cfm at 1250 engine rpm. It shall be gear driven, engine oil pressure lubricated and cooled by the engine cooling system. The air compressor shall have a 5-year warranty.

#### **60. ENGINE**

A Cummins ISI-9 (2017), turbocharged, with derate exception charge air cooled engine shall be provided.

TYPE:

In-Line six (6) cylinder, 4 cycle

HORSEPOWER:

450 @ 2000 rpm / Governed at 2100 rpm

TORQUE:

1250 lb.ft. @ 1300 rpm

GOVERNOR:

Electronic

A wiring harness shall be supplied with a drop out at the back of the cab. The harness shall include a connector to allow an optional harness for the pump panel to be plugged into it. Circuits shall be provided for multiplexed gauges, hand throttle, high idle and PSG system. A circuit for J1939 data link shall also be provided at the drop out.

A spin on engine coolant filter with shut-off valve shall be provided.

An engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge shall be part of the engine's lubrication system.

#### **61. ENGINE WARRANTY**

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

#### **62. ENGINE OIL LEVEL CHECK**

A low engine oil level switch shall be provided that will indicate when the engine oil is approximately four (4) quarts or more low. The switch shall light a red "LOW OIL LEVEL" indicator light in the dash. The indicator shall only function while the ignition switch is on and the engine is not running.

#### **63. FUEL WATER SEPARATOR WITH LIGHT AND ALARM**

A Fleetguard fuel-water separator shall be installed with an instrument panel lamp and audible alarm to indicate when water is present in the fuel. The filter shall replace the standard fuel filter and be mounted on the engine.

#### **64. JACOBS ENGINE BRAKE-CUMMINS**

A Jacobs engine compression brake, for the six (6) cylinder Cummins engine, with brake light actuation and cutout relay when in pump mode shall be installed. The engine brake will activate upon release of accelerator when in operation mode. Dash mounted switches with "On/Off" and High/Low functions shall be installed.

#### **65. EXHAUST SYSTEM**

The exhaust system shall be installed under the frame with the discharge to the right side forward of the rear tires.

The tailpipe shall terminate as a 5 inch pipe in order to mate with the Plymovent system installed in the firehouse.

#### **66. TAIL PIPE CHROME EXTENSION**

None



## **67. AIR CLEANER**

The air cleaner shall be the dry type with a replaceable element. It shall have an outside air intake with an ember separator filter and an indicator light in the warning light cluster to show when the air cleaner element requires replacement.

## **68. COOLING SYSTEM**

The cooling system shall have sufficient capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the engine and transmission manufacturer and EPA requirements. The complete cooling system shall be mounted in a manner to isolate the system from vibration and stress. The individual cores shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

### Radiator

The radiator shall be a cross-flow design constructed completely of aluminum with welded side tanks. The radiator shall be bolted to the bottom of the charge air cooler to allow a single depth core, thus allowing a more efficient and serviceable cooling system. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

### Surge Tank

The cooling system shall be equipped with a surge tank that is capable of being filled and removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a cap that meets the engine manufacturers pressure requirements as well as the system design requirements.

### Coolant

The cooling package shall have Extended Life Coolant (ELC) installed. The use of supplemental coolant additives (SCA's) will not be allowed, as this is part of the extended life coolant makeup. The coolant shall contain ethylene glycol and deionized water to keep the coolant from freezing to a temperature of -34 degrees F.

### Coolant Filters

Engines equipped with coolant filters will be supplied with standard nonchemical type filters.

### Hoses/Clamps

All radiator tubes shall be formed from aluminized steel tubing and installed with silicone hoses with stainless steel constant torque clamps.

### Recirculation Shields

Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting the performance. When a center hosewell is installed an additional shield may be required to redirect the airflow into the coolers.

### Charge Air Cooler

The charge air cooler shall be a cross-flow design constructed completely of aluminum with welded side tanks. The charge air cooler shall be bolted to the top of the radiator to allow a single depth core.

### Hoses / Clamps

All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "T" style clamps meeting the engine manufacturers requirements.

## **69. COOLING SYSTEM FAN**

The engine cooling system shall incorporate a thermostatically controlled, clutched fan.

When the clutched fan is disengaged it shall facilitate improved vehicle performance, cab heating in cold climates, and fuel economy.

The fan will automatically lock up when the vehicle is placed in pumping mode.

The fan shall be installed on the engine and includes a shroud. Recirculation shields shall be installed to insure that air, which has passed through the radiator, is not drawn through it again.

## **70. TRANSMISSION COOLING SYSTEM**

### Transmission Cooler

The transmission cooler shall be a cross flow air to oil design constructed completely of aluminum with welded side tanks. The transmission cooler shall be bolted to the bottom of the radiator to allow a single depth core, allowing a more efficient and serviceable cooling system. The transmission cooler shall be mounted in such a manner as not to extend below the chassis frame by more than 1", allowing greater approach angles and ground clearance.

## **71. TRANSMISSION**

The transmission shall be an Allison 4000 EVS automatic with electronic controls. The transmission will have two (2) 10-bolt PTO pads.

The transmission shall be equipped with an air to oil transmission cooler located below the radiator allowing a single depth core and efficient cooling package. The transmission cooler shall be mounted in a manner to allow maximum approach angle by not protruding below the frame more than an inch. The transmission cooler shall be constructed completely of aluminum with welded side tanks. The transmission shall have two (2) internal oil filters.

Fourth gear hold-in range may be accomplished through wiring for a pumping application.

The transmission gear ratios shall be:

1st	3.51:1
2nd	1.91:1
3rd	1.43:1
4th	1.00:1
5th	0.74:1
Rev	4.80

## **72. SYNTHETIC TRANSMISSION FLUID**

Castrol "Transynd" or an equivalent synthetic TES 295 transmission fluid shall be utilized to fill the Allison 4000 EVS transmission.

## **73. TRANSMISSION PUSH BUTTON CONTROL**

An Allison push button type range selector pad shall be provided and located to the right of the driver within clear view and reach.

## **74. TRANSMISSION MODE**

The transmission, upon start-up, will select four (4) speed operation. By pressing the "mode" switch on the shift pad (mode on) provides five (5) speed overdrive.

## **75. DRIVELINES**

All drivelines shall be 1810 heavy duty series with "glide coat" splines on all slip shafts.

## 76. TRANSMISSION WARRANTY

The Allison 4000 EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

The transmission must be filled with transynd synthetic fluid or approved equal.

## 77. MULTIPLEX ELECTRICAL SYSTEM WITH COLOR DISPLAY

A Weldon multiplex electrical system, or equal shall be supplied. The system shall be a single starting type, installed per NFPA 1901. The electrical system shall be 12 volt, suppressed per SAE J551 with six (6) Douglas BCI-31 950 CCA batteries with 210 minute reserve capacity and 3/0 welding type dual path starter cables per SAE J541.

The Multiplexed wiring system shall include the following:

- \* Smart Vision System will consist of a color display and P.O.D.S.
- \* Systems Diagnostic Menu and controls.
- \* Solid state switching.
- \* Complete Peer to Peer network architecture.
- \* Weatherproof Nodes and sealed Deutsch connectors.
- \* Sequences and sheds electrical loads.

The display will have a 16:9 (wide screen) aspect ratio measuring 92mm H X 159mm W. Adjacent to the color display will be two groups of four virtual switches, allowing an operator to view and manipulate real-time data. The operator shall be able to choose from the graphical display showing real-time system information, or up to two NTSC signals from devices such as cameras and GPS receivers. When specified in conjunction with a multiplexed chassis, climate controls will be accessible through the display.

The graphical display will show an operator five system driven screens.

Ready mode will display a real time clock, chassis and pump service interval time and allow the operator to manipulate non-emergency functions.

While operating in the Calling for Right-of-Way mode, The Smart Vision display will operate in the Response mode and will show an operator an incrementing clock tracking response time to an incident. Additionally, while in the response mode, an operator can manipulate classically accessed functions through the cascaded menus.

While operating in the Blocking Right-of-Way mode, The Smart Vision Display will operate in the Scene mode will show an operator applicable fire pump status, aerial status and allow the operator to manipulate classically accessed functions through the cascaded menus.

While in Transit mode, the Smart Vision Display will show an operator Inside and Outside temperatures and allow the operator to manipulate classically accessed functions through the cascaded menus.

Alert mode will show an operator system parameters that need immediate attention such as open door conditions, engine warnings.

The Smart Vision Display will continuously monitor system outputs for shorts and opens to be displayed for an operator to allow efficient diagnosis.

Grouped to the left of the display will be three P.O.D.S. (**P**rogrammable **O**n **D**emand **S**witching) Each Pod will consist of four domed, back-lit, momentary switches that can be programmed to act as maintained, momentary or three-way switches. Each switch will have an independent indicator lamp that will illuminate in conjunction with an output.

Both the display and the P.O.D.S. will be a part of the active Peer-to-Peer network requiring no additional hardware to integrate to the multiplexing system.

The remaining nodes of the system shall be comprised of weatherproof solid-state, microprocessor based hardware capable of switching, sequencing and shedding loads in response to operator inputs as well as

digital and analog signals.

The Smart Vision System is expandable and shall be field re-programmable and re-configurable by any authorized dealer or service center.

All wiring to be appropriate gauge cross link with 311 degree F. insulation. All wires in the chassis shall be circuit numbered and function coded, in addition the SAE wiring will be color coded. The wiring shall be protected by 275 degree F. minimum high temperature flame retardant loom as required.

All controlled functions not otherwise specified shall be activated through this multiplex system.

#### **LED Ground Lighting Below Each Door**

The cab shall be equipped with LED lighting under each cab door. The lights will be activated by either a single switch through the multiplex system or each respective door switch.

#### **Alternating Headlights**

An alternating high beam headlamp flashing system shall be installed into the high beam headlamp system that will allow the high beams to flash alternately from left to right.

The completed system shall be capable of using high beam to override flashing function and will flash high beams only when the low beam headlamps are selected.

#### **Audible Alarm for Open Door Light**

An audible alarm shall be wired to the open door light, which will sound when a door is open and the air brake is off with the vehicle in gear.

The starting system shall be supplied with the following:

- One (1) Cole-Hersee #2484 master battery switch.
- One (1) Cole-Hersee #EX26654A ignition switch.
- One (1) starter button.
- One (1) green LED indicator for battery "on".
- One (1) green LED indicator for ignition "on"

Includes 4 rocker switches on driver's dash:

1. Secondary Braking On/Off switch.
2. Secondary Braking Variance Control (High/Med/Low).
3. Spare (if not replaced by customer requested options).
4. Spare (if not replaced by customer requested options).

## **78. INSTRUMENTATION**

An ergonomically designed instrument panel shall be provided. The gauges shall be backlit with red LED lamps

The instrument panel shall contain the following gauges:

One (1) electronic tachometer with integral digital hour meter. The scale on the tachometer shall read from 0 to 3000 RPM. The hourmeter shall display engine hours of operation.

One (1) electronic speedometer with integral digital odometer/tripodometer. The speedometer shall have a dual scale with miles per hour (MPH) as the dominant scale and kilometers per hour (KPH) on the minor scale. The speedometer scale shall read from 5 to 85 MPH (5 to 140 KPH). The odometer shall display miles.

- One (1) Primary Air Pressure gauge
- One (1) Secondary Air Pressure gauge
- One (1) Fuel Level gauge
- One (1) Oil Pressure gauge
- One (1) Coolant temperature gauge
- One (1) transmission Oil Temperature gauge
- One (1) Voltmeter
- One (1) Ampmeter

The instrument panel shall contain an Annunciator Module that contains the following indicator lights. All indicator lights shall contain LED lamps.

#### **79. RED LAMPS**

Stop Engine - indicates critical engine fault.  
Park Brake - indicates park brake is set.  
Low Fuel - indicates low fuel.  
Cab Ajar - indicates tilt cab is not locked down. (1)  
Volts - indicates high or low system voltage.  
Low Oil Press - indicates low engine oil pressure.  
High Coolant Temp - indicates excessive engine coolant temperature.  
High Trans Temp - indicates excessive transmission oil temperature.  
Low Air - indicates low air pressure in either system one or system two.  
Low Coolant Level - indicates low engine coolant level. (1)  
Low Oil Level - indicates low engine oil level.  
Air Filter - indicates excessive engine air intake restriction.

#### **80. YELLOW LAMPS**

Check Engine - indicates non-critical engine fault.  
Check Trans - indicates transmission fault.  
Wait to Start - indicates active engine air preheat cycle. (2)  
ABS - indicates anti-lock brake system fault.  
Water in Fuel - indicates presence of water in fuel filter. (1)  
Engine Maint - indicates engine maintenance is required. (1)

#### **81. GREEN LAMPS**

Left and Right turn signal indicators.  
Aux Brake Active - indicates secondary braking device is active. (1)  
High Idle - indicates engine high idle is active. (1)  
Low Trac - indicates low wheel traction for automatic traction control (ATC) equipped vehicles, also indicates mud/snow mode is active for ATC system. (1)

#### **82. BLUE LAMP**

High beam indicator.

The instrumentation system shall provide a constant audible alarm for the following situations:

Low air pressure.  
Low engine oil pressure.  
High engine coolant temperature.  
High transmission oil temperature.  
Low coolant level. (1)  
High or low system voltage  
Critical engine fault (Stop Engine).

The instrumentation system will provide a three second alarm every three minutes for the following situations:

Low fuel.  
Water in fuel.

#### **83. OFFICER ROCKER SWITCH PANEL**

The officer's side switch panel shall include the multiplexer display.

#### **84. DRIVER ROCKER SWITCH PANEL**

The driver's side panel shall include an intermittent windshield wiper/washer switch and shall include the multiplexer display.

#### **85. ROCKER SWITCH PANEL**

The center main rocker switch panel shall include the arrow controls as provided in section 96, as well as space for two (2) user installed mobile radios.

#### **86. ROCKER SWITCH CONSOLE**

A switch console shall be provided.  
The switch console shall not be an add-on type console.

#### **87. STOP, TAIL, TURN AND BACK-UP LIGHT WIRING**

Individual wires shall be run to the rear of the chassis for the stop light, turn signal, tail light and back-up lights. These lights should be LED.

#### **88. POWER AND GROUND STUDS - BATTERY DIRECT**

Power and grounding studs shall be provided and installed behind the electrical center cover with a breaker. The studs shall be #10 and capable of carrying up to a 40 amp battery direct load.

#### **89. BATTERY JUMPER STUDS**

Battery jumper studs shall be provided in a easy access area. The studs allow the vehicle to be jump started or cab to be raised in an emergency due to battery failure.

#### **90. ALTERNATOR**

A 320 amp Leece Neville 12 volt alternator with integral regulator and #10 screw AC terminals shall be installed.

#### **91. SUPER AUTO EJECT 20 AMP KUSSMAUL**

Covered in section 32.

#### **92. MARKER LAMPS**

Five (5) I.C.C. DOT approved Weldon model #9186-1500-20 Light Emitting Diode (LED) cab marker lamps shall be installed on the face of the cab above the windshield.

#### **93. MOUNT CUSTOMER SUPPLIED ANTENNAS**

3 radio antenna wiring kits (user provided) are to be mounted at locations to be determined at the preconstruction conference.

2 diversity antennas (user provided) are to be mounted on the cab roof terminated in the dash.

#### **94. INTERSECTOR LIGHTS**

See section 96

#### **95. INTERSECTOR LIGHTS**

See section 96.

#### **96. WARNING LIGHTS**

#### **Upper Lighting Package**

The following NFPA 1901 lighting package will be installed in the upper areas of the vehicle.

Zone A: There shall be one (1) Federal Signal Navigator warning light bar model NVG87-NFPA2 provided and mounted on the cab roof. Visibility of the light bar shall not be obstructed by the brow light or any other object.

The light bar will consist of:     One (1) Opticom or equivalent traffic pre-emption emitter  
  Eight (8) or more Red or Red/White LED heads  
  Two (2) Rotating Red LED heads

The light bar shall have clear lenses, and be wired to the master lighting switch. All white lights shall deactivate when the parking brake is set. An additional switch to deactivate the Opticom or equivalent emitter shall be provided, and shall reset to normally on each time the master warning switch is activated.

Zones B&D:     The side forward areas shall be covered by the Zone A lighting.

Zone C:         There shall be two (2) red Federal Signal MicroEscape one (1) ME2QLD-R, and one (1) ME2QLP-R mounted at the rear upper corners of the vehicle, one (1) per side.  
                          There shall be one (1) amber directional arrow Federal Signal Latitude SignalMaster SL8S-A mounted to the rear of the apparatus under the hosebed and mounted to protect it from damage during hose deployment. The control selector with in-cab display shall be mounted to the center dash and accessible to both driver and passenger.

### **Lower Lighting Package**

The following NFPA 1901 lighting package will be installed in the lower areas of the vehicle.

Zone A: There shall be four (4) red Federal Signal QuadraFlare QL64XF-R mounted in the front turn signal bezels of the chassis, two (2) each side. All lights shall be wired so each head alternates with the adjacent head within this zone.

Zones B&D:     There shall be six (6) red Federal Signal QuadraFlare QL64XF-R mounted on the sides of the vehicle chassis and body, three (3) each side. Mounting locations shall be at the front corner of the cab, at the front wheel well, and at the rear wheel well. All lights shall be wired so each head alternates with the adjacent head within this zone.

Zone C:         There shall be two (2) red Federal Signal QuadraFlare QL64XF-R mounted on the rear of the vehicle body, one (1) each side. All lights shall be wired so each head alternates with the adjacent head within this zone.

### **97. SCENE LIGHTS**

There shall be four (4) Fire Research Spectra LED flood light SPA-900-Q70 or equivalent. They shall operate on 12 volts and generate 7,000 lumens of light. Mounting locations shall be one (1) each side of the cab, and two (2) on the rear of the body. In addition to left, right, and rear in-cab switches, the cab lights shall activate when a front or rear passenger door is opened, and the rear lights shall activate when the transmission is placed in reverse.

### **98. BROW LIGHTS**

There shall be one (1) Fire Research Spectra LED Floodlight model SPA-800-Q15, or equivalent. It shall be installed on the front center of the cab. It shall operate on 12 volts and generate 15,000 lumens of light. The lamp head and mounting bracket shall be powder coated white. The light shall activate from a switch on the multiplex system.

### **99. HEADLIGHTS**

Four (4) rectangular LED headlamps with a separate high and low beams in bright bezels shall be provided. The headlamps shall be equipped with a "Daytime Running" light feature when the master switch is in the "On" position and the parking brake is released.

Two (2) round side turn side /marker LED lights shall be provided on the front cab corners.

### **100. TURN SIGNALS - AMBER LED**

Two (2) amber LED programmable turn signals shall be installed in matching bezels located above the

outer headlamps.

### **101. FRONT FACIA**

### **102. FLAT FLOOR EXTENDED MEDIUM FOUR DOOR 10" RAISED ROOF TILT CAB**

All glass used in the cab shall be automotive tint. The windshield shall be designed for maximum visibility.

A molded rubber grab handle shall be provided on the hinge post inside the cab at both the driver and officer door for entering and exiting the cab.

The driver seat shall have a compartment in the seat box beneath them. The compartment shall have a hinged door.

Intermittent electric wipers with a single motor and electric powered "wet arm" type windshield washers shall be provided.

### **103. FLAT FLOOR CAB DOORS**

All four cab doors shall be flush, full length type with hidden stainless steel door hinges.

The interior latches shall be flush paddle type, which are incorporated into an upper door panel. The front steps shall be a two (2) step configuration with the lower step constructed of stainless steel open grate material and the intermediate step covered with embossed, NFPA compliant aluminum tread plate.

The rear steps shall be a two (2) step configuration with the lower step constructed of stainless steel open grate material and the intermediate step covered with embossed, NFPA compliant aluminum tread plate.

The Manufacturer shall specify the door sizes and step measurements with the bid.

### **104. FRONT AND REAR ROLL DOWN DOOR WINDOWS**

The front doors shall have a full roll down window with power window control.

The rear doors shall have a roll down window by crank.

### **105. ABS INNER DOOR PANELS**

The inner door panels shall be a vacuum formed ABS composite upper panel and a polished stainless steel lower panel. A vacuum formed ABS composite insert pull cap shall be included with the front and rear door panels.

### **106. DOOR WARNING - CHEVRON**

Four (4) Chevron reflective signs shall be installed on the lowest portion of the inner door panels, one (1) on each door. A stripe of reflective tape shall be installed at the outer edge of each door.

### **107. STAINLESS TRIM**

A stainless steel trim band, 10" high with upper and lower trim affixed without holes and fasteners shall be installed on the lower exterior sides of the cab and doors.

### **108. ENGINE COVER**

The cover shall be an integral part of the cab and made of aluminum.

The interior cab side shall be covered with a vacuum formed ABS composite tapering on the sides to provide maximum hip and elbow room for the driver and officer.

The engine side of this area shall be heavily insulated with multi-layer insulating materials that resists heat transfer, and held in place.



#### **109. MOBILE DATA TERMINAL PROVISION - ABS DASH**

A Mobile Data Terminal (MDT) provision shall be provided above the glove box on the officer side of the dash. A 20 amp 12AWG clean power and ground circuit will be provided to the MDT area.

#### **110. FULL WIDTH CREW CAB DOOR ASSIST RAILS**

Black powder coated cast aluminum assist rails shall be provided and installed on the inside of the rear crew doors the full width of the window glass. The rails shall be located at the retracted door window glass level and will protect the exposed window glass area.

#### **111. FLASHING DOOR AJAR LIGHT**

A red flashing door ajar light shall be located in the headliner, centered in the cab. The light shall be labeled "Do Not Move Apparatus". The light shall be wired to indicate an open door on the cab when the parking brake is released. The door ajar light shall also indicate if any fire body door is open, or the ladder rack is not stowed.

#### **112. ENGINE TUNNEL LIGHTS**

Two LED clear work lights shall be provided and installed under the engine tunnel.

#### **113. INTERIOR LIGHTING**

##### **RED DOME LAMPS - Three (3)**

Three (3) LED red dome lamps with three (3) switches shall be mounted in the headliner of the cab.

##### **CLEAR DOME LAMPS - Four (4)**

Four (4) LED clear dome lamps with four (4) switches shall be mounted in the headliner of the cab. The four (4) dome lamps shall be activated by respective door switches, and by respective lamp switch.

##### **MAP LIGHT**

None

#### **114. 12 VOLT RECEPTACLE**

A 12 volt cigarette lighter type receptacle shall be provided in the cab dash on the officer's side to act as a power source.

#### **115. FABRIC COVERED SEATS - DURABLE BALLISTIC POLYESTER**

The seats shall be covered with a high strength, wear resistant fabric of durable ballistic polyester. A PVC coating is bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids.

#### **116. RED SEAT COLOR**

All seats supplied on the chassis shall be red in color.

#### **117. DRIVER SEAT**

The driver's seat shall be a six-way electric Seats Inc. 911 high back seat or equivalent shall include a tapered and padded seat cushion and back with mechanical suspension.

The seat shall be an ABTS (All Belts to Seat) type integrated red three-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The female seat belt clasp shall extend up from the seat base to be within easy reach of the occupant.

#### **118. OFFICER SEAT**

The officer's seat shall be a Seats Inc. 911 "ABTS" SCBA high back seat or equivalent shall include a tapered

and padded seat cushion and back.

The seat back shall include a vertically split hinged headrest and ZICO "ULL" bracket with LLS strap. A removable padded vinyl cover shall be supplied over the SCBA cavity.

The seat shall be an ABTS (All Belts to Seat) type integrated red three-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The female seat belt clasp shall extend up from the seat base to be within easy reach of the occupant.

#### **119. REAR FACING OUTBOARD SEATS**

Two (2) outboard rear facing crew area Seats Inc. 911 "ABTS" SCBA high back individual seats or equivalent shall be installed in the rear of the cab.

Each "Universal" high back seat shall include a tapered and padded seat cushion and back.

Each seat back shall include a vertically split hinged headrest and ZICO "ULL" bracket with LLS strap. A removable padded vinyl cover shall be supplied over the SCBA cavity.

The seats shall be an ABTS (All Belts to Seat) type integrated red three-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The female seat belt clasp shall extend up from the seat base to be within easy reach of the occupant

#### **120. REAR FACING CENTER SEATS**

A metal cabinet will be mounted with an adjustable shelf and 110 volt power outlet from the Kussmaul. The dimensions of the cabinet should be mentioned in the bid.

#### **121. FORWARD FACING OUTBOARD SEATS**

Two (2) outboard forward facing spring loaded hinge fold up seat.

Each seat shall include a tapered and padded seat cushion and back with a spring loaded hinge fold up seat bottom.

The seats shall be an ABTS (All Belts to Seat) type integrated red three-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The female seat belt clasp shall extend up from the seat base to be within easy reach of the occupant.

#### **122. FORWARD FACING CENTER SEATS**

Two (2) center forward facing crew area Seats Inc. 911 "ABTS" SCBA high back individual seats or equivalent shall be installed in the rear of the cab.

Each "Universal" high back seat shall include a tapered and padded seat cushion and back.

Each seat back shall include a vertically split hinged headrest and ZICO "ULL" bracket with LLS strap. A removable padded vinyl cover shall be supplied over the SCBA cavity.

The seats shall be an ABTS (All Belts to Seat) type integrated red three-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The female seat belt clasp shall extend up from the seat base to be within easy reach of the occupant.

#### **123. FORWARD FACING FULL WIDTH SEAT BOX**

A seat box shall be installed against the rear wall for seat mounting. The seat box shall be made from smooth aluminum and welded to the cab structure for seat mounting integrity. The seat box will be painted the cab interior color.

The front of the seat box shall have two openings.

#### **124. PAINT INTERIOR**

The interior metal surfaces shall be painted with a Zolatone #20-78 dark red texture finish.

#### **125. DASH AND HEADER TRIM ABS**

The cab interior dash trim shall consist of a two (2) piece vacuum formed ABS composite driver and officer panel.

The "A" pillar and center windshield post trim shall consist of a vacuum formed ABS composite driver, officer and center cover.

The header trim shall consist of a vacuum formed ABS composite driver, officer and a two (2) piece center HVAC cover. Mounted to the trim panels shall be two (2) vinyl sunvisors.

#### **126. INTERIOR TRIM COLOR AND FLOOR MAT**

Any cab interior soft vinyl trim surfaces shall be red in color.

Any cab interior vacuum formed ABS composite trim surfaces shall be red in color.

The cab interior floor mat shall be Black in color.

#### **127. HVAC SYSTEM**

The cab shall be equipped with a ceiling mounted HVAC system. The system shall consist of an overhead heater/defroster/air-conditioning unit mounted above the engine tunnel in a central location with controls in the multiplex.

The ceiling mounted HVAC system 45,000 Btu's of heat at 460 cfm for defrosting. In "Cabin Mode" the system is designed to produce 60,000 Btu's of heat and 32,000 Btu's of cooling. The system shall be capable of lowering the cab interior temperature from 100 degrees to 70 degrees within thirty minutes, with a relative humidity of sixty percent.

A roof mounted condenser shall be installed Centered on cab forward of the raised roof.

The air-conditioning compressor will be an engine driven Seltec TM-16 and utilize R-134A refrigerant.

The A/C lines will be a mixture of custom bent zinc coated steel fittings and Aeroquip flexible hose with E-Z clip fittings.

All heater system hoses, including auxiliary units shall be silicone with stainless steel constant torque clamps approved for use with silicone hose.

#### **128. DELUXE INSULATION PACKAGE**

Additional insulation in the cab shall be installed to improve air-conditioning and/or heating in extreme weather climates as well as reducing road noise.

#### **129. CAB TILT ACTUATION**

The entire cab shall tilt 45 degrees to allow for easy maintenance of the engine and transmission.

The cab tilt actuation shall be with an electric over hydraulic lift pump with a control box on a pendant for safe visual operation.

Two spring loaded hydraulic hold down hooks outboard of the frame shall be installed for holding the cab securely to the frame.

A steel safety assembly shall be installed on the right side cab lift cylinder to prevent accidental cab

lowering. The safety assembly shall fall over the lift cylinder when the cab is in the "up" position. A cable release system shall also be provided to clear the safety assembly from the lift cylinder when lowering the cab.

#### **130. MANUAL CAB LIFT PUMP - HORIZONTAL**

A manual cab lift pump module shall be attached to the electric over hydraulic tilt pump. The hand pump shall be mounted in a horizontal orientation.

#### **131. POLISHED STAINLESS STEEL ON REAR CAB CORNERS**

The rear corners of the cab shall be trimmed with polished stainless steel to protect the cab paint.

#### **132. FRONT GRILLE**

#### **133. REAR WALL DIAMOND PLATE**

The exterior rear wall of the cab shall be covered with aluminum diamond plate.

#### **134. DIAMOND PLATE ON RAISED ROOF SECTION**

None

#### **135. MAP BOOK RACK**

A map book rack will be installed between the officer's seat and the driver's seat, accessible to both. The rack will be approximately 26" wide, 8" deep and 10" tall. The rack shall be sloped rearward at least one inch front to back to keep books from sliding out while in motion. There shall be 3 slots side by side, 3" high, for a total of 6 slots.

#### **136. WHEEL WELL LINERS**

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Liners should be made with a heavy duty black rubber.

#### **137. CAB WINDOWS**

Fixed cab side windows shall be installed behind the front cab doors one each side of the cab. Each window shall be the same height as the windshield to provide maximum visibility.

#### **138. EXTERIOR CAB ASSIST HANDLES**

Four (4) 18" or equivalent anti-slip exterior assist handles shall be installed, one (1) behind each cab door.

#### **139. CAB MIRRORS**

Two (2) Retraco, West Coast style mirrors model 607018(1172HL) shall be provided. The mirrors shall be Dual Vision, motorized and heated with a flat 7" x 16" head. The mirror heads shall be mounted on stainless steel bow swing away type arms mounted to the cab doors. The mirrors shall be heated and lighted by amber clearance lights. The mirror head backs are stainless steel.

#### **140. EXTERIOR PAINT**

All cab painting must be completed prior to the installation of glass accessories or any other cab trim to assure complete paint coverage and maximum corrosion protection.

The paint shall be PPG (DBHS or DCC), Sikkens FLNA or Dupont Imron (5000 or 6000) paint shall be warranted for seven (7) years against cracking, checking or peeling and loss of gloss caused by chalking or fading.

Cab underside and doors shall be rustproofed with a ten (10) year or 100,000 mile warranty certificate against perforation issued in the Fire Department's name.

Color code will be provided at preconstruction.

#### **141. HAND SAND AND BUFF FINISH**

The base coat clear coat finish shall be power sanded and machine finished to achieve a flat finish on all "A" visual surfaces.

#### **142. OPERATORS MANUAL AND PARTS LIST**

The chassis operator's manual and parts list with wiring and air and plumbing diagrams shall be provided. The wiring diagram should be printed and a complete set in a CD form as built of the chassis model.

#### **143. ENGINE AND TRANSMISSION OPERATION MANUAL**

One set, in a CD form, of the engine operation and maintenance manual and one set of the transmission operation manual shall be included.

#### **144. FIRE EXTINGUISHER**

A 2.5 pound BC D.O.T approved fire extinguisher shall be shipped loose with the cab.

#### **145. AS BUILT DIAGRAMS**

All drawings and diagrams are to be "as built".

#### **147. BATTERY & AIR CHARGERS**

Covered by section 32.

#### **148. PRESSURE PROTECTION VALVE**

There shall be a pressure protection valve to prevent the use of air horns or other air operated accessories when the system air pressure drops below 85 psi.

#### **149. CHASSIS REQUIRED LABELING**

Signs that state "Occupants must be seated and belted when apparatus is in motion" shall be provided. They shall be visible from each seating position.

There shall be a lubrication plate mounted inside cab listing the type and grade of lubrication used in the following areas on the apparatus and chassis:

- Engine oil
- Engine Coolant
- Transmission Fluid
- Pump Transmission Lubrication Fluid
- Pump Primer Fluid
- Drive Axle Lubrication Fluid
- Generator Lubrication Fluid (if applicable)
- Tire pressures

#### **150. VEHICLE INFORMATION LABEL**

There shall be a travel clearance warning label located in the chassis cab. The travel clearance warning label to be located in easy view of the driver. The travel clearance warning label to include the following information:

1. Overall travel clearance height in feet and inches.
2. Overall travel clearance length in feet and inches.
3. Overall travel clearance width in feet and inches.

#### **151. MUD FLAPS**

Heavy-duty rubber mud flaps shall be provided behind all wheels. The mud flaps shall be black rubber type and be bolted in place. **NO LOGO**

#### **152. FUEL FILL DOOR**

There shall be a fuel fill assembly located on the left side of the apparatus body accessing the chassis supplied fuel tank. The assembly shall be located in the area that best suits efficient fuel filling with the space appropriated. There shall be a drain in the fuel fill assembly to allow over flow to drain on the back side of the apparatus body. The fuel fill cap to be removable. There shall be a label near the fuel fill door labeled "DIESEL FUEL ONLY". The fuel fill pipe shall have a 3/8" inside diameter vent line installed from the top of the fuel tank to the fill tube.

#### **153. PERIMETER LIGHTS**

There shall be eight (8) underbody perimeter lights furnished and installed. One under each of the cab doors, and one (1) each side of the rear wheels to illuminate the ground around the truck. Lighting designed to provide illumination on areas under the driver and crew riding area exits shall be switchable but activate automatically when the exit doors are open. All other ground area lighting shall be switchable. They shall be a LED Lamp.

#### **154. MIDSHIP PUMP**

The pump shall be a Hale Fire Pump, QMax-150, single stage.

#### **155. PUMP SEALS**

#### **156. MASTER DRAIN VALVE**

There shall be a manifold type drain valve installed in the pump compartment. All pump drains shall be connected to the master drain valve. The control shall be a hand wheel knob marked "open" and "closed".

#### **157. SUCTION RELIEF VALVE**

A suction relief valve with a range of pressure adjustment from 75 to 250 PSI shall be furnished, and installed inside pump compartment piped to the suction side of the pump.

The valve shall be preset at 125 PSI suction inlet pressure. The valve shall be installed inside the pump compartment where it will be easily accessible for future adjustment. The excess water shall be plumbed to the atmosphere.

For normal pumping operations, the relief valve shall not be capped and there shall be a placard stating "DO NOT CAP" installed.

#### **158. PUMP SHIFT**

The drive unit shall be provided with an air pump shift system. The control valve shall be a spring loaded guard lever that locks in "Road" or "Pump" mode.

There shall be two indicator lights to show the position of the pump when the control is moved to "Pump" position. A green light shall be energized when the pump shift has been completed and shall be labeled "PUMP ENGAGED"; a second green light shall be labeled "OK TO PUMP" energized when both the pump shift has been completed and the chassis automatic transmission is engaged.

A third green indicator light shall be installed adjacent to the throttle on the pump operator's panel. This light shall be labeled "Throttle Ready".

In addition to this indicator light, an additional indication shall be provided to the pump operator at the panel when the pump is ready to pump. This additional indication shall be that one (1) of the operator's panel illumination lights will only activate when the "Throttle Ready" indicator is lit and the pump is engaged. The remaining panel lights shall be controlled via pushbutton switch.

#### **159. PUMP SHIFT MANUAL OVERRIDE**

In the event of pump shift failure, the pump can be shifted by a push/pull manual override. The handle shall be located on the lower portion of the driver's side pump panel and shall be labeled accordingly.

#### **160. PRIMING SYSTEM**

The priming system shall include an electrically driven rotary vane priming pump rigidly attached to the pump transmission. The priming pump shall be self-lubricating and shall not require an external oil reservoir. The pump, when dry, shall be capable of taking suction and discharging water with a lift of 10 feet in not more than 30 seconds, through, 20 feet of suction hose through the steamers.

The primer shall be activated by a pull/push "T" handle control, Hale Model "PVG".

#### **161. THERMAL RELIEF VALVE**

A mechanical thermal relief valve shall be installed to protect the pump from overheating. It shall be mechanical and will not require operator monitoring. It shall automatically reset in the event of it going into operation. It shall contain an integral strainer to keep mechanism free of contamination. It shall be set at 120 degrees F(49 degrees C).

Relief valve shall discharge out below the running board. A warning light shall be installed on the pump panel to alert the operator that the relief valve is open. It will be accompanied by an audible alarm. The valve shall be a Hale TRVL-120 with alarm.

#### **162. TRANSMISSION LOCKUP CIRCUIT**

There shall be a redundant electric circuit that upon actuation of a guarded toggle switch adjacent to the manual pump shift lever will cause the Allison transmission to attempt to attain converter lockup in 4<sup>th</sup> range after the operator selects drive on the chassis provided transmission selector.

A placard will be provided detailing the sequence of events necessary to utilize the circuit. This circuit will be independent of all other systems on the apparatus.

#### **163. STEAMER INLETS**

##### **INTAKE BUTTERFLY VALVE - ELECTRIC OPERATED - DRIVER SIDE & OFFICERS SIDE**

The fire pump shall be fitted with a Hale Master Intake Valve (MIV), on the driver side and officers side of the main suction inlet. The valve shall be mounted between the suction tube extension and the suction tube, and shall be recessed behind the operator's panel. The valve body and all related components that are in contact with water shall be manufactured of fine grained, corrosion resistant bronze. The valve shall have a bore of 6.40". The valve shall incorporate a pressure relief valve, set at the pump manufacturer's facility to a rating of 125 PSI. The pressure relief valve shall provide protection for the suction hose even with the valve in the closed position. The valve shall incorporate NFPA-1901 compliant, large diameter hose air bleed valve, controlled at the operator's panel.

The valve shall be operated by a twelve (12) volt DC motor, as standard. It shall also incorporate a knob control manual override, mounted at the suction inlet. The electric control shall incorporate a placard with status lights to indicate whether the valve is in the closed, open or throttled position. The valve shall not be able to move from fully open to fully closed in under three (3) seconds, in compliance with NFPA-1901.

The inlets should terminate with a 30 degree down angle 5 inch storz connection.

#### **164. HALE 2CBP BOOSTER PUMP**

A Hale Products 2CBP Series two stage centrifugal High Pressure booster pump shall be provided and installed with the Hale QMAX pump. This pump option shall be plumbed to the dual booster reels provided, and be driven off the main pump. The intake is to be off the main pump and be capable of 60 gallons per minute at 500 PSI.

**When the truck is put in pump gear, both pumps will be engaged.**

#### **165. HOSE REELS**

There shall be two (2) Hannay electric rewind booster reels with automatic brake furnished and installed on the apparatus. Each reel shall have a capacity of 200' of 1" and 100' of ¾" 800 psi booster hose.

The reels shall each be plumbed to the pump with a 1" quarter turn Akron 8810 ball valve and 1" high pressure hose and couplings. The valves shall be controlled from the operator's panel. There shall be a manual rewind device furnished. Manual crank shall be mounted adjacent to booster reel.

Each booster reel shall be provided with an individual Class 1 2.5" (RED backlit) gauge on the operators panel.

The hose reels shall be natural finish aluminum. The hose reels shall be mounted above the pump house.

Two (2) electric rewind switches shall be located adjacent to the booster reels. Each switch shall have a weather proof rubber cover and label denoting its function.

There will be two (2) stainless steel hose roller guides installed, one (1) on either side of each hose reel to allow hose deployment without rubbing the apparatus.

There will be a stainless steel hose roller mounted between the hose reels to assist hose deployment when both lines must be deployed on a single side of the apparatus.

#### **166. BOOSTER HOSE**

Each reel shall come equipped with 300 feet (200 ft 1 in and 100 ft ¾ in) of booster hose, 800 psi. The hose shall be furnished in 100 foot lengths with chrome Barway couplings. Each reel shall also come equipped with a TFT Ultimatic W/Grip 1.0" NH B-BGH Nozzle.

#### **167. STAINLESS STEEL PLUMBING**

All auxiliary suction and discharge plumbing related fittings, waterways, and manifolds shall be fabricated with stainless steel pipe, brass or high pressure flexible piping with stainless steel couplings. Where waterway transitions are critical (elbows, tees, etc), no threaded fittings shall be allowed to promote the smooth transition of water flow to minimize friction loss and turbulence. All piping components and valving shall be non-painted. All piping welds shall be wire brushed and cleaned for inspection and appearance.

The high pressure flexible piping shall be black SBR synthetic rubber hose with 300 PSI working pressure and 1200 PSI burst pressure for flexible piping sizes 1.5" through 4". Sizes ¾", 1" and 5" are rated at 250 PSI working pressure and 1000 PSI burst pressure. All sizes are rated at 30" HG vacuum. Reinforcement consists of two plies of high tensile strength tire cord for all sizes and helix wire installed in sizes 1" through 5" for maximum performance in tight bend applications. The material has a temperature rating of --40° F to +210° F.

The stainless steel full flow couplings are precision machined from high tensile strength stainless steel. All female couplings are brass. Mechanical grooved and male ¾" and 1" couplings are brass. A high tensile strength stainless steel ferrule with serrations on the I. D. is utilized to assure maximum holding power when fastening couplings to hose.



### **168. 3" RIGHT SIDE SUCTION**

There shall be one (1) gated suction inlet installed on the apparatus. The intake valve shall be equipped with a 3/4" bleeder. Each suction shall be plumbed with a 3" Akron brass valve.

The valve shall be controlled with a lever directly attached to the valve.

The side suction shall be plumbed with 3" piping. The plumbing shall be drained with a quarter-turn drain system. The drain control shall be located on the lower sill on the right side of the pump house.

The suction shall terminate with a heavily chrome plated brass 3" NST swivel female adapter with screen. In addition, a 3" NST male plug shall be included secured by a chain or cable to the inlet termination location.

### **169. 3" LEFT SIDE SUCTION**

There shall be one (1) gated suction inlet installed on the apparatus. Each intake valve shall be equipped with a 3/4" bleeder. Each suction shall be plumbed with a 3" Akron brass valve

The valve shall be controlled with a lever directly attached to the valve.

The side suction shall be plumbed with 3" piping. The plumbing shall be drained with a quarter-turn drain system. The drain control shall be located on the lower sill on the left side of the pump house.

The suction shall terminate with a heavily chrome plated brass 3" NST swivel female adapter with screen. In addition, a 3" NST male plug shall be included secured by a chain or cable to the inlet termination location.

### **170. REAR SUCTION**

There shall be an auxiliary steamer inlet located on the right rear of the apparatus. There shall be a manually operated drain control furnished at the low point of the line.

A pressure gauge shall be provided and installed on the operators pump panel for the rear suction. Each suction shall be plumbed with a Hale MIV series electrically actuated valve. The electric valve (with manual hand wheel override) shall be operated with a control switch located on the pump operators panel. A quarter turn air bleeder valve shall be plumbed to the water supply side of the intake valve (by a 3/4" NPT port) to help evacuate air from the system.

The rear suction shall be plumbed with 5" stainless steel piping.

The suction shall terminate with a heavily chrome plated brass 5" NST male adapter and a 30 degree storz adapter with cap.

The suction shall be plumbed with manually operated drains in the locations specified. The suction shall be located on the right rear of the apparatus, below the hose bed.

### **171. FRONT SUCTION**

None.

### **172. RIGHT SIDE DISCHARGE**

There shall be one (1) gated discharge installed on the right side of the apparatus.

The gated discharge outlet furnished shall utilize a 3" Akron brass valve.

The discharge shall be controlled from the driver's side operator's panel by a hand crank operation.

The discharge shall terminate with a heavily chrome plated brass 3" NPT to NST adapter and a 3" NST female by male swivel 30 degree elbow. In addition, a 3" female to 2 1/2" female adapter with cap shall be included secured by a chain or cable to the outlet termination location.

A Class 1 2 1/2" lighted gauge shall be supplied for discharge pressure reading 0-400 psi. The gauge

shall utilize green LED lights and be manufactured by Class 1.

### **173. LEFT SIDE DISCHARGES**

There shall be two (2) gated discharges installed on the left side of the apparatus.

Each discharge shall utilize an 2 1/2" Akron brass valve.

Each discharge shall be controlled from the drivers side operator's panel.

Each discharge shall be plumbed with 2 1/2" piping. The discharge shall be controlled with a 'swing-type' lever directly attached to the valve. The lever shall operate just over 90 degrees of travel to provide full open / full closed positioning of the valve.

The plumbing shall be drained with a quarter-turn drain system. The drain control shall be located on the lower sill on the left side of the pump house.

The discharges shall terminate with a 2 1/2" NST adapter and a 2 1/2" NST female by male swivel 45 degree elbow. In addition, a 2 1/2" NST cap shall be included, secured by a chain or cable to the outlet termination location.

A Class 1 2 1/2" lighted gauge shall be supplied for discharge pressure reading 0-400 psi. The gauge shall utilize green LED lights and be manufactured by Class 1.

### **174. MASTER DISCHARGE**

There shall be one (1) master discharge installed on the right side of the apparatus in the pump module area. The gated discharge outlet furnished shall utilize a Akron brass 3" valve and shall be controlled from the driver's side operators panel by a hand crank operator.

The discharge shall be plumbed with 3" piping. The plumbing shall be drained with a quarter-turn drain system. The drain control shall be located on the lower sill on the right side of the pump house.

The discharge shall terminate with a heavily chrome plated brass 3" NPT to NST adapter and a 3" NST female swivel by 5" Storz cast aluminum 30 degree elbow. In addition, a 5" Storz cap shall be included secured by a chain or cable to the outlet termination location.

A Class 1 2 1/2" lighted gauge shall be supplied for discharge pressure reading 0-400 psi. The gauge shall utilize green LED lights and be manufactured by Class 1.

### **175. LEFT REAR DISCHARGE**

There shall be one (1) gated discharge installed in the rear of the apparatus, on the left side of the truck. The gated discharge outlet furnished shall utilize a 3" Akron brass valve, controlled by a hand crank operator located on the driver's side operators panel.

The discharge shall terminate with a heavily chrome plated brass 3" NPT to NST adapter and a 3" x 3" NST female by male swivel 30 degree elbow. There shall be a 3" Female x 2 1/2" male with a 2 1/2" NST cap shall be included secured by a chain or cable to the outlet termination location.

A Class 1 2 1/2" lighted gauge shall be supplied for discharge pressure reading 0-400 psi. The gauge shall utilize green LED lights and be manufactured by Class 1.

### **176. HOSE BED PRE-CONNECT - LEFT**

One (1) hose bed pre-connects shall be provided for 2 1/2" hose. The discharge shall be located at the rear of the truck.

The gated discharge outlet furnished shall utilize an 2 1/2" Akron brass valve.

The plumbing shall be drained with an auto-drain located at the lowest point of the waterway system. The discharge shall be controlled from the Drivers side operator's panel with a hand crank operator.

The discharge shall terminate with a heavily chrome plated brass fitting with 2 1/2" NST male threads . This discharge is intended to be pre-connected to hose, so no cap shall be provided.

A Class 1 2 1/2" lighted gauge shall be supplied for discharge pressure reading 0-400 psi. The gauge shall utilize green LED lights and be manufactured by Class 1.

#### **177. HOSE BED PRE-CONNECT - RIGHT**

One (1) hose bed pre-connects shall be provided for 2 1/2" hose. The discharge shall be located at the rear of the truck.

The gated discharge outlet furnished shall utilize an 2 1/2" Akron brass valve.

The plumbing shall be drained with an auto-drain located at the lowest point of the waterway system. The discharge shall be controlled from the driver's side operator's panel with a hand crank operator.

The discharge shall terminate with a heavily chrome plated brass fitting with 2 1/2" NST male threads. This discharge is intended to be pre-connected to hose, so no cap shall be provided.

A Class 1 2 1/2" lighted gauge shall be supplied for discharge pressure reading 0-400 psi. The gauge shall utilize green LED lights and be manufactured by Class 1.

#### **178. DELUGE PLUMBING**

None

#### **179. TANK TO PUMP LINE**

The connection between the tank and the pump shall be capable of the flow recommendations as set forth in NFPA Pamphlet 1901, latest revision and shall be tested to those standards when the pump is being certified.

One (1) 3" Akron Brass electrically operated valve.

The valve shall be controlled from the driver's side operator's panel.

One (1) non-collapsible flexible hose shall be incorporated into the tank to pump plumbing to allow movement in the line as the chassis flexes to avoid damage during normal road operation.

Schedule 10 stainless steel or schedule 40 Poly-Vinyl Chloride piping may be used to complete the connection from the tank to pump valve to the water tank.

#### **180. TANK TO PUMP CHECK VALVE**

There shall be a tank to pump check valve, conforming to NFPA standards, which shall be of bronze construction. The check valve shall be mounted as an integral part of the pump suction extension.

#### **181. TANK FILL LINE**

One (1) 2" tank fill/recirculating line shall be installed from the pump directly to the booster tank. One (1) 2" Akron brass valve shall be installed.

The valve shall be controlled from the driver's side operator's panel.

#### **182. SUCTION RELIEF VALVE**

Covered by section 157.

### **183. PUMP ANODE**

The pump shall be equipped with a Hale anode system.

### **184. PUMP COMPARTMENT**

The complete apparatus pump compartment shall be constructed of a combination of structural Members and formed sheet metal. The same materials used in the body shall be utilized in the construction of the pump compartment. The structure shall be welded utilizing the same A.S.W. Certified welding procedure as used on the structural body module. These processes shall ensure the quality of structural stability of the pump compartment module.

The pump compartment module shall be separated from the apparatus body with a gap. This gap is necessary to accommodate the flexing of the chassis frame rails that is encountered while the vehicle is in transit so that harmful torsional forces are not transmitted into the structural framework.

### **185. PUMP COMPARTMENT SERVICE ACCESS**

The front portion of the pump compartment structure (directly behind the chassis cab) shall not be overlaid to provide an opening for access to the midship fire pump.

The structural framework of the pump compartment shall be self-supportive and independent of the apparatus body.

### **186. AIR CHUCK OUTLET**

There shall be a quick disconnect air chuck outlet furnished and installed on the apparatus. The air chuck outlet shall be plumbed to the chassis air system and have on/off valve and label on the left side lower pump compartment sill.

### **187. APPARATUS LABELING**

The apparatus shall be descriptively tagged with color coded metal labels. The labels shall be applied near Apparatus features that require a user function description. Wherever necessary, the labels shall be color coded to differentiate controls and their respective functions to simplify and clarify complex configurations. The fire company will specify color codes.

### **188. OPERATORS PANEL**

The brushed stainless steel pump operator's panel shall be located on the left, upper side of the apparatus pump compartment. The panel shall be split into an upper and lower section. The left upper panel shall house all gauges and controls and be hinged to allow easy access to those components. The door shall have a stainless steel hinge, a dual point chrome push button latch and a rubber seal provided to prevent excessive moisture from entering or leaving the pump house.

The structure shall be overlaid underneath the removable panels on each side of the compartment shall be made of brushed stainless steel.

Valve controls shall be immediately adjacent to its respective gauge. The valve controls shall be properly labeled and color coded for ease of use. All markings shall be permanent in nature.

All discharge valve controls are to be located on the operators pump panel

Adequate illumination shall be provided for all gauges and controls by means of a shielded light assembly with five (5) LED on the left side and three (3) LED lights on the right side panel. The on/off switch for all lights shall be waterproof and be located on the control panel. This switch shall also activate any area step lighting. The center light on both sides is to turn on when the pump is placed in pump gear.

### **189. BRUSHED STAINLESS STEEL SIDE PANELS**

There shall be two (2) stainless steel side pump panels each side of the pump compartment, one upper

panel and one lower panel. The left, upper side panel shall be the pump operator's panel. Each upper panel shall be accessible by a quick-release type latch, closing against a door seal. Each lower panel shall be easily removed for a large access to the pump for service. All panels shall be manufactured from heavy duty brushed stainless steel.

#### **190. RUNNING BOARDS**

The running boards on the left and right hand side of the pump body shall be made of a Flexible storage bin capable of holding up to 25 feet of 5 inch hose. A quick release strap system should be in place to secure the hose. The frame shall support all loads by transmitting the loads through the pump compartment structure directly to the chassis frame rails. The running boards shall be independent of the apparatus body and shall be tied only to the pump compartment structure, thereby eliminating any pump compartment to body interference. This is essential in keeping a truly 'modular' configuration. All step surfaces are to be Grip Strut .

#### **191. TREAD PLATE OVERLAY**

None

#### **192. MASTER GAUGES**

Both master intake and master discharge gauges shall be manufactured by Class One and mounted on the operator's panel. They shall be liquid filled to keep the dial from pulsating and also to prevent condensation from forming inside the gauges. The master gauges shall be 4 1/2" in diameter. The master intake gauge shall read from - 30 to 400 psi with the master discharge gauge reading from 0 to 400 psi. The gauge shall utilize green LED lights and be manufactured by Class 1.

#### **193. TESTING PORTS**

There shall be a pressure and vacuum test gauge adapter with chrome plated plugs furnished and installed on the pump operators panel.

#### **194. HOUR METER**

There shall be an hour meter installed on the pump operator's panel that tracks the number of hours the pump is running.

#### **195. PRESSURE GOVERNOR AND MONITORING DISPLAY**

Fire Research model TGA201 pressure governor and monitoring display kit shall be installed. The kit shall include a control panel, intake pressure sensor, discharge pressure sensor, buzzer, and cables. The control panel case shall be waterproof and have dimensions not to exceed 4 3/4" high by 9 3/4" wide by 2 3/4" deep. The panel shall have LEDs to indicate PSI mode, RPM mode, OK TO PUMP, and IDLE RPM.

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
- PSI/RPM setting; shown on an LED bar graph display
- Engine RPM; shown with four daylight bright LED digits more than 1/2" high, updated in 10 RPM increments
- Oil pressure; shown on an LED bar graph display
- Engine coolant temperature; shown on an LED bar display
- Battery voltage; shown on an LED bar graph display
- Transmission temperature on an LED bar display

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.

There shall be two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall

occur when switching between pressure and RPM modes. When the pump engaged interlock signal is recognized an OK TO PUMP LED will light to indicate throttle ready and the governor shall be in pressure mode with the engine RPM set 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.

The program features shall be accessed via push buttons located on the front of the control panel. The program shall support manual control of pump discharge pressure and RPM settings, field programmable presets, and diagnostic capabilities. 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 PSG installation shall be wired specifically for the Cummins electronic engine.

#### **196. PUMP PANEL FUEL GAUGE**

There shall be a fuel gauge located on the pump panel.

#### **197. HEAT EXCHANGER**

There shall be a supplementary heat exchanger cooling system furnished and installed for use of water from the discharge side of the fire pump through the engine compartment, without intermixing, for absorption of excess heat. The heat exchanger shall be adequate in size to maintain the temperature of the coolant in the pump drive engine not to exceed the engine manufacturer's temperature rating under all pumping conditions.

Appropriate drains shall be provided to allow draining the heat exchanger to prevent damage from freezing. A manual shut-off valve shall be supplied at the pump operator's position.

#### **198. AIR HORN BUTTON**

There shall be an air horn activation button furnished and installed on the pump operator's gauge panel. The button shall be red in color.

#### **199. RADIO BOX**

None

#### **200. TORSION PUMP MODULE MOUNTING SYSTEM**

The entire pump module assembly shall be mounted so that it "floats" above the chassis frame rails with vibration and torsion isolator assemblies. The body substructure shall be mounted above the frame to allow independent flexing to occur between the body and the chassis. Each assembly shall be mounted to the chassis frame rails with steel, gusseted mounting brackets. Each bracket shall be powder coated for corrosion resistance. Each body mount bracket shall be mounted to the side chassis frame flange with two 5/8"-UNC Grade 5 HHCS.

#### **201. PUMP COMPARTMENT OVERLAY**

The top of the pump compartment shall be an approved stepping surface constructed of embossed tread plate approved by the latest NFPA standards for abrasiveness.

#### **202. TANK LEVEL GAUGE**

A Fire Research Tank Vision LED water tank level indicator shall be installed on the pump operator instrument panel. The gauge shall provide the pump operator with an accurate reading of the water tank level.

A beveled lens shall be incorporated into the indicator that protrudes from the module to allow viewing of the water tank level by personnel when not standing directly in front of the display.

The tank level gauge shall utilize a pressure transducer mounted on the outside of the tank for sensing

water levels without the use of a probe.

### **203. ALL ALUMINUM FIRE BODY**

Compartment Floors: The body compartments shall be enclosed with aluminum sheet metal as specified above. The compartment floors shall have a 1" lip downward at the door opening side of the compartment. This lip shall integrate with a structural member on the bottom edge and form a "sweep-out" compartment. This design shall also allow for a structural flush fitting door frame and a complete door/weather seal.

Compartment Vents: The body compartments shall be vented. Compartment Load Capacity: Each compartment shall have a minimum of one additional structural compartment floor support centered on the underside of the compartment floor. This additional member shall be integral with the rest of the body structure. Each compartment must be designed to carry a working load of:

Full depth side compartment: 1,000 lbs per compartment

Half depth side compartment: 750 lbs per compartment

Rear center compartment: 1,500 lbs per compartment

### **204. GENERAL BODY DETAILS**

All compartmentation shall be constructed in a sweep out design to be water and dust proof, manufactured to the maximum possible storage capacity.

### **205. FASTENERS**

All bolts and nuts used in the finish construction of the apparatus shall be stainless steel which helps prevent dissimilar metal electrolytic reaction and corrosion. Any bolt extending into a compartment or into the hose bed area shall have an acorn nut attached or be protected in such manner where sharp edges are avoided.

### **206. WHEEL WELLS**

Wheel wells shall be semicircular black polymer composite inner liners or all aluminum. Each wheel well shall be a continuous piece with no breaks or ledges where road grime or debris may accumulate.

### **207. WHEEL WELL MODULES**

The body wheel well area on each side of the body shall be fabricated of smooth aluminum and finish painted. They shall incorporate storage compartments to utilize the most space possible.

### **208. WHEEL CHOCK COMPARTMENT**

Wheel Chock storage shall be under the fire body.

### **209. SCBA BOTTLE COMPARTMENTS**

#### **DRIVER SIDE - FRONT SECTION OF FENDER**

A storage compartment shall be inserted into the fender to provide a storage area for three (3) MSA 45 minute low profile approx. size 6 ½" by 24" SCBA cylinders. The storage area shall be sized as tall and wide as possible in the fender with an angled floor. The compartment shall have a non-abrasive lined cradle storage area for each of the three (3) devices.

#### **DRIVER SIDE - REAR SECTION OF FENDER**

A storage compartment shall be inserted into the fender to provide a storage area for two (2) MSA 45 minute low profile approx. size 6 ½" by 24" SCBA cylinders and the fuel fill. The storage area shall be sized as tall and wide as possible in the fender. The compartment shall have a non-abrasive lined cradle storage area for each of the devices.

## **OFFICER SIDE - FRONT SECTION OF FENDER**

A storage compartment shall be inserted into the fender to provide a storage area for an oil dry hopper.

## **OFFICER SIDE - REAR SECTION OF FENDER**

A storage compartment shall be inserted into the fender to provide a storage area for two 2 ½ gallon pressurized water extinguishers. The storage area shall be sized as tall and wide as possible in the fender. The compartment shall have a non-abrasive lined cradle storage area.

## **210. TORSION BODY MOUNTING SYSTEM**

The entire body module assembly shall be mounted so that it "floats" above the chassis frame rails with vibration and torsion isolator assemblies. The body substructure shall be mounted above the frame to allow independent flexing to occur between the body and the chassis. There shall be no welding to the chassis frame rail sides, web or flanges, or drilling of holes in the top or bottom frame flanges between axles. All body to chassis connections shall be bolted so that in the event of an accident, the body shall be easily removable from the truck chassis for repair or replacement.

## **211. BODY STRUCTURE WIDTH**

The width of the apparatus body from the outside of the left compartments to the outside of the right compartments shall be approximately 96" excluding any attached peripherals such as rub rails, fenderettes, grab handles, etc.

## **212. ROBINSON BRAND ROLL-UP DOORS**

Roll up doors shall be Robinson brand. Door slats to be of a double wall box frame extrusion. Exterior surface shall be flat, interior surface shall be concave to prevent loose equipment from jamming the door. Slats will be anodized to prevent oxidation. Slats are to have inner-locking end shoes on every slat secured by a Punch-Dimple process. Slats shall have interlocking joints with a folding locking flange. Between each slat is a PVC/Vinyl inner seal to prevent any metal to metal contact.

Track to be one piece aluminum which has an attaching flange and finishing flange incorporated into its design which facilitates installation and provides a finished look to installation without additional trim or caulking. Track to have a replaceable side seal. Side seal prevents water and dust intrusion into the compartment.

Drip rail will have a built in replaceable wiper seal. Drip rail to be made of aluminum. Roll-up door to have a 4" diameter counterbalance to assist in lifting and to eliminate the risk of accidental closing. The door shall be secured by a full width lift bar, operable by one hand even with heavy gloves. Securing method will be a positive latch device.

The rear center compartment door shall be left a natural satin aluminum finish. The side compartment doors shall be aluminum finish and wet painted to match the body color.

The roller assembly is to have a removable protective shield to protect the painted surface of the door when open.

## **213. COMPARTMENT UNISTRUT SHELF MOUNTING**

Each compartment shall have unistrut or equivalent mounting for adjustable shelving.

## **214. COMPARTMENTATION**

The following compartments shall be supplied on the apparatus: The bidder is to provide actual dimensions.



Compartment "L1": One full height/split depth compartment shall be provided forward of the rear wheels. The compartment dimensions shall be approximately 35" wide x 71" tall x 29" deep in the lower 30" tall area, and 14" deep in the upper 41" tall area.  
This compartment will have ROM roll up door with a pull out bottom tray and adjustable height shelves.  
Doors painted body color.

Compartment "L2": One high side compartment shall be provided above the rear wheels. The compartment dimensions shall be approximately 64" wide x 40" high x 14" deep.  
This compartment will have a ROM roll up door and tool board. Door painted body color.

Compartment "L3": One full height/split depth compartment shall be provided behind the rear wheels. The compartment dimensions shall be approximately 56" wide x 71" tall x 29" deep in the lower 30" tall area, and 14" deep in the upper 41" tall area.  
This compartment will have a ROM roll up door. Door painted body color.

Aluminum diamond plate should be mounted on the top outside full length of the left side compartments.

A beavertail compartment shall be incorporated into Compartment L-3. .

Compartment "B1": There shall be one (1) compartment located at the rear of the apparatus, directly below the hose bed access area. This compartment will have a roll out tray that will store the Hanney cord reel (section 253) and a Tele Lite positive pressure fan(TLAPVS-16, 19x19.5x20.5). Fire company will provide the fan. This compartment will also have a ROM roll up door. Not painted the body color.

Compartment "R1": One mid height compartment shall be provided forward of the rear wheels. The compartment dimensions shall be approximately 35" wide x 48" tall x 29" deep in the lower 32" tall area, and 14" deep in the upper 16" tall area.  
This will have a swing open type door and painted the body color.

Compartment "R2": One equipment compartment shall be provided above the rear wheels. The compartment dimensions shall be approximately 64" wide x 18" high x 14" deep.  
This will have a swing open door style and painted the body color.

Compartment "R3": One mid height compartment shall be provided behind the rear wheels. The compartment dimensions shall be approximately 56" wide x 48" tall x 29" deep in the lower 32" tall area, and 14" deep in the upper 16" tall area.  
This will have a swing open door and be painted the body color.

Aluminum diamond plate should be installed on the top outside full length of the right side compartments.

A beavertail compartment shall be incorporated into Compartment R-3.

Brushed stainless steel sill plates shall be installed at the bottom of each body compartment door opening.

## **215. HOSE STORAGE**

Looking to keep the hose bed between 6" and 6"6" from the ground.

A hose bed shall be provided with slotted aluminum flooring installed to allow drainage through the tank cavity to the ground below.

The aluminum flooring shall be manufactured in discrete sections to allow for easy removal and outstanding stability. The area shall be free of sharp edges to protect the hose when loaded or distributed. The hose bed shall accommodate the following hose loads:

<u>Qty</u>	<u>Size</u>
1200'	5"
800'	2-1/2"

50 ' 2 ½ + 150' 1-3/4"  
50 ' 2 ½ + 150' 1-3/4"

There shall be three (3) divider(s) installed in the hose bed. The divider(s) shall be fabricated of 1/4" thick aluminum plate with a double sided reinforcement where it is attached to the adjustable slide rails. The rear of the divider(s) shall have a radius to provide a smooth corner and a hand cut out to aid in access to the hose bed area. Hose payout shall be unobstructed by the divider(s).

#### **216. HOSE BED AREA**

The hose bed area of the apparatus shall be overlaid with brushed material matching the body material type.

#### **217. HOSE BED AREA TRIMMED W/ BRUSHED SST**

The vertical corners at the back hose bed shall be trimmed with brushed stainless steel. The trim shall extend from the hose floor level up to the top edge of the body side.

#### **218. SHELVING**

Each shelf shall be fabricated of thick aluminum sheet material with the outside and inside edges flanged up to prevent equipment from sliding off of the shelves. Each shelf shall be as wide as possible to allow proper attachment to the above described slots. Shelves shall be adjustable up and down. Shelving quantities and locations shall be provided at pre construction.

All compartments shall be capable of accepting shelving from top to bottom.

Six (6) adjustable full width shelves installed in compartments.

Two (2) roll out trays installed in compartments

The location of the shelves and trays will be specified at pre-construction.

#### **219. RUB RAILS**

The bottom edge of the compartments shall be trimmed with rub rails to absorb minor damage while protecting the body. The rub rails shall be fabricated of brightly anodized aluminum channel. The rub rails shall be bolted in place with stainless steel bolts and locking nuts, and shall be spaced away from the body with 1/2" nylon spacers to help prevent the collection of water and debris. Each rub rail section shall be easily removable and replaced should it become damaged.

#### **220. FENDERETTES**

Four (4) Heavy duty black rubber fenderettes shall be provided on the front and rear wheel well openings. A rubber welting shall be provided between the body and the crown to seal the seam and restrict moisture from entering. A dielectric barrier shall be provided between the fender crown fasteners (screws) and the fender sheet metal to prevent corrosion.

#### **221. OVERLAYS**

All aluminum used in an overlay area shall be bright type 3003, 1/8" thick diamond plate material coated with 3M sealant and adhesive on the back sides to protect and to put an insulating barrier between dissimilar metals to assist in corrosion resistance.

The following areas shall have aluminum diamond plate overlays installed:

- The front faces of the apparatus compartments as well as the front header of the hose bed area.

The catwalks shall be approved stepping surfaces constructed of knurled tread plate approved by the latest NFPA standards for abrasiveness.

#### **222. REAR TAILBOARD AND BEAVER TAIL COMPARTMENTS**

The rear tailboard shall be fabricated of the same structural materials as used in the apparatus body.

The tailboard shall be an independent assembly bolted to the rear structural framing to provide body protection and a solid rear stepping platform. The rear step shall be designed to incorporate "crush zone" technology.

The rear of the apparatus body shall have beaver tail compartments on each side. The beaver tail compartments shall be constructed of the same materials as the apparatus body and extend from the top of the body compartments down to the rear tailboard.

The hosebed sides of the beaver tail compartments shall be overlaid with diamond plate.

On the rear body surface, a sign shall be attached that states: "DO NOT RIDE ON REAR STEP, DEATH OR SERIOUS INJURY MAY RESULT."

The rear tailboard and body shall be constructed such that the angle of departure shall be no less than 8 degrees at the rear of the apparatus when fully loaded (Per NFPA 1901).

The rear tailboard shall be incorporate a ventilated "Grip strut" material stepping surface bolted in place which spans the width of the apparatus. The extruded stepping surface shall be completely enclosed by the supporting structural framework to minimize damage. The ventilated "Grip strut" material shall be capable of being easily replaced if necessary, using only hand tools.

There shall be enough space to mount a Humat valve to the tailboard without obstructing compartment B1.

### **223. FOLDING STEPS**

Each surface of the folding step shall have grip material with a minimum of 42 sq. inches in size. Each step shall be capable of sustaining a 500 lb. static load. The following steps shall be installed:

Two folding steps shall be installed on the left forward wall of the front compartment. These steps shall be utilized to access the water tank fill tower of the apparatus. The steps shall also be utilized to gain access to the top of the pump compartment structure and any equipment located in the immediate vicinity.

Two (2) lights shall be mounted to illuminate stepping areas provided. Each light shall be a LED. Each light shall be directed towards and positioned above the stepping surfaces.

Two folding steps shall be installed on the right forward wall of the front compartment. The steps shall be utilized to access the water tank fill tower of the apparatus. The steps shall also be utilized to gain access to the top of the pump compartment structure and any equipment located in the immediate vicinity.

Two (2) lights shall be mounted to illuminate stepping areas provided. Each light shall be LED. Each light shall be directed towards and positioned above the stepping surfaces.

Folding steps shall be installed on the left rear vertical face of the body. Lights shall be mounted to illuminate stepping areas provided. Each light shall be a LED light. Each light shall be directed towards and positioned above the stepping surfaces.

Folding steps shall be installed on the right rear vertical face of the body. Lights shall be mounted to illuminate stepping areas provided. Each light shall be a LED. Each light shall be directed towards and positioned above the stepping surfaces.

### **224. RUBBER GRIP INSERT HANDRAIL SPECIFICATIONS**

All handrails shall be 1 1/4" in diameter, constructed of extruded aluminum with rubber grip inserts.

There shall be chrome plated brackets with a rubber gasket installed between the body and the bracket.

There shall be a 2" minimum clearance between the bracket and the body.  
The following handrails shall be installed at the approximate lengths noted:

There shall be hand rails installed on the rear of the apparatus.

Two (2) vertical hand rails shall be installed, one on each side, just below the hose bed sides. The remaining hand rail shall be installed horizontally, just below the hose bed area, full width.

Four (4) 10" long x 1 1/4" diameter handrail constructed of extruded aluminum with rubber grip inserts. There shall be chrome plated brackets with a rubber gasket installed between the body and the bracket. There shall be a 2" minimum clearance between the bracket and the body.

The four (4) hand rails shall be mounted in the following locations:

1. Right front body area of the pump panel.
2. Right rear body above the hose bed.
3. Left rear body above the hose bed.
4. Left front body area of the pump panel.

### **225. REAR TOW EYES**

There shall be a two rear tow eyes attached to the frame rails. The location of the tow eye shall be below the rear center compartment.

### **226. POLYPRENE TANK**

**TANK SHAPE:** The water tank shall be designed to utilize cavities that have commonly been wasted space. The water tank shall extend up and over the rear center compartment to just behind the rear body wall. The water tank shall fill the void between the main hose bed floor and the top of the rear center compartment. This tank design shall provide for a lower overall tank height, resulting in a lower overall main hose bed height. An "L" shaped tank is acceptable in order to achieve a lower hosebed height.

#### **TANK CONSTRUCTION:**

The booster tank shall be constructed of 1/2" thick polypropylene sheet stock which is a non-corrosive stress relieved thermoplastic. It shall be designed to be completely independent of the body and compartments. All joints and seams are extrusion welded and/or contain the "Bent Edge" and tested for maximum strength and integrity. The top of the booster tank is fitted with lifting eyes designed with a 3 to 1 safety factor to facilitate tank removal.

#### **COVER:**

The tank cover shall be constructed of 1/2" thick polypropylene and shall be recessed. A minimum of two lifting dowels shall be drilled and tapped 1/2" x 2" to accommodate the lifting eyes.

#### **BAFFLES:**

The swash partitions shall be manufactured from 1/2" polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments to provide maximum water flow. All swash partitions interlock and are welded to one another as well as to the walls of the tank.

#### **MOUNTING:**

The tank shall have a reinforced 3/4" floor for added strength and durability. The tank shall be isolated from the body substructure cross members with 1/2" x 2 1/2" rubber strips that are 60 durometer in hardness.

The tank shall sit nested inside the center body substructure and shall be completely removable without disturbing the body side panels. Tank stops on all four sides will keep the tank from shifting front to back or side to side.

#### **FILL TOWER:**

Fill opening shall be approximately 12" x 12". The tower will have a 1/4" thick removable polypropylene screen and a polypropylene hinged type cover that will open if the tank is filled at an excess rate. There shall be a removable 1/4" thick polypropylene screen to prevent debris from falling into the tank. The fill tower

shall have a 6" overflow that will discharge underneath the tank, behind the rear wheels.

The overflow shall terminate above the tank water level when filled to the rated capacity. A rear secondary tank vent shall be provided to prevent entrapment of air when filling on a decline and will vent next to the overflow.

The fill tower shall be located in the left front hose bed.

#### **SUMP:**

The sump will be constructed of 1/2" polyprene and be located inline with the tank suction valve. There shall be a 4" schedule 40 polyprene tube installed that will run from the suction outlet to the sump location. The tank will have an anti-swirl plate located approximately 2" above the sump.

The sump shall have a 3" plug for use in draining and cleaning out the tank.

#### **OUTLETS:**

In addition to the tank suction valve outlet located in the sump, there shall be an outlet provided for the tank fill valve. If there are any additional options selected (such as an extra tank suction or direct tank inlets), there shall be additional outlets provided to accommodate these items.

### **227. TANK CAPACITY**

The tank shall be 750 gallons in capacity.

### **228. LADDER MOUNTING**

There shall be a Ziamatic Quic-Lift ladder access system furnished and installed above the officers' side compartments. There shall be an automatic safety latch to hold the ladder rack in the stowed position.

The rack shall be powered by two (2) Warner 12 volt high cycle 1000# electric actuators. There shall be a spring loaded quarter turn latch furnished to hold the ladders on the rack when it is in any position.

Flashing warning lights shall be provided at the front and rear of the ladder rack and shall automatically activate when the ladder rack is in the down position.

The switch to operate the ladder rack shall be located on the rear of the vehicle

The ladder rack shall also be switched to the "Open Door Indicator Light" in the cab to alert the driver if the rack is not in the stowed position. The ladder rack shall be located on the right side of the apparatus body.

#### **LADDERS**

The following Duo-Safety ground ladder compliment shall be provided:

- One (1) Duo-Safety series 900-A, 24', aluminum, two (2) section extension ladder shall be provided.
- One (1) Duo-Safety series 775-A, 14', aluminum, straight roof ladder with folding hooks shall be provided.
- One (1) Duo-Safety series 585-A, 10', folding, aluminum, attic ladder shall be provided.

### **229. HOSE BED COVER**

The rear facing portion shall be cargo netting with a quick release system at each corner of the netting.

### **230. PAINT SPECIFICATIONS**

All bright metal fittings, if unavailable in stainless steel, shall be heavily chrome plated.

Critical body and sub-frame area which cannot be primed after assembly shall be pre-painted.

All welded metal surfaces shall be ground to a smooth surface prior to a degreasing and high pressure, high temperature phosphatizing process. The entire surface shall then be sprayed with a non-chromate sealing compound to prevent formulation of stains or flash rust on previously phosphatized parts.

The paint applied to the apparatus shall be PPG Industries Delfleet® brand, applied throughout a multi-step process including at least two coats of each color and clear coat finish.

The coating shall be an infra red, baked air dried. The coatings shall provide full gloss finished suitable for application by high-pressure airless or conventional low pressure air atomizing spray.

The coatings shall not contain lead, cadmium or arsenic. The polyisocyanate component shall consist of only aliphatic isocyanates, with no portion being aromatic isocyanate in character.

The solvents used in all components and products shall not contain ethylene glycol mono-ethyl ethers or their acetates (commercially recognized as cellosolves), nor shall they contain any chlorinated hydrocarbons.

The coating system, as supplied and recommended for application, shall meet all applicable federal, state and local laws and regulations now in force or at any time during the courses of the bid.

The entire exterior body structure (excluding roll-up doors) shall receive the primer coats and the finish coats. The painted surfaces shall have a finish with no runs, sags, craters, pinholes or other defects.

### **231. INTERIOR COMPARTMENT FINISH**

To prevent scratching of the paint finish, and to provide the maximum reflectivity for the compartment lighting, the interior of the compartments shall have a Duraback or equivalent type finished white in color.

### **232. DOOR OPEN INDICATOR**

Each Cab and compartment door shall have an integral door open indicator. If the door is not properly closed, it shall activate the "Door Open" light in the cab.

Each wheel well compartment door shall have a magnetic style switch. If the door is not properly closed, it shall activate the "Door Open" light in the cab.

### **233. LOW-VOLTAGE ELECTRICAL SYSTEM**

The apparatus shall be equipped with a Logic Controlled, Low-Voltage (12v) Electrical System compliant with the latest revision of the NFPA 1901 guideline.

The system shall be capable of performing total load management, load management sequencing, and load shedding via continuous monitoring of the low-voltage electrical system. In addition, the system shall be capable of switching loads eliminating the dependency on many archaic electrical components such as conventional flasher modules. The system shall also incorporate provisions for future expansion or modification.

The low-voltage electrical system shall be designed to distribute the placement of electrical system hardware throughout the apparatus thereby enabling a smaller, optimized wire harness. The programmable, logic controlled system shall eliminate redundant electrical hardware such as harnesses, circuit boards, relays, circuit breakers, and separate electrical or interlock subsystems and associated electronics for controlling various electrical loads and inputs.

As-built electrical system drawings and a vehicle-specific reference of I/O shall be furnished in the delivery manuals. These drawings shall show the electrical system broken down into separate functions, or small groups of related functions. Drawings shall depict circuit numbers, electrical components and connectors from beginning to end. A single drawing for all electrical circuits installed by the apparatus builder shall not be accepted.

#### **234. LED DOT LIGHTING**

There shall be five (5) lights located on the rear of the vehicle. Three (3) of the lights shall be mounted as high as possible on the rear face of the body for use as identification lamps. Two (2) lights shall be located as high and wide as possible, one each side, for use as clearance lamps. There shall be two (2) additional lights between the front and rear axles for identification and turn signaling as required. The lights shall be Weldon brand 9186-1500 series LED red and amber markers.

#### **235. LED REAR TAIL LIGHT CLUSTER**

There shall be a rear tail light cluster furnished and installed in a polished bezel at the rear of the apparatus, one each side. The 4684-0200 series cluster shall be manufactured by Weldon Technologies, Inc. and consist of the following:

- 1 - Weldon LED series red brake light
- 1 - Weldon LED Clear backup light
- 1 - Weldon LED series amber turn signal light populated in the shape of an arrow

Each tail light cluster shall be mounted on a removable panel for easy access to the electrical distribution centers at each rear corner of the apparatus body.

#### **236. REAR SCENE LIGHTS**

See section 97

#### **237. PUMP/BOX COMPARTMENT LIGHTING**

There shall be one (1) 12 volt work light(s) installed in the pump/transverse compartment.

The light shall be activated with a switch located on each light and shall be enclosed in an ABS case. The light head shall be removable and have a retractable wire that can be extended a minimum of 10 feet to allow maintenance personnel to relocate and direct the light as needed.

#### **238. TRADITIONAL COMPARTMENT LIGHTING**

There shall be LED lighting mounted in each body compartment. The light in each compartment shall be on a separate circuit, turning on only those lights that have open compartment doors.

#### **239. ROM COMPARTMENT STRIP LIGHTING**

Two (2) ROM strip lights (LED) shall be installed in each compartment. The lights in each compartment shall be on a separate circuit, turning on only the lights that have open compartment doors. The lights shall be manufactured by ROM.

#### **240. UPPER LIGHTING PACKAGE**

Covered by section 96.

#### **241. LOWER LED WARNING LIGHTING**

Covered by section 96.

#### **242. LOWER ZONES B&D CAST ALUMINUM LIGHT HOUSING**

A cast aluminum light housing shall be used for the rearmost warning light in zones B&D to ensure the light is mounted as far rearward as possible.

#### **243. REAR REFLECTIVE STRIPING**

Red and white reflective striping shall be provided on the rear body surface to meet NFPA requirements.

#### **244. HOSE BED FLOOD LIGHTS**

None

#### **245. CAST ALUMINUM LIGHT STANCHIONS**

Two light stanchions shall be mounted in the upper rear corners of the body sides, one each side. Each shall be large enough to accommodate an upper zone C warning light. The DOT lights specified elsewhere in the quote shall also be located one on the side and the other located on the rear of each stanchion.

#### **246 HARRISON HYDRAULICALLY DRIVEN GENERATOR**

One (1) Harrison Stealth Hydraulic Driven Generator model number 8.0MCR-16R rated at 8,000 watts, 41/82 amps, 120/240 VAC, 60 Hz, 1-phase.

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. The generator shall be a commercial type with a heavy-duty bearing and of brushless 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. Determination as to which PTO to use will be made by the Fire Department. The generator must be able to be used while vehicle is either stationary or in motion.

There shall be a meter containing the volts, amp, frequency and hour meter supplied and installed with the generator and mounted in a location close to the apparatus breaker box.

The generator shall be mounted in the dunnage area and shall have a removable protective cover.

#### **247. HOT SHIFT PTO**

A 'hot' shift shall be added to the hydraulic generator installation. The guarded switch shall be used to disconnect the PTO from the transmission in the event of hydraulic system failure (broken hose, etc) during operation.

The PTO shall remain 'engaged' to keep fluid circulating through the system so that when you wish to 'excite' the generator, you may do so with a separate switch mounted on the driver's side pump panel.

All switches shall be supplied with an indicator light. This light shall be energized when the generator is 'excited'.



#### **248. GENERATOR POWERED OUTLETS**

Two (2) outlets shall be supplied on the apparatus and be live when the generator is running;

The outlet locations will be provided at pre-construction.

The outlets shall be 120 vac/15 amp twist lock (NEMA L5-15), single receptacle with a weatherproof cover.

#### **249. GENERATOR POWERED OUTLET**

Covered by section 248.

#### **250. SHORE LINE POWERED OUTLET**

The following outlet shall be supplied on the apparatus and be live when shoreline power is provided;

One (1) outlet shall be located inside the chassis cab. Location to be determined at the preconstruction conference.

The outlet shall be a 120 vac/20 amp dual receptacle with a weatherproof cover.

#### **251. LOAD CENTER**

There shall be an electrical load center furnished and installed in a protected environment. The load center shall have provisions for at least twelve (12) 20 amp manual reset type circuit breakers. The load center location shall be confirmed at pre-build conference, but located in the L1 compartment. There shall also be 12 volt power to supply two (2) Mobile radios, and two (2) flashlights also in L1 compartment.

#### **252. TELESCOPING LIGHTS**

There shall be two (2) Fire Research Spectra LED Scene Light model SPA530-K20, or equivalent. It shall operate off the generator at 120 volts and generate 20,000 lumens of light. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the pole into position, and shall rotate 360 degrees. The lamp head shall be powder coated white. There shall be an activation switch for each light mounted on the driver's side pump panel.

Telescoping lights should be mounted on the rear wall of the cab, one on each side.

#### **253. ELECTRICAL CORD REEL**

There shall be one (1) Hannay electric rewind cord reel furnished and installed on the apparatus. Locations to be in compartment B1.

A push button switch to activate the rewind shall be located next to the reel. There shall be a four way roller assembly mounted on the reels to guide the cord on and off of the spool. There shall also be a cord stop supplied. The reels shall come equipped with 150 feet of yellow 10-4 electrical cord.

The cord shall be hardwired to a Circle D remote power distribution box with (3) three NEMA L5-15 single receptacles, and one NEMA (20 Amp) dual grounded receptacle. The distribution box shall be stored in a mounting bracket when not in use. The box shall be equipped with a light to indicate when distribution box is energized.

#### **254. UNDERCOATING**

Because the apparatus is constructed of materials that are weather and corrosion resistant, there shall be no undercoating provided on the apparatus.

#### **255. LICENSE PLATE BRACKET**

Provisions for mounting a license plate shall be installed on the apparatus in conjunction with the proper illumination to meet DOT requirements.

#### **256. REAR VIEW CAMERA**

A rear view camera is to be mounted on the rear of the apparatus with a display in the cab.

#### **257. ISOLATED PIKE POLE / ATTIC LADDER COMPARTMENT**

A compartment to accommodate two (2) pike poles and one (1) folding attic ladder shall be provided on the hose bed. The location will be determined at pre construction.

#### **258. EQUIPMENT**

The following equipment shall be supplied by the Apparatus Manufacturer:

##### **ZICO WHEEL CHOCKS**

- one (1) set of NFPA compliant Ziamatic folding wheel chocks model # SAC-44 shall be supplied with the apparatus

##### **GROUND LADDERS**

-as specified in section 228

##### **PIKE POLES**

- one (1) Duo-Safety 8' pike pole with fiberglass handle
- one (1) Duo-Safety 10' pike pole with fiberglass handle

##### **LITTLE GIANT LADDER**

A little Giant, Alta-one ladder type 1 model 17, should be supplied and mounted on the truck. The ladder could be mounted in the driver's side rear compartment L3 or next to the booster reels in a separate compartment.

#### **259. FIRE COMPANY PROVIDED EQUIPEMENT MOUNTING**

The following equipment shall be mounted in the locations determined at pre-construction.

1. Eight (8) hand light chargers (12 volt)
2. One (1) 6 radio bank charger (110 volt)
3. One T.I.C. holder charger (12 volt)
4. One (1) portable radio charger (12 volt)