

FAIRFIELD COUNTY

Procurement Office

350 Columbia Road, Winnsboro, SC 29180

Phone 803-635-1415 Fax 803-635-5969

Sheila Pickett, CPPB, Procurement Director

INVITATION FOR BID

BID NUMBER: IFB 0219 Fire Service Tanker
DATE: January 17, 2019
OPENING DATE AND TIME: **February 13, 2019 at 10:00AM EST**
OPENING LOCATION: Fairfield County Administration Building,
Conference Room, 2nd Floor
350 Columbia Road, Winnsboro, SC 29180
MAILING ADDRESS: Fairfield County Procurement Office
P.O. Drawer 60
Winnsboro, SC 29180
PROCUREMENT FOR: Fire Service Tanker

Subject to the conditions, provisions and the enclosed specifications, sealed bids will be received at this office until the stated date and time and then publicly opened. Any bid received after the scheduled deadline, will be immediately disqualified. The County assumes no responsibility for delivery of bids which are mailed.

BID NUMBER MUST BE SHOWN ON THE OUTSIDE OF ENVELOPE.

DIRECT ALL INQUIRES TO: Sheila Pickett, Procurement Director
Phone: (803) 635-1415
Fax: (803) 635-5969

NOTICE TO BIDDERS: Each bidder shall fully acquaint himself with conditions relating to the scope and restrictions attending the execution of the work under the conditions of this bid. The failure or omission of a bidder to acquaint himself with existing conditions shall in no way relieve him of any obligation with respect to this bid or to the contract.

There will not be a pre-bid conference. All prospective bidders should review the bid document and all Attachments and submit all questions and/or requests for additional information. **Questions may be submitted using the enclosed form or e-mailed to Sheila Pickett at sheila.pickett@fairfield.sc.gov. Deadline for questions is February 5, 2019 at 10:00 am EST.**

Sheila Pickett, CPPB
Procurement Director

"NO BID" RESPONSE FORM

To submit a "No Bid" response for this project, this form must be completed for your company to remain on our bidders list for commodities/services referenced. If you do not respond your name may be removed from this bidders list. **In order to ensure that the County file has current information, or if you wish to be added to Fairfield County's Vendor Registration, you must also return the Certificate of Familiarity form completed in its entirety.**

Note: Please show the solicitation number on the outside of the envelope.

Please check statement(s) applicable to your "No Bid" response --

- Specifications are ambiguous (explain below).
- We are unable to meet specifications.
- Insufficient time to respond to the solicitation.
- Our schedule would not permit us to perform.
- We are unable to meet bond requirements.
- We are unable to meet insurance requirements.
- We do not offer this product or service.
- Remove us from your vendor list for this commodity/service.
- Other (specify below).

Comments: _____

Company Name (as registered with the IRS)

Authorized Signature

Correspondence Address

Printed Name

City, State, Zip

Title

Date

_____/_____
Phone # Fax #

BID NUMBER: 0219

DATE: January 17, 2019

CERTIFICATE OF FAMILIARITY AND NON-COLLUSION

The undersigned, having fully familiarized him with the information contained within this entire solicitation and applicable amendments, submits the attached proposal and other applicable information to the County, which I verify to be true and correct to the best of my knowledge. I certify that this proposal is made without prior understanding, agreement, or connection with any corporation, firm or person submitting a proposal for the same materials, supplies or equipment, and is in all respects, fair and without collusion or fraud. I agree to abide by all conditions of this proposal and certify that I am authorized to sign this proposal. I further certify that this proposal is good for a period of sixty (60) days, unless otherwise stated.

_____ Company Name <small>(as registered with the IRS)</small>	_____ Authorized Signature	
_____ Correspondence Address	_____ Printed Name	
_____ City, State, Zip	_____ Title	
_____ Date	_____ Phone #	_____ Fax #
_____ E-mail Address	_____ Mobile Phone #	

LICENSE #

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_____ Remittance Address	
_____ City, State, Zip	
_____ Phone #	_____ Toll-Free Phone #, if available
_____ Federal Tax ID Number	_____ SC Sales and Use Tax Number

GENERAL BID CONDITIONS

1. INSTRUCTIONS TO BIDDERS:

Proposals shall be publicly opened at **10:00 A.M. (SHARP)** on **February 13, 2019** as indicated in the request to Bid and shall be conducted in the “FAIRFIELD COUNTY GOVERNMENT COMPLEX BUILDING, 350 COLUMBIA ROAD, WINNSBORO, and SC 29180, IN THE CONFERENCE ROOM.

- b. Sealed bids shall be enclosed and secured in an envelope. The name and address of the bidder shall be displayed on the envelope. Bids shall be addressed to the Director of Purchasing, PO Drawer 60, Winnsboro, South Carolina 29180. Hand carried bids shall be delivered to the Purchasing Department, 350 Columbia Road, Winnsboro, South Carolina 29180.
- c. Bids shall be submitted no later than **10:00 A.M.** In the place and manner as described in paragraph 1b above and on the date indicated by the request to Bid. Bids received after this time is considered late bids. Late bids shall not be considered, unless the delay was caused by improper handling by the District employees.
- d. The County shall not accept responsibility for unidentified bids.
- e. In the event that a bid is unintentionally opened prior to the official time set for the bid opening, the employee opening such bid shall immediately inform the Director of Purchasing or his assistant who shall, in the presence of another of equal rank or above, immediately contact the vendor submitting the bid.
- f. The vendor so contacted will be informed as to the circumstances and shall be invited to come to the office of the Director of Purchasing to reseal and submit or withdraw the bid, if the vendor elects to reseal and submit the bid, such vendor shall be required to sign, date and indicate the time of resealing on the bid envelope. If the vendor directs the Purchasing Department to reseal the bid, both the employee making the contact to the vendor and the district witness present, shall sign, date and indicate the time of sealing on the bid envelope.
- g. In the event that the Purchasing Department is directed by the vendor to return the bid, a statement properly witnessed stating the action taken and when, shall be duly filed.
- h. All prices and quotations shall be entered in ink or typewritten and shall remain firm for not less than thirty (30) days from the date of the bid. Mistakes may be crossed out and corrections inserted adjacent there to and shall be initialed in ink by the person signing the bid. The bidder shall insert the net price per stated unit and the extension against each item, which he/she proposes to deliver. The price shall include in the grand total column all delivery charges, installation and applicable taxes when necessary.

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2. **TAXES:** When applicable, South Carolina sales tax shall be shown as a separate entry on the bid total summation. In other words, there shall be a bid subtotal with South Carolina tax added in to create a grand total. When required, exemption certificates shall be furnished on forms provided by the vendor.
3. **PROPRIETARY INFORMATION:** Bidders shall visibly mark as “CONFIDENTIAL” each part of their bid which considers proprietary information. Price may not be considered confidential proprietary information.
4. **AMBIGUOUS BIDS:** Bids which are uncertain as to terms, delivery, quantity, or compliance with requirements and/or specifications may be rejected or otherwise disregarded.
5. **COVENANT AGAINST CONTINGENT FEES:** The vendor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the vendor for the purpose of securing business. For breach or violation of this warranty, Fairfield County shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.
6. **BIDDER’S QUALIFICATIONS:**
 - a. Bids shall be considered only from bidders who are regularly established in the business called for and who in the judgment of the District are financially responsible and able to show evidence of their reliability, ability, experience, equipment supervised by them to render prompt and satisfactory service in the volume called for under this contract.
7. **ACKNOWLEDGEMENT OF AMENDMENTS TO REQUEST FOR BIDS:**
 - a. Bidders shall acknowledge receipt of any amendments to this solicitation either by signing and returning one (1) copy of the amendment or by letter or by telegram or by fax.
 - b. Fairfield County must receive the acknowledgment by the time, date, and at the place specified for receipt of bids.
8. **AFFIRMATIVE ACTION:** The successful bidder will take affirmative action in complying with all Federal and State requirements concerning fair employment, employment of the handicapped, and concerning the treatment of all employees, without regard or discrimination by reason of race, color, religion, sex, national origin and/or physical handicap.

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9. EXPLANATION TO PROSPECTIVE BIDDERS:

- a. Any prospective bidder desiring an explanation or interpretation of this solicitation shall request it in writing soon enough to allow a reply to reach all prospective bidders before submission of their bids.
- b. Oral explanation and/or instructions given before the award of the contract shall not be binding.
- c. Any information given to a prospective bidder pertaining to this solicitation shall be furnished promptly to other prospective bidders as an amendment, if that information is necessary in submitting bids or if the lack of it would be prejudicial to other prospective bidders.

10. AWARDING POLICY: The County reserves the right to select and award on an individual item basis, lot (group) basis or an “all or none” basis, whichever the County determines to be most advantageous. Therefore, individual prices per item must be indicated on the bid form. Bidders are encouraged to offer discounts for consideration of consolidated award. Furthermore, the County in determining the lowest responsible bidder on each of the items shall consider, in addition to the bid prices, the quality, training, suitability and adaptability of the services required by this solicitation. The County reserves the right to reject or accept any or all bids and to waive any informalities and/or irregularities thereof.

In the event that identical bids are received on like items, the Director of Purchasing, subject to the approval of the County Administrator, shall award bids by whichever of the following procedures are deemed most appropriate under the circumstances:

- a. Award to the firm whose primary business establishment is physically located:
 1. within the boundaries of Fairfield County; and
 2. within the boundaries of the State of South Carolina.
 - b. If all of the above are equal, the County shall award by a toss of a coin with all interested parties given an opportunity to witness. The County shall have a minimum of two witnesses for the coin toss.
11. WITHDRAWAL OF BIDS: Any bidder may withdraw his bid prior to the closing time scheduled for the receipt of bids. No bid shall be withdrawn for a period of thirty (30) days after the schedule closing time for the receipt of bids. The County reserves the right to award contracts for a period of thirty (30) days.
12. INSURANCE REQUIREMENTS: **All vendors who provide Fairfield County with services on County property will be required to submit General Liability Insurance minimum limits of \$500,000 per occurrence, or \$1,000,000 single limit, for damages arising from acts which occur during the contract period, with Fairfield County specifically listed as an additional insured on the policy. All vendors who provide Fairfield County with services will also provide and maintain workers compensation insurance, regardless of the number of employed**

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persons at its organization. Failure to provide either requested policies will deem the vendor to be non-responsive. Vendors will provide these policies before commencing work on the project.

13. ACCIDENTS: The vendor shall hold the County harmless from any and all damages and claims that may arise by reason of any negligence on the part of the vendor, his agents or employees in the performance of this contract. In case any action is brought against the County or any of its agents or employees, the vendor shall assume full responsibility for the defense thereof. Upon his failure to do so after proper notice, the County reserves the right to defend such motion and charge all costs thereof to the vendor. The vendor shall take all precautions necessary to protect the public against injury.

14. STATEMENT OF COMPLIANCES AND ASSURANCES: By submitting a bid and signing the bid schedule, vendors are providing written assurance of non-collusion and understanding and acceptance of all general and special conditions stated in this contract. In addition, this signature certifies that the firm or agency represented in the bid submitted complies with all applicable federal and state laws and regulations.

15. BIDDERS RESPONSIBILITY: Each bidder shall fully acquaint himself/herself with conditions relating to the scope and restrictions attending the execution of the work under the conditions of this bid. It is expected that this will sometimes require on-site observation. The failure or omission of a bidder to acquaint himself/herself with existing conditions shall in no way relieve the bidder of any obligations with respect to this bid or contract.

16. FAILURE TO SUBMIT BID: Recipients of this solicitation not responding with a bid should not return this solicitation, unless it specified otherwise. Instead, they should advise the issuing office by letter or postcard whether they want to receive future consideration for similar requirements. If a recipient does not submit a bid or fails to respond by submitting a “no bid” for three (3) consecutive bids for the same commodity, they shall be removed from the applicable vendor list.

17. EXAMINATION OF RECORDS:
 - a. The County Administrator of Fairfield County or his duly authorized representative(s) and/or duly authorized representative(s) from the office of the County Auditor shall, until three (3) years after final payment under this contract, have access to and the right to examine any of the Contractors’ directly pertinent books, documents, papers or other records involving transactions related to this contract.
 - b. He/She agrees to include in first-tier subcontracts under this contract a clause to the effect that the County Administrator of Fairfield County or his duly authorized representative(s), and/or duly authorized representative(s) from the office of the County Auditor shall, until three (3) years after final payment under the subcontract, have access to and the right to examine any of the subcontractors’ directly pertinent books, documents, papers or other records

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involving transactions related to the subcontract(s).

18. **MATERIALS REQUIRED:** Materials required must be in conformity with the specifications and shall be subject to inspection and approval after delivery, and shall comply in quality and type of material and method of manufacture with all applicable local or state laws pertaining thereto. The right is reserved to reject and return at the risk and expense of the vendor such portions of any shipment which may be defective or fail to comply with specifications and without validating the remainder of the order.

19. **PACKING AND DELIVERY:** All shipments shall be FOB to the County locations specified. Purchase order numbers and/or contract numbers(s) as appropriate, must be clearly stated on each carton or package.

20. **“OR APPROVED EQUAL” CLAUSES:** Certain processes, types of equipment or kinds of materials are described in the specifications and on the drawings by means of trade names and catalog numbers. In each instance where this occurs, it is understood and inferred that such description is followed by the words “or approved equal”. Such method of description is intended merely as a means of establishing a standard of comparison. However, the County reserves the right to select the items which, in the judgment of the County, are best suited to the needs of the County, based on price, quality, service, availability and other relative factors. Bidders must indicate brand name, model, model number, size, type, weight, color, etc., of the item bid if not exactly the same as the item specified. Vendor’s stock number or catalog number is not sufficient to meet this requirement. If any bidder desires to furnish an item different from that specifically mentioned in the specifications, he/she shall submit with his bid the information, data, pictures, cuts, designs, etc., of the material he/she plans to furnish so as to enable the County to compare the material specified; and, such material will be given due consideration. The County reserves the right to insist upon and receive the items as specified, if the submitted items do not meet the County’s standards for acceptance.

21. **PATENTS:** The vendor shall hold the County, its officers, agents, and employees harmless from liability of any nature or kind whatsoever, on account of use by the publisher or author, manufacturer or agent, of any copyrighted or uncopyrighted composition, secret process, article or appliance furnished or used under this bid.

22. **INSTALLATION:** Where equipment is called for to be installed under this bid, it shall be placed, leveled and accurately fastened into place by the vendor. He/she shall be responsible for obtaining dimensions and other such data which may be required to assure exact fit to work under another contract or as intended by the County. The vendor shall be responsible providing an appropriate amount of lead-in to equipment requiring electrical, water or other basic service. The County will normally be responsible for bringing the appropriate service to the lead-in. The vendor shall completely remove from the premises all packing, crating, and other letter due to his/her work. He/she shall also be responsible for the cost of repair of any damage to existing work which is caused by him/her equipment.

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23. **GUARANTEE:** The vendor shall supply a guarantee for all workmanship for the equipment he/she is furnishing for a period comparable to the standards in the industry. When defects or faulty material is discovered during the guarantee period, the vendor shall, immediately, upon notification by the County, proceed at his/her own expense, to repair or replace the same, together with any damage to all finishes, equipment, and furnishings that may have been damaged as a result of the defective equipment or workmanship.
24. **PROPER INVOICE:** Invoices submitted for payment for goods or services provided under this contract shall contain, as a minimum, the following information:
- Name of business concern
 - Contract number or other authorization for delivery of service or property
 - Complete description
 - Price and quantity of property or service actually delivered or executed
 - Shipping and payment terms
 - Name where applicable
 - Title, telephone number and complete mailing address of responsible official to whom payment is to be sent; and.
 - Other substantiating documentation of information as required by the contract.
25. **TIME OF COMPLETION:** Date of delivery shall be a consideration factor in the awarding process. The bidder shall include with his/her bid delivery dates for each item as requested, and shall furnish all items in accordance with the bid solicitation unless an extension was granted by the County in writing.
26. **SERVICE FACILITIES:** In considering the equipment bid upon, the County shall take into consideration past performance of existing installations, service and maintenance facilities provided by the bidder. The bidder shall have available a local service organization that is trained in the proper servicing of equipment.
27. **LIQUIDATED DAMAGES:** Should the Contractor fail to complete the contract within the established time limit, or at the later date as authorized in writing by the Director of Purchasing, he/she shall pay liquidated damages in the sum of one hundred dollars (\$100.00) per day.
28. **S.C. LAW CLAUSE:** Upon award of a contract under this bid, the person, partnership, association, or corporation to whom the award is made must comply with the laws of South Carolina which require such person or entity to be authorized and/or licensed to do business in this State. Notwithstanding the fact that applicable statutes may exempt or exclude the successful bidder from requirements that it be authorized and/or licensed to do business in this State, by submission of this signed bid, the bidder agrees to subject itself to the jurisdiction and process of the courts of the State of South Carolina as to all matters and disputes arising or to arise under the contract and the performance thereof, including any questions as to the liability for taxes, licenses, or fees levied by the State.

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29. COMPETITION: There are no Federal or State laws that prohibit bidders from submitting a bid lower than a price or bid given to the United States Government. Bidders may bid lower than the United States Government Contract price without any liability because the State is exempt from provisions of the Robinson-Patman Act and other related laws.
30. EXCUSABLE DELAY: The Contractor shall not be liable for any excess costs of the failure to perform the contract arise out of causes beyond the control and without the fault or negligence of the contractor. Such causes may include, but are not restricted to acts of God or of the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather; but, in every case the failure to perform must be beyond the control and without the fault or negligence of the contractor. If the failure to perform is caused by the default of a subcontractor, and if such default arises out of causes beyond the control of both the contractor and subcontractor, and without the fault or negligence of either of them, the contractor shall not be liable for any excess costs or failure to perform, unless the supplies or services to be furnished by the subcontractor were obtainable from other sources in sufficient time to permit the contractor to meet the required delivery schedule.
31. ASSIGNMENT: No contract may be assigned, sublet, or transferred without a written consent of the Director of Purchasing.
32. SPECIFICATIONS: Any deviation from specifications indicated herein must be clearly pointed out; otherwise, it will be considered that items offered are in strict compliance with these specifications, and the successful bidder shall be held responsible thereof.
33. PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS:
- a. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as grass, trees, and shrubs) or on or adjacent to the work site, which is not to be removed and which does not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by any careless operation of equipment, or by workman, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with tree pruning compound as directed by the District representative(s).
 - b. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are

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the property of a third party resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the County representatives(s) may recommend that the necessary work be performed and charge the cost to the Contractor.

34. Documentation contained in Section “D” shall be completed and submitted along with the Proposal.
35. TERMINATION: Subject to the provisions below, the contract may be terminated by the Director of Purchasing providing a thirty (30) day advance notice in writing is given to the Contractor.
- a. Termination for Convenience.
In the event that this contract is terminated or cancelled upon request and for the convenience of the County without the required thirty (30) day advance notice, then the County shall negotiate reasonable termination costs, if applicable.
- b. Termination for Cause.
Termination by the County for cause, default or negligence on the part of the Contractor shall be excluded from the foregoing provisions; termination costs, if any, shall not apply. The thirty (30) day advance notice requirement is waived and the default provision in this bid shall apply.
36. DEFAULT: In case of default, the County reserves the right to purchase any or all items in open market, charging the Contractor with any excessive costs. Should such charges be assessed, no subsequent bids of the defaulting contractor shall be considered until the assessed charge has been satisfied.

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FAIRFIELD COUNTY

Procurement Office, 350 Columbia Road, Winnsboro, SC 29180

Ph: (803) 635-1415 / Fax: (803) 635-5969

BID FORM

BID NUMBER: IFB 0219

DATE: January 17, 2019

OPENING DATE AND TIME:

February 13, 2019 at 10:00am EST

OPENING LOCATION:

Fairfield County Procurement Office
County Administration Building, Conference Rm. 2nd Floor,
Winnsboro, SC 29180

PROCUREMENT OF:

Fire Service Tanker

All prices quoted shall include sales tax and any delivery charges.

BID AMOUNT: _____

COMPANY NAME: _____

ADDRESS: _____

CITY/STATE/ZIP: _____

PHONE: _____ FAX: _____

SIGNATURE: _____ Title: _____

Print Signature: _____ Date: _____

By signing this Bid Form, the Bidder acknowledges that he/she has read this document and understands the provisions, agrees to be bound by its terms and conditions, will adhere to scheduling requirements stated herein and is capable of providing all required services as stated in this document.

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BIDDER'S QUESTION SUBMITTAL FORM

**FOR QUESTIONS RELATED TO BID # 0219,
Fire Service Tanker**

Deadline for submitting a question is Tuesday, February 5, 2019 at 10:00am EST.

**If possible, please submit your questions via e-mail to the buyer assigned to this bid.
Buyer's contact information is listed below.**

Name: Sheila Pickett, CPPB
Title: Procurement Director
E-mail: sheila.pickett@fairfield.sc.gov
Phone: 803-635-1415

**If you do not have access to e-mail, you may use the form below to fax questions to
(803) 635-5969.**

Company Name: _____ Date: _____

Address: _____

Contact Person: _____

Phone #: (_____) _____ Fax #: (_____) _____

(PLEASE REFER TO PAGE AND PARAGRAPH NUMBER FROM THE BID, WHEREVER POSSIBLE)

**SPECIFICATIONS
FOR
COMMERICAL TANKER**

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GENERAL INFORMATION

The apparatus being proposed will be constructed to endure the continuous use and severe situations that are encountered during emergency firefighting and rescue services. The apparatus will be carefully designed and constructed with due consideration to the type of load and how it will be distributed on the apparatus. The apparatus will be of the latest type.

This proposal details the design criteria for the following:

- Cab and chassis components
- Fire pump and related components (if applicable)
- Water tank (if applicable)
- Fire body
- Electrical components
- Paint
- Equipment

All the items listed in this proposal specification will conform to the National Fire Protection Association (NFPA) 1901 Standard 2016 Edition.

The manufacturer will provide satisfactory evidence of our ability to construct, provide service parts, mechanical support, and technical support / assistance for the specified apparatus.

GENERAL INFORMATION-INTENT OF SPECIFICATIONS

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

These specifications detail the requirements for general design criteria of cab and chassis components, fire pump and related components, water tank, fire body, electrical components, painting, and equipment. In evaluating the bid proposals to determine which proposal is the most advantageous, these major items shall be considered.

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

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

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BIDDER INSTRUCTIONS

Bids shall be addressed and submitted in accordance with the advertised "Bid Notice". The words "Fire Apparatus Bid", the date, and the bid opening time must be stated on the face of the bid envelope. It is the bidder's responsibility to see that their proposals arrive on time. Late proposals, telegram, facsimile or telephones bids shall not be considered.

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

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

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

TIMELY PROPOSALS

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

PRODUCT LIABILITY INSURANCE

Since the Purchaser desires to eliminate divided responsibility on the part of the manufacturers, only manufacturers who build their own fire apparatus body shall be considered. The apparatus body must be built and painted in a facility owned and operated by the bidder by a staff that is directly employed by the bidder. At least fifteen similar units must have been sold and delivered of the type described herein. The entire apparatus (to include cab, chassis, body, pump, water tank and aerial device) **MUST** be manufactured in the United States!

Garage insurance is not acceptable. No Exceptions.

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FIRE APPARATUS COMPLETION DOCUMENTATION

The manufacturer will provide, at the time of apparatus delivery, at least one (1) copy of the following documents.

The apparatus manufacturer's record of apparatus construction (build) details, including the information listed below:

- Apparatus Owner's name and address
- Apparatus manufacturer, model and serial number
- Apparatus Chassis make, model and serial number
- Front tire size, and total rated capacity (in pounds)
- Rear tire size, and total rated capacity (in pounds)
- Apparatus Chassis weight distribution in pounds, with water and equipment mounted, front and rear
- Apparatus Engine make, model, serial number, rated horse power, rated speed and governed speed.
- Type of fuel(s) used by apparatus and fuel tank(s) capacity
- Apparatus electrical system - Voltage and Alternator output (in amps)
- Battery make, model and total capacity (in cold crank amps)
- Transmission make, model and serial number: If equipped, chassis transmission PTO(s) make, model and gear ratio
- Pump make, model, rated capacity in gallons per minute (GPM) and serial number
- Apparatus water tank certified capacity in gallons
- Paint manufacturer and paint number(s)

The apparatus manufacturer will include certification of "slip resistance" for all stepping, standing and walking surfaces.

If the apparatus has a fire pump, the following additional documents will be provided:

- The pump manufacturer's certification of suction capability
- Copy of the apparatus manufacturer's approval for stationary pumping applications
- Engine manufacturer's certified brake horsepower curve for the engine provided, showing the maximum governed speed.
- Pump manufacturer's certification of hydrostatic test (if it applies)
- The independent third party certification of inspection and test for the apparatus fire pump

If the apparatus has a "fixed line" voltage power source, there will be documentation of the fixed power source test certification.

If the apparatus features an air system, there will be test results of the air quality, SCBA fill station and the installation of the air system.

The apparatus manufacturer will provide documentation from a certified weight scale. This documentation will show actual loading on the front axle, rear axle(s) and overall vehicle weight. This weight will include the weight of the "full" apparatus water tank. This documentation will be provided with the completed apparatus build to determine compliance with NFPA 1901 latest addition.

Electrical performance testing documentation and a written load analysis report will be provided with the completed apparatus.

If the apparatus features a water tank, the water tank capacity certification will be supplied by the tank manufacturer.

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APPARATUS FMVSS CERTIFICATION

The apparatus chassis will be certified by the chassis manufacturer as conforming to all applicable Federal Motor Vehicle Safety Standards in effect at the date of contract on the apparatus. The apparatus chassis will have a FMVSS certification label attached on the apparatus by the final manufacturer.

GENERAL CONSTRUCTION

The overall apparatus, including assemblies, subassemblies, component parts, etc. will be designed and built with special consideration to the type and distribution of the load to be sustained and to the overall character of the type of service to which the apparatus is exposed to once it is completed and placed into active service. Each and every part of the apparatus will be designed with safety in mind. The level of safety will be equal to or greater than that which is considered "standard" and acceptable for this type and class of equipment in the fire fighting service. All parts of the apparatus will be constructed to be strong enough to withstand the general service under full load. The apparatus will be designed so that parts are accessible by personnel for maintenance such as lubrication, inspection(s), adjustment and repair work.

The completed apparatus will be designed and constructed, and the fire equipment mounted with consideration to load distribution between the front and rear axles, so that all equipment including ground ladders, apparatus water tank (full), loose equipment, and firefighting personnel will be carried without damaging or overloading the apparatus.

STEPPING, STANDING & WALKING SURFACES

All standing, stepping and walking surfaces on the apparatus body shall meet NFPA 1901 (latest edition) "anti-slip" standards. All aluminum tread plate that is used for standing, stepping and walking surfaces shall be "NO-SLIP TYPE." This material shall be a minimum of 3/16" (0.1875") in thickness. The Manufacturer shall supply proof of compliance with this requirement. All of the vertical surfaces on the apparatus body, which incorporate aluminum tread plate material, shall utilize the same material pattern to provide a consistent overall appearance on the apparatus.

SERVICE CENTER AND CAPABILITIES

The manufacturer shall have an authorized service center, with a staff of factory-trained mechanics, well versed in all aspects of service for all major components, of the apparatus within a 150 mile radius of the Purchaser. In addition, the manufacturer shall maintain a separate service facility at the manufacturing site, in order to satisfy the need for possible major emergency service work.

SERVICE CENTER INFORMATION

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

PROPRIETARY PARTS

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

PAINT PERFORMANCE CERTIFICATION

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The proposed apparatus must meets or exceed the required Commercial Vehicle Paint Performance Standards.

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PRICES AND PAYMENTS

The bid price shall be F.O.B. Destination, on a delivered and accepted basis at the Fire Department.

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

Bidder shall compute pricing less federal and state taxes. It is understood that any applicable taxes shall be added to the proposed prices, unless the purchaser furnishes appropriate tax-exempt forms.

APPARATUS DELIVERY TIME

Each bidder shall state the completed apparatus delivery time based on the number of calendar days, starting from the date the sales contract is signed and accepted by the apparatus manufacturer.

Delivery Time: _____ Calendar days

FAIR, ETHICAL AND LEGAL COMPETITION

In order to provide fair, ethical and legal competition, the original equipment manufacturer (OEM) or the parent company of the OEM will not have ever been fined or convicted of the following in any domestic or international fire apparatus market:

- **Price Fixing**
- **Bid Rigging**
- **Collusion**

NON-COLLUSIVE BIDDING CERTIFICATION

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

- The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for purpose of restricting competition, as to any matter relating to sale price with any other bidder or any competitor.
- Unless otherwise required by law, the prices that have been quoted in this bid have not been knowingly disclosed by the bidder and shall not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor.
- No attempt has been made by the bidder to induce any other person, partnership, or corporation to submit or not to submit a bid for the purpose of restricting competition.
- That all requirements of the law including amendatory provisions as to non-collusive bidding have been complied with.

MATERIAL AND WORKMANSHIP

All equipment provided will be guaranteed by the manufacturer to be new and of current manufacture; to meet all requirements of the purchaser's specifications.

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

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SALES ENGINEER

The successful bidder shall designate a representative to perform the manufacturer's sales engineer functions. The sales engineer shall provide a single point interface between the purchaser and the manufacturer on all matters concerning the apparatus contract.

APPROVAL DRAWING

A detailed apparatus drawing will be provided for approval before the construction process begins. A copy of this drawing will also be provided to the manufacturer's representative. Upon approval, the finalized apparatus drawing will become a part of the total contract. The drawing will show, but is not limited to, such items as the apparatus chassis make and model, major components, location of lighting, sirens, all compartment locations and dimensions, special suction, discharges, etc. The apparatus drawing will be a visual interpretation of the apparatus as it is to be supplied.

INSPECTION VISITS

The successful bidder shall provide two (2) factory inspection trip to the apparatus manufacturer's facility. Transportation, meals, lodging, and other requisite expenses shall be the bidder's responsibility.

Travel arrangements less than 300 miles from the manufacturing facility shall be via ground transportation.

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

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

APPARATUS DELIVERY

Delivery of the apparatus to the Purchaser shall remain the bidder's responsibility.

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

INSTRUCTION MANUALS / DRAWINGS

The successful bidder shall supply upon delivery, two (2) copies of operation and service manual(s) for the completed apparatus as delivered and accepted by the customer.

These manuals will contain the items below:

- Specifications, descriptions and ratings of chassis, and pump (if provided).
- Lubrication (fluids) charts
- Operational instructions for the apparatus chassis and any major components such as a pump or auxiliary system.
- Instructions regarding the frequency and maintenance procedures recommended for the apparatus.
- Replacement parts information.
- Two (2) parts manuals with complete wiring diagrams will be provided with each apparatus.

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PARTS MANUAL

Two (2) parts manuals with complete wiring diagrams will be provided with each apparatus. Unless otherwise specified, the manuals will be in paper form.

SAFETY AND OPERATIONAL INSTRUCTION VIDEO

An apparatus safety video will be supplied with the final documentation for the apparatus. The video will address key safety considerations for personnel to understand driving, operating, and maintenance of the apparatus. Safety procedures like vehicle pre-trip inspection, chassis operation, pump operation, and maintenance will be covered.

CAB SAFETY SIGNS

The apparatus will be equipped with the following safety signs inside the cab:

- A label displaying the maximum number of occupants the vehicle is designed to carry will be visible to the driver.
- An "Occupants shall be seated and belted when apparatus is in motion" sign will be visible from each apparatus seat.
- A "Do Not Move Apparatus When Light Is On" sign will be adjacent to the warning light indicating a hazard if the apparatus is moved.
- A label displaying the overall height, length, and GVWR of the apparatus will be visible to the driver.

HELMET WARNING LABEL

The apparatus cab will feature a label that will be visible to everyone in the apparatus cab; "Warning" that "Helmets are not to be worn in the cab and will be safely secured."

DO NOT RIDE LABEL

A label will be located on the apparatus at the rear step areas, and at any cross walkway areas, if applicable. The label(s) will warn personnel that riding in or on these areas while the vehicle is in motion is prohibited.

HELMET STORAGE

To meet NFPA 1901-2009 section 14.1.8.4.1, the helmet for each riding position will be stored in a specified body compartment as per the department's request.

FUEL PLATE

The apparatus will feature an engraved plate near the apparatus fuel fill area to designate the chassis fuel type.

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APPARATUS CHASSIS DATA LABELS

The following information will be on the labels affixed to the apparatus:

Fluid Data:

- Engine Oil
- Engine Coolant
- Chassis Transmission Fluid
- Pump Transmission Lubrication Fluid
- Pump Primer Fluid (if applicable)
- Drive Axle(s) Lubrication Fluid
- Air Conditioning Refrigerant
- Air Conditioning Lubrication Oil
- Power Steering Fluid
- Transfer Case Fluid (if applicable)
- Equipment Rack Fluid (if applicable)
- Air Compressor System Lubricant (if applicable)
- Generator System Lubricant (if applicable)
- Front Tire Cold Pressure
- Rear Tire Cold Pressure
- Maximum Tire Speed Rating

Chassis Data:

- Chassis Manufacturer
- Production Number
- Year Build
- Month Manufactured
- Vehicle Identification Number (V.I.N.)

Manufacturers weight certification:

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

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REQUIRED PROPOSAL DRAWING

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

FAMA COMPLIANCE

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

MANDATORY SOUTH CAROLINA DEALER'S LICENSE

In order to protect the customer from possible fraudulent bids or inability to enforce warranty requirements, the bidder must be a fully licensed South Carolina Motor Vehicle Dealer. A copy of a valid, current license must be included with proposal.

Failure to include this license with bid will result in immediate rejection of bid.

If the bidder unable to provide the dealer's license and the surety bond that is required of all motor vehicle dealers, this is indication that the bidder is not financially solvent and secure and therefore, their proposal will be considered non-responsive and not considered.

U.S.A. MANUFACTURER

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

COOPERATIVE PURCHASING

The Manufacturer shall be pleased to allow other public agencies to use the purchase agreement resulting from this invitation to bid unless the bidder expressly notes on the proposal form that prices are not available for tag-on. The condition of such use by other agencies shall be that any such agency must make and pursue contact, purchase order/contract, and all contractual remedies with the successful bidder. Such tag-on's shall be done so that the original purchasing agency has no responsibility for performance by either the manufacturer or the agency using the contract.

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DEALER SERVICES

Prior to delivery of the apparatus, the successful bidder shall perform a bumper to bumper inspection and pump test at no cost to the customer.

During the first year of the truck's warranty period, the bidder shall provide warranty inspections at 120 and 330 days after delivery at no charge to the customer.

All manufacturer covered warranty issues shall be taken care of by the bidder's service center as prompt as possible after being notified by the customer. The customer shall not be charged for any parts, labor or travel associated with a manufacturer approved warranty claim.

FULL TIME SERVICE AND WARRANTY STAFF

The bidder must have four (4) full time employees on staff dedicated to their service center's apparatus parts and warranty division. The bidder must also employ one (1) dedicated full time employee to warranty.

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APPARATUS DIMENSIONS & G.V.W.R.

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

BIDDER TO SUPPLY AND FILL- IN PROPOSED DIMENSIONS:

- OVERALL LENGTH: _____ "
- OVERALL WIDTH: _____ "
- OVERALL HEIGHT: _____ "
- WHEELBASE: _____ "

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

- MINIMUM FRONT G.A.W.R.: _____ lbs.
- MINIMUM REAR G.A.W.R.: _____ lbs.
- MINIMUM TOTAL G.V.W.R.: _____ lbs.

ROLLOVER STABILITY

The apparatus shall meet the criteria defined in 4.13.1 for rollover stability as defined in the most current edition of the NFPA Standard for Automotive Fire Apparatus.

VEHICLE STABILITY COMPLIANT - CALCULATION METHOD

Per NFPA 1901-2009 edition paragraph 4.13.1 the vehicle shall be reviewed to verify that the Vertical center of gravity shall be no higher than 80% of the rear axle track width without equipment at the time of manufacture.

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CHASSIS SPECIFICATIONS

Data Code	Description	Weight Front	Weight Rear
Price Level			
PRL-18M	M2 PRL-18M (EFF:04/17/18)		
Data Version			
DRL-030	SPECPRO21 DATA RELEASE VER 030		
Vehicle Configuration			
001-175	M2 112 CONVENTIONAL CHASSIS	8,244	6,126
004-220	2020 MODEL YEAR SPECIFIED		
002-004	SET BACK AXLE - TRUCK		
019-002	STRAIGHT TRUCK PROVISION		
003-001	LH PRIMARY STEERING LOCATION		
General Service			
AA1-002	TRUCK CONFIGURATION		
AA6-001	DOMICILED, USA 50 STATES (INCLUDING CALIFORNIA AND CARB OPT-IN STATES)		
A85-020	FIRE SERVICE		
A84-1EV	EMERGENCY VEHICLES BUSINESS SEGMENT		
AA4-002	LIQUID BULK COMMODITY		
AA5-002	TERRAIN/DUTY: 100% (ALL) OF THE TIME, IN TRANSIT, IS SPENT ON PAVED ROADS		
AB1-008	MAXIMUM 8% EXPECTED GRADE		
AB5-001	SMOOTH CONCRETE OR ASPHALT PAVEMENT - MOST SEVERE IN-TRANSIT (BETWEEN SITES) ROAD SURFACE		
995-1AE	FREIGHTLINER LEVEL II WARRANTY		
A66-99D	EXPECTED FRONT AXLE(S) LOAD : 16000.0 lbs		
A68-99D	EXPECTED REAR DRIVE AXLE(S) LOAD : 30000.0 lbs		
A63-99D	EXPECTED GROSS VEHICLE WEIGHT CAPACITY : 46000.0 lbs		
Truck Service			
AA3-027	FIRE TANK/PUMPER - MAIN DRIVELINE DRIVEN SPLIT-SHAFT PTO/PUMP		
A88-99D	EXPECTED TRUCK BODY LENGTH : 0.0 ft		
AF3-2F0	KOVATCH MOBILE EQUIPMENT COMPANY		
AF7-99D	EXPECTED BODY/PAYLOAD CG HEIGHT ABOVE FRAME "XX" INCHES : 32.0 in		
Engine			
101-23D	CUM L9 380EV HP @ 2000 RPM, 2200 GOV RPM, 1150 LB/FT @ 1400 RPM	-850	-70
Electronic Parameters			
79A-060	60 MPH ROAD SPEED LIMIT		
79B-000	CRUISE CONTROL SPEED LIMIT SAME AS ROAD SPEED LIMIT		
79M-001	PTO MODE BRAKE OVERRIDE - SERVICE BRAKE APPLIED		
79P-002	PTO RPM WITH CRUISE SET SWITCH - 700 RPM		

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Data Code	Description	Weight Front	Weight Rear
79Q-003	PTO RPM WITH CRUISE RESUME SWITCH - 800 RPM		
79S-001	PTO MODE CANCEL VEHICLE SPEED - 5 MPH		
79U-007	PTO GOVERNOR RAMP RATE - 250 RPM PER SECOND		
80G-002	PTO MINIMUM RPM - 700		
80J-002	REGEN INHIBIT SPEED THRESHOLD - 5 MPH		
Engine Equipment			
99C-017	2016 ONBOARD DIAGNOSTICS/2010 EPA/CARB/FINAL GHG17 CONFIGURATION		
99D-012	2008 CARB EMISSION CERTIFICATION - EXEMPTED VEHICLE; NO CLEAN IDLE LABEL REQUIRED		
13E-001	STANDARD OIL PAN		
105-001	ENGINE MOUNTED OIL CHECK AND FILL		
133-004	ONE PIECE VALVE COVER		
014-1BX	SIDE OF HOOD AIR INTAKE WITH NFPA COMPLIANT EMBER SCREEN AND FIRE RETARDANT DONALDSON AIR CLEANER		
124-1CC	LN 12V 270 AMP 4949PGH PAD MOUNT ALTERNATOR WITH AC TAPS	10	
292-208	(2) DTNA GENUINE, FLOODED STARTING, MIN 2250CCA, 390RC, THREADED STUD BATTERIES	-50	-10
290-017	BATTERY BOX FRAME MOUNTED		
281-001	STANDARD BATTERY JUMPERS		
282-001	SINGLE BATTERY BOX FRAME MOUNTED LH SIDE UNDER CAB		
291-017	WIRE GROUND RETURN FOR BATTERY CABLES WITH ADDITIONAL FRAME GROUND RETURN		
289-001	NON-POLISHED BATTERY BOX COVER		
87P-001	CAB AUXILIARY POWER CABLE	5	
293-058	POSITIVE LOAD DISCONNECT WITH CAB MOUNTED CONTROL SWITCH MOUNTED OUTBOARD DRIVER SEAT	8	
295-029	POSITIVE AND NEGATIVE POSTS FOR JUMPSTART LOCATED ON FRAME NEXT TO STARTER	2	
107-032	CUMMINS TURBOCHARGED 18.7 CFM AIR COMPRESSOR WITH INTERNAL SAFETY VALVE		
108-002	STANDARD MECHANICAL AIR COMPRESSOR GOVERNOR		
131-013	AIR COMPRESSOR DISCHARGE LINE		
152-039	GVG, FIRE AND EMERGENCY SERVICE VEHICLES ENGINE WARNING		
128-1AN	C-BRAKE BY JACOBS WITH LOW/OFF/HIGH BRAKING DASH SWITCH, ACTIVATES STOP LAMPS	80	
016-1DC	RH OUTBOARD UNDER STEP MOUNTED HORIZONTAL AFTERTREATMENT SYSTEM ASSEMBLY WITH RH HORIZONTAL TAILPIPE EXITING FORWARD OF REAR TIRES	10	5

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Data Code	Description	Weight Front	Weight Rear
28F-007	ENGINE AFTERTREATMENT DEVICE, AUTOMATIC OVER THE ROAD ACTIVE REGENERATION AND DASH MOUNTED SINGLE REGENERATION REQUEST/INHIBIT SWITCH		
239-001	STANDARD EXHAUST SYSTEM LENGTH		
237-022	RH HORIZONTAL TAILPIPE, EXIT FORWARD OF REAR TIRES AT 90 DEGREES	20	20
23U-001	6 GALLON DIESEL EXHAUST FLUID TANK		
30N-003	100 PERCENT DIESEL EXHAUST FLUID FILL		
43X-002	LH MEDIUM DUTY STANDARD DIESEL EXHAUST FLUID TANK LOCATION		
23Y-001	STANDARD DIESEL EXHAUST FLUID PUMP MOUNTING		
43Y-001	STANDARD DIESEL EXHAUST FLUID TANK CAP		
273-018	HORTON DRIVEMASTER ADVANTAGE ON/OFF FAN DRIVE		
276-001	AUTOMATIC FAN CONTROL WITHOUT DASH SWITCH, NON ENGINE MOUNTED		
110-003	CUMMINS SPIN ON FUEL FILTER		
118-008	COMBINATION FULL FLOW/BYPASS OIL FILTER		
266-017	1300 SQUARE INCH ALUMINUM RADIATOR	-20	
103-039	ANTIFREEZE TO -34F, OAT (NITRITE AND SILICATE FREE) EXTENDED LIFE COOLANT		
171-007	GATES BLUE STRIPE COOLANT HOSES OR EQUIVALENT		
172-001	CONSTANT TENSION HOSE CLAMPS FOR COOLANT HOSES		
270-008	AUXILIARY ENGINE COOLING USING WATER FROM FIRE PUMP	10	
168-001	STEEL OIL PAN GUARD	80	
138-011	PHILLIPS-TEMRO 1000 WATT/115 VOLT BLOCK HEATER	4	
140-038	CHROME ENGINE HEATER RECEPTACLE MOUNTED UNDER LH DOOR WITH CURRENT SENSOR LIGHT		
134-001	ALUMINUM FLYWHEEL HOUSING		
132-004	ELECTRIC GRID AIR INTAKE WARMER		
155-058	DELCO 12V 38MT HD STARTER WITH INTEGRATED MAGNETIC SWITCH	-10	
Transmission			
342-1KD	ALLISON 3000 EVS AUTOMATIC TRANSMISSION WITH PTO PROVISION	-80	-20
Transmission Equipment			
343-331	ALLISON VOCATIONAL PACKAGE 198 - AVAILABLE ON 3000/4000 PRODUCT FAMILIES WITH VOCATIONAL MODEL EVS		
84B-003	ALLISON VOCATIONAL RATING FOR FIRE TRUCK/EMERGENCY VEHICLE APPLICATIONS AVAILABLE WITH ALL PRODUCT FAMILIES		
84C-022	PRIMARY MODE GEARS, LOWEST GEAR 1, START GEAR 1, HIGHEST GEAR 5, AVAILABLE FOR 3000/4000 PRODUCT FAMILIES ONLY		

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Data Code	Description	Weight Front	Weight Rear
84D-022	SECONDARY MODE GEARS, LOWEST GEAR 1, START GEAR 1, HIGHEST GEAR 5, AVAILABLE FOR 3000/4000 PRODUCT FAMILIES ONLY		
84E-000	PRIMARY SHIFT SCHEDULE RECOMMENDED BY DTNA AND ALLISON, THIS DEFINED BY ENGINE AND VOCATIONAL USAGE		
84F-000	SECONDARY SHIFT SCHEDULE RECOMMENDED BY DTNA AND ALLISON, THIS DEFINED BY ENGINE AND VOCATIONAL USAGE		
84G-000	PRIMARY SHIFT SPEED RECOMMENDED BY DTNA AND ALLISON, THIS DEFINED BY ENGINE AND VOCATIONAL USAGE		
84H-000	SECONDARY SHIFT SPEED RECOMMENDED BY DTNA AND ALLISON, THIS DEFINED BY ENGINE AND VOCATIONAL USAGE		
84J-000	ENGINE BRAKE RANGE PRESELECT RECOMMENDED BY DTNA AND ALLISON, THIS DEFINED BY ENGINE AND VOCATIONAL USAGE		
84K-000	ENGINE BRAKE RANGE ALTERNATE PRESELECT RECOMMENDED BY DTNA AND ALLISON, THIS DEFINED BY ENGINE AND VOCATIONAL USAGE		
84L-000	LOAD BASED SHIFT SCHEDULE AND VEHICLE ACCELERATION CONTROL RECOMMENDED BY DTNA AND ALLISON, THIS DEFINED VOCATIONAL USAGE		
84N-000	NEUTRAL AT STOP - DISABLED, FUELSENSE - DISABLED		
84U-000	DRIVER SWITCH INPUT - DEFAULT - NO SWITCHES		
353-026	VEHICLE INTERFACE WIRING CONNECTOR WITH PDM AND NO BLUNT CUTS, AT BACK OF CAB		
34C-001	ELECTRONIC TRANSMISSION CUSTOMER ACCESS CONNECTOR FIREWALL MOUNTED		
362-035	CUSTOMER INSTALLED CHELSEA 277 SERIES PTO		
363-002	PTO MOUNTING, RH SIDE OF MAIN TRANSMISSION		
341-018	MAGNETIC PLUGS, ENGINE DRAIN, TRANSMISSION DRAIN, AXLE(S) FILL AND DRAIN		
345-003	PUSH BUTTON ELECTRONIC SHIFT CONTROL, DASH MOUNTED		
97G-004	TRANSMISSION PROGNOSTICS - ENABLED 2013		
370-015	WATER TO OIL TRANSMISSION COOLER, IN RADIATOR END TANK	15	
346-003	TRANSMISSION OIL CHECK AND FILL WITH ELECTRONIC OIL LEVEL CHECK		
35T-001	SYNTHETIC TRANSMISSION FLUID (TES-295 COMPLIANT)		
Front Axle and Equipment			
400-1A9	DETROIT DA-F-16.0-5 16,000# FL1 71.0 KPI/3.74 DROP SINGLE FRONT AXLE	190	
402-030	MERITOR 16.5X6 Q+ CAST SPIDER CAM FRONT BRAKES, DOUBLE ANCHOR, FABRICATED SHOES	10	
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Data Code	Description	Weight Front	Weight Rear
403-026	FIRE AND EMERGENCY SEVERE SERVICE, NON-ASBESTOS FRONT LINING		
419-023	CONMET CAST IRON FRONT BRAKE DRUMS		
427-001	FRONT BRAKE DUST SHIELDS	5	
409-006	FRONT OIL SEALS		
408-001	VENTED FRONT HUB CAPS WITH WINDOW, CENTER AND SIDE PLUGS - OIL		
416-022	STANDARD SPINDLE NUTS FOR ALL AXLES		
405-002	MERITOR AUTOMATIC FRONT SLACK ADJUSTERS		
536-012	TRW TAS-85 POWER STEERING	40	
539-003	POWER STEERING PUMP		
534-003	4 QUART POWER STEERING RESERVOIR	5	
40T-002	SYNTHETIC 75W-90 FRONT AXLE LUBE		
Front Suspension			
620-026	16,000# TAPERLEAF FRONT SUSPENSION	200	
619-005	MAINTENANCE FREE RUBBER BUSHINGS - FRONT SUSPENSION		
410-001	FRONT SHOCK ABSORBERS		
Rear Axle and Equipment			
420-024	RS-30-185 30,000# U-SERIES SINGLE REAR AXLE		-2,030
421-489	4.89 REAR AXLE RATIO		
424-001	IRON REAR AXLE CARRIER WITH STANDARD AXLE HOUSING		
386-073	MXL 17T MERITOR EXTENDED LUBE MAIN DRIVELINE WITH HALF ROUND YOKES	20	20
452-001	DRIVER CONTROLLED TRACTION DIFFERENTIAL - SINGLE REAR AXLE		20
878-018	(1) DRIVER CONTROLLED DIFFERENTIAL LOCK REAR VALVE FOR SINGLE DRIVE AXLE		
87B-005	BUZZER AND BLINKING LAMP WITH EACH MODE SWITCH, DIFFERENTIAL UNLOCK WITH IGNITION OFF, ACTIVE <5 MPH		
423-010	MERITOR 16.5X7 P CAM REAR BRAKES, DOUBLE ANCHOR, CAST SHOES		30
433-025	FIRE AND EMERGENCY SEVERE SERVICE NON- ASBESTOS REAR BRAKE LINING		
434-011	BRAKE CAMS AND CHAMBERS ON FORWARD SIDE OF DRIVE AXLE(S)		
451-018	WEBB CAST IRON REAR BRAKE DRUMS		50
425-002	REAR BRAKE DUST SHIELDS		5
440-006	REAR OIL SEALS		
426-1B5	BENDIX EVERSURE LONGSTROKE HEAVY DUTY 30/36 1-DRIVE AXLE SPRING PARKING CHAMBERS		-20
428-003	HALDEX AUTOMATIC REAR SLACK ADJUSTERS		
41T-002	SYNTHETIC 75W-90 REAR AXLE LUBE		
Rear Suspension			
622-1DG	31,000# FLAT LEAF SPRING REAR SUSPENSION WITH HELPER AND RADIUS ROD FOR FIRE/EMERGENCY SERVICE		140

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Data Code	Description	Weight Front	Weight Rear
621-005	SPRING SUSPENSION - 2.00 INCH AXLE SPACER		5
431-001	STANDARD AXLE SEATS IN AXLE CLAMP GROUP		
623-005	FORE/AFT CONTROL RODS		
Brake System			
018-002	AIR BRAKE PACKAGE		
490-101	WABCO 4S/4M ABS WITH TRACTION CONTROL, WITH ATC OFF-ROAD SWITCH		
871-001	REINFORCED NYLON, FABRIC BRAID AND WIRE BRAID CHASSIS AIR LINES		
904-001	FIBER BRAID PARKING BRAKE HOSE		
412-001	STANDARD BRAKE SYSTEM VALVES		
* 46D-001	STANDARD AIR SYSTEM PRESSURE PROTECTION AND 85 PSI PRESSURE PROTECTION FOR AIR HORN(S)		
413-002	STD U.S. FRONT BRAKE VALVE		
432-003	RELAY VALVE WITH 5-8 PSI CRACK PRESSURE, NO REAR PROPORTIONING VALVE		
480-009	BW AD-9 BRAKE LINE AIR DRYER WITH HEATER	20	
479-003	AIR DRYER MOUNTED INBOARD ON LH RAIL		
460-058	STEEL AIR TANKS MOUNTED AFT INSIDE AND/OR BELOW FRAME JUST FORWARD OF REAR SUSPENSION		
607-001	CLEAR FRAME RAILS FROM BACK OF CAB TO FRONT REAR SUSPENSION BRACKET, BOTH RAILS OUTBOARD		
477-006	BW DV-2 AUTO DRAIN VALVE WITHOUT HEATER ON ALL TANK(S)		
Trailer Connections			
335-004	UPGRADED CHASSIS MULTIPLEXING UNIT		
32A-002	UPGRADED BULKHEAD MULTIPLEXING UNIT		
Wheelbase & Frame			
545-570	5700MM (224 INCH) WHEELBASE		
546-102	7/16X3-9/16X11-1/8 INCH STEEL FRAME (11.11MMX282.6MM/0.437X11.13 INCH) 120KSI	310	240
547-001	1/4 INCH (6.35MM) C-CHANNEL INNER FRAME REINFORCEMENT	230	410
552-043	1975MM (78 INCH) REAR FRAME OVERHANG		
55W-007	FRAME OVERHANG RANGE: 71 INCH TO 80 INCH	-30	130
AC8-99D	CALC'D BACK OF CAB TO REAR SUSP C/L (CA) : 158.85 in		
AE8-99D	CALCULATED EFFECTIVE BACK OF CAB TO REAR SUSPENSION C/L (CA) : 155.85 in		
AE4-99D	CALC'D FRAME LENGTH - OVERALL : 332.32		
AM6-99D	CALC'D SPACE AVAILABLE FOR DECKPLATE : 158.45 in		
FSS-0LH	CALCULATED FRAME SPACE LH SIDE : 122.17 in		
FSS-0RH	CALCULATED FRAME SPACE RH SIDE : 235.09 in		

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Data Code	Description	Weight Front	Weight Rear
553-001	SQUARE END OF FRAME		
550-001	FRONT CLOSING CROSSMEMBER		
559-001	STANDARD WEIGHT ENGINE CROSSMEMBER		
561-001	STANDARD CROSSMEMBER BACK OF TRANSMISSION		
562-001	STANDARD MIDSHIP #1 CROSSMEMBER(S)		
572-001	STANDARD REARMOST CROSSMEMBER		
565-001	STANDARD SUSPENSION CROSSMEMBER		

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Chassis Equipment

556-1AR	THREE-PIECE 14 INCH CHROMED STEEL BUMPER WITH COLLAPSIBLE ENDS	
558-033	REMOVABLE FRONT TOW HOOKS STORED ON THE CHASSIS FRAME	25
586-024	FENDER AND FRONT OF HOOD MOUNTED FRONT MUDFLAPS	
551-007	GRADE 8 THREADED HEX HEADED FRAME FASTENERS	
605-017	LEVEL FRAME RAILS (+1%, -0%) WHEN CHASSIS IS LOADED TO FRONT AND REAR SUSPENSION RATINGS	
* 601-012	CUSTOMER REQUESTED "DRIVELINE AND CROSSMEMBER ONLY" LAYOUT 2D DXF/PDF FORMAT ELECTRONICALLY TRANSMITTED	
970-039	TANK BODY 1501 TO 3000 GALLONS	

Fuel Tanks

204-215	50 GALLON/189 LITER SHORT RECTANGULAR ALUMINUM FUEL TANK - LH	-10
218-005	RECTANGULAR FUEL TANK(S)	
215-005	PLAIN ALUMINUM/PAINTED STEEL FUEL/HYDRAULIC TANK(S) WITH PAINTED BANDS	
212-007	FUEL TANK(S) FORWARD	
664-001	PLAIN STEP FINISH	
205-002	CHROME FUEL TANK CAP(S)	
122-1J1	DETROIT FUEL/WATER SEPARATOR WITH WATER IN FUEL SENSOR, HAND PRIMER AND 12 VOLT PREHEATER"	10
216-020	EQUIFLO INBOARD FUEL SYSTEM	
11F-998	NO NATURAL GAS VEHICLE FUEL TANK VENT LINE/STACK	
202-016	HIGH TEMPERATURE REINFORCED NYLON FUEL LINE	

Tires

093-1RJ	MICHELIN X WORKS Z 315/80R22.5 20 PLY RADIAL FRONT TIRES	100
094-2CM	MICHELIN X WORKS XDY 315/80R22.5 20 PLY RADIAL REAR TIRES	232

Hubs

418-060	CONMET PRESET PLUS PREMIUM IRON FRONT HUBS	
450-014	WEBB IRON REAR HUBS	70

Wheels

502-356	ALCOA ULTRA ONE 89U64X 22.5X9.00 10-HUB PILOT 5.99 INSET ALUMINUM FRONT WHEELS	-28
505-356	ALCOA ULTRA ONE 89U64X 22.5X9.00 10-HUB PILOT 5.99 INSET ALUMINUM REAR WHEELS	-56
524-001	POLISHED FRONT WHEELS; OUTSIDE ONLY	
525-001	POLISHED REAR WHEELS; OUTSIDE OF OUTER WHEELS ONLY	
496-011	FRONT WHEEL MOUNTING NUTS	
497-011	REAR WHEEL MOUNTING NUTS	

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Cab Exterior

829-072	112 INCH BBC FLAT ROOF ALUMINUM CONVENTIONAL CAB		
650-008	AIR CAB MOUNTING		
705-012	CAB ROOF REINFORCEMENTS FOR ROOF MOUNTED COMPONENTS	2	
648-002	NONREMOVABLE BUGSCREEN MOUNTED BEHIND GRILLE		
754-017	BOLT-ON MOLDED FLEXIBLE FENDER EXTENSIONS	10	
678-067	SAFETY YELLOW LH AND RH INTERIOR GRAB HANDLES AND LH AND RH EXTERIOR NON-SLIP GRAB HANDLES		
646-023	HOOD MOUNTED CHROMED PLASTIC GRILLE		
65X-003	CHROME HOOD MOUNTED AIR INTAKE GRILLE		
644-004	FIBERGLASS HOOD		
690-016	CAB FLOOR, TOE BOARD AND FIREWALL HEAT SHIELD	5	
727-802	FACTORY PREP DUAL 25 INCH ROUND STUTTER TONE HOOD MOUNTED AIR HORNS WITH DUAL LANYARDS HORNS SHIP LOOSE FOR PDI INSTALL	8	
726-002	DUAL ELECTRIC HORNS		
728-002	DUAL HORN SHIELDS		
657-1CV	DOOR LOCKS AND IGNITION SWITCH KEYED THE SAME WITH (4) KEYS		
575-001	REAR LICENSE PLATE MOUNT END OF FRAME		
312-088	LED HEADLIGHT ASSEMBLY AND INCANDESCENT MARKER/TURN LAMP WITH CHROME BEZEL		
302-047	LED AERODYNAMIC MARKER LIGHTS		
311-001	DAYTIME RUNNING LIGHTS		
294-094	OMIT STOP/TAIL/BACKUP LIGHTS AND PROVIDE WIRING WITH SEPARATE STOP/TAIL WIRES TO 7 FEET BEYOND END OF FRAME	-5	
300-015	STANDARD FRONT TURN SIGNAL LAMPS		
744-1BC	DUAL WEST COAST BRIGHT FINISH HEATED MIRRORS WITH LH AND RH REMOTE		
797-001	DOOR MOUNTED MIRRORS		
796-001	102 INCH EQUIPMENT WIDTH		
743-204	LH AND RH 8 INCH BRIGHT FINISH CONVEX MIRRORS MOUNTED UNDER PRIMARY MIRRORS		
74A-001	RH DOWN VIEW MIRROR		
729-001	STANDARD SIDE/REAR REFLECTORS		
677-055	RH AFTERTREATMENT SYSTEM CAB ACCESS WITH POLISHED DIAMOND PLATE COVER		
768-043	63X14 INCH TINTED REAR WINDOW		
661-004	TINTED DOOR GLASS LH AND RH WITH TINTED OPERATING WING WINDOWS		
654-011	RH AND LH ELECTRIC POWERED WINDOWS	4	
769-002	LOWER RH DOOR WINDOW WITH FRESNEL LENS	7	
663-013	TINTED WINDSHIELD		

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659-019 2 GALLON WINDSHIELD WASHER RESERVOIR
WITHOUT FLUID LEVEL INDICATOR, FRAME
MOUNTED

Cab Interior

707-1AK	OPAL GRAY VINYL INTERIOR			
706-013	MOLDED PLASTIC DOOR PANEL			
708-013	MOLDED PLASTIC DOOR PANEL			
772-006	BLACK MATS WITH SINGLE INSULATION			
785-004	DASH MOUNTED ASH TRAY(S) WITHOUT LIGHTER			
691-008	FORWARD ROOF MOUNTED CONSOLE WITH UPPER STORAGE COMPARTMENTS WITHOUT NETTING			
694-010	IN DASH STORAGE BIN			
742-007	(2) CUP HOLDERS LH AND RH DASH			
680-006	GRAY/CHARCOAL FLAT DASH			
860-004	SMART SWITCH EXPANSION MODULE			
700-002	HEATER, DEFROSTER AND AIR CONDITIONER			
701-001	STANDARD HVAC DUCTING			
703-005	MAIN HVAC CONTROLS WITH RECIRCULATION SWITCH			
170-019	STANDARD HEATER PLUMBING WITH BALL SHUTOFF VALVES			
130-033	DENSO HEAVY DUTY AIR CONDITIONER COMPRESSOR			
702-002	BINARY CONTROL, R-134A			
739-034	PREMIUM INSULATION			
285-013	SOLID-STATE CIRCUIT PROTECTION AND FUSES			
280-007	12V NEGATIVE GROUND ELECTRICAL SYSTEM			
324-011	DOMED DOOR ACTIVATED LH AND RH, DUAL READING LIGHTS, FORWARD CAB ROOF			
655-005	LH AND RH ELECTRIC DOOR LOCKS			
284-023	(1) 12 VOLT POWER SUPPLY IN DASH			
756-1E7	SEATS INC 911 UNIVERSAL SERIES HIGH BACK AIR SUSPENSION DRIVER SEAT WITH NFPA 1901-2009/2016 COMPLIANT SEAT SENSOR	50		
760-1F1	SEATS INC 911 UNIVERSAL SERIES HIGH BACK NON SUSPENSION PASSENGER SEAT WITH UNDERSEAT STORAGE AND NFPA 1901- 2009/2016 COMPLIANT SEAT SENSOR	25	10	
711-004	LH AND RH INTEGRAL DOOR PANEL ARMRESTS			
758-023	GRAY VINYL DRIVER SEAT COVER WITH GRAY CORDURA CLOTH BOLSTER AND HEADREST			
761-022	GRAY VINYL FRONT PASSENGER SEAT COVER WITH GRAY CORDURA CLOTH BOLSTER AND HEADREST			
763-105	NFPA 1901-2009 HIGH VISIBILITY ORANGE SEAT BELTS			
532-002	ADJUSTABLE TILT AND TELESCOPING STEERING COLUMN	10		
540-015	4-SPOKE 18 INCH (450MM) STEERING WHEEL			
765-002	DRIVER AND PASSENGER INTERIOR SUN VISORS			

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Instruments & Controls

732-004	GRAY DRIVER INSTRUMENT PANEL	
734-004	GRAY CENTER INSTRUMENT PANEL	
87L-001	ENGINE REMOTE INTERFACE WITH PARK BRAKE INTERLOCK	
870-001	BLACK GAUGE BEZELS	
486-001	LOW AIR PRESSURE INDICATOR LIGHT AND AUDIBLE ALARM	
840-002	2 INCH PRIMARY AND SECONDARY AIR PRESSURE GAUGES	
198-006	ENGINE COMPARTMENT MOUNTED AIR RESTRICTION INDICATOR WITH GRADUATIONS, WITH WARNING LIGHT IN DASH	
721-001	97 DB BACKUP ALARM	3
149-013	ELECTRONIC CRUISE CONTROL WITH SWITCHES IN LH SWITCH PANEL	
156-007	KEY OPERATED IGNITION SWITCH AND INTEGRAL START POSITION; 4 POSITION OFF/RUN/START/ACCESSORY	
811-042	ICU3S, 132X48 DISPLAY WITH DIAGNOSTICS, 28 LED WARNING LAMPS AND DATA LINKED	
160-038	HEAVY DUTY ONBOARD DIAGNOSTICS INTERFACE CONNECTOR LOCATED BELOW LH DASH	
844-001	2 INCH ELECTRIC FUEL GAUGE	
148-073	ENGINE REMOTE INTERFACE FOR REMOTE THROTTLE	
163-004	ENGINE REMOTE INTERFACE CONNECTOR IN ENGINE COMPARTMENT	
856-001	ELECTRICAL ENGINE COOLANT TEMPERATURE GAUGE	
864-001	2 INCH TRANSMISSION OIL TEMPERATURE GAUGE	
830-017	ENGINE AND TRIP HOUR METERS INTEGRAL WITHIN DRIVER DISPLAY	
372-051	CUSTOMER FURNISHED AND INSTALLED PTO CONTROLS	
49B-004	ELECTRONIC STABILITY CONTROL	
852-002	ELECTRIC ENGINE OIL PRESSURE GAUGE	
679-001	OVERHEAD INSTRUMENT PANEL	
35M-004	SMARTPLEX HUB MODULE WITH OVERHEAD SWITCH MOUNTING, CENTER CONSOLE (12 SWITCH SLOTS, NO CB)	44
786-119	NFPA VEHICLE DATA RECORDER AND SEATBELT DISPLAY	
746-115	AM/FM/WB WORLD TUNER RADIO WITH BLUETOOTH AND USB AND AUXILIARY INPUTS, J1939	10
747-001	DASH MOUNTED RADIO	
750-002	(2) RADIO SPEAKERS IN CAB	
753-001	AM/FM ANTENNA MOUNTED ON FORWARD LH ROOF	
748-001	POWER AND GROUND STUDS IN/UNDER DASH	

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810-027	ELECTRONIC MPH SPEEDOMETER WITH SECONDARY KPH SCALE, WITHOUT ODOMETER	
817-001	STANDARD VEHICLE SPEED SENSOR	
812-001	ELECTRONIC 3000 RPM TACHOMETER	
813-998	NO VEHICLE PERFORMANCE MONITOR	-5
162-002	IGNITION SWITCH CONTROLLED ENGINE STOP	
81Y-001	PRE-TRIP LAMP INSPECTION, ALL OUTPUTS FLASH, WITH SMART SWITCH	
264-028	(2) LH AND RH FOOT SWITCHES WITH DASH SWITCH FOR HORN BUTTON TO CONTROL AIR HORN, DEFAULT TO ELECTRIC <85 PSI	
836-015	DIGITAL VOLTAGE DISPLAY INTEGRAL WITH DRIVER DISPLAY	
660-008	SINGLE ELECTRIC WINDSHIELD WIPER MOTOR WITH DELAY	
304-001	MARKER LIGHT SWITCH INTEGRAL WITH HEADLIGHT SWITCH	
27D-004	ALTERNATING FLASHING HEADLAMP SYSTEM WITH BODY BUILDER CONTROLLED ENGAGEMENT	
882-018	ONE VALVE PARKING BRAKE SYSTEM WITH DASH VALVE CONTROL AUTONEUTRAL AND WARNING INDICATOR	
299-013	SELF CANCELING TURN SIGNAL SWITCH WITH DIMMER, WASHER/WIPER AND HAZARD IN HANDLE	
298-039	INTEGRAL ELECTRONIC TURN SIGNAL FLASHER WITH HAZARD LAMPS OVERRIDING STOP LAMPS	

Design

065-902	TWO COLOR CUSTOM PAINT
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Color

980-3QC	CAB COLOR A: L6431EB WINTER WHITE ELITE BC
981-2L4	CAB COLOR B: L2225EB CANDY APPLE RED ELITE BC
986-020	BLACK, HIGH SOLIDS POLYURETHANE CHASSIS PAINT
963-003	STANDARD E COAT/UNDERCOATING

Certification / Compliance

996-001	U.S. FMVSS CERTIFICATION, EXCEPT SALES CABS AND GLIDER KITS
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Secondary Factory Options

998-033	CORPORATE PDI CENTER IN-SERVICE AND OPTION INSTALLATION/MODIFICATION
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Sales Programs

NO SALES PROGRAMS HAVE BEEN SELECTED

TOTAL VEHICLE SUMMARY

Weight Summary

	Weight	Weight	Total
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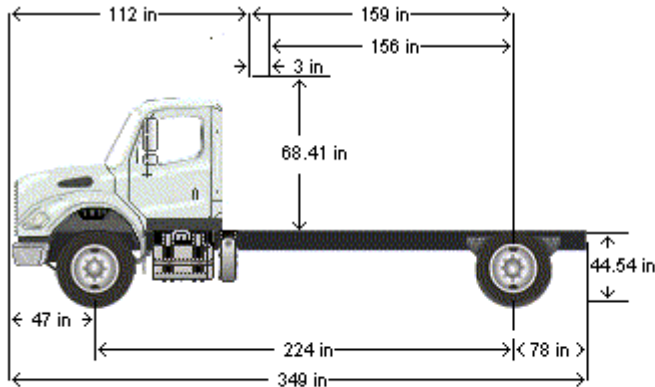
	Front	Rear	Weight
Factory Weight ⁺	8745 lbs	5305 lbs	14050 lbs

(+) Weights shown are estimates only.

If weight is critical, contact Customer Application Engineering.

Fairfield County Fire Services

D I M E N S I O N S



VEHICLE SPECIFICATIONS SUMMARY - DIMENSIONS

Model.....M2112
 Wheelbase (545).....5700MM (224 INCH) WHEELBASE
 Rear Frame Overhang (552)1975MM (78 INCH) REAR FRAME OVERHANG
 Fifth Wheel (578) NO FIFTH WHEEL
 Mounting Location (577)..... NO FIFTH WHEEL LOCATION
 Maximum Forward Position (in)..... 0
 Maximum Rearward Position (in) 0
 Amount of Slide Travel (in).....0
 Slide Increment (in).....0
 Desired Slide Position (in).....0.0
 Cab Size (829) 112 INCH BBC FLAT ROOF ALUMINUM CONVENTIONAL CAB
 Sleeper (682)NO SLEEPER BOX/SLEEPER/CAB
 Exhaust System (016) RH OUTBOARD UNDER STEP MOUNTED HORIZONTAL AFTERTREATMENT SYSTEM
 ASSEMBLY WITH RH HORIZONTAL TAILPIPE EXITING FORWARD OF REAR TIRES

TABLE SUMMARY - DIMENSIONS

Dimensions	Inches
Bumper to Back of Cab (BBC)	112.4
Bumper to Centerline of Front Axle (BA)	46.9
Min. Cab to Body Clearance (CB)	3.0
Back of Cab to Centerline of Rear Axle(s) (CA)	158.8
Effective Back of Cab to Centerline of Rear Axle(s) (Effective CA)	155.8
Back of Cab Protrusions (Exhaust/Intake) (CP)	0.0
Back of Cab Protrusions (Side Extenders/Trim Tab) (CP)	0.0
Back of Cab Protrusions (CNG Tank)	0.0
Back of Cab Clearance (CL)	3.0
Back of Cab to End of Frame	236.6
Cab Height (CH)	68.4
Wheelbase (WB)	224.4
Frame Overhang (OH)	78.0
Overall Length (OAL)	349.1
Rear Axle Spacing	0.0
Unladen Frame Height at Centerline of Rear Axle	44.5

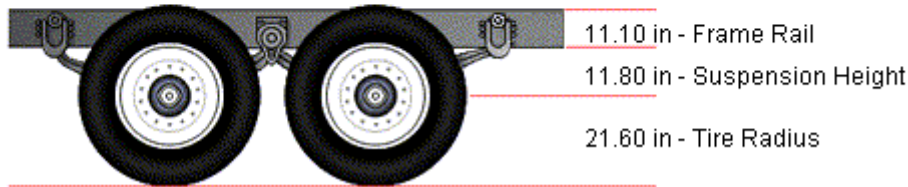
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Performance calculations are estimates only. If performance calculations are critical, please contact Customer Application Engineering.

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UNLADEN FRAME HEIGHT

Unladen Height	Requested	Calculated
Frame (in)	N/A	44.50



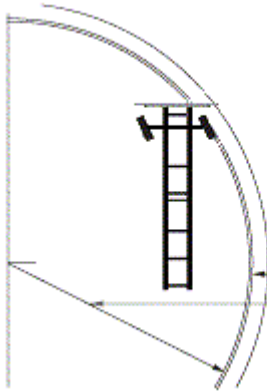
VEHICLE SPECIFICATIONS SUMMARY - UNLADEN FRAME HEIGHT

Model.....	M2112
Cab Size (829).....	112 INCH BBC FLAT ROOF ALUMINUM CONVENTIONAL CAB
Frame Rails (546).....	7/16X3-9/16X11-1/8 INCH STEEL FRAME (11.11MMX282.6MM/0.437X11.13 INCH) 120KSI(546)
Web Height (in).....	11.125
Flange Thickness (in).....	0.4375
Rear Suspension (622)31,000# FLAT LEAF SPRING REAR SUSPENSION WITH HELPER AND RADIUS ROD FOR FIRE/EMERGENCY SERVICE	
Rear Suspension Ride Height (621).....	SPRING SUSPENSION - 2.00 INCH AXLE SPACER
Axle C/L to Bottom of Frame (in).....	11.764
Rear Tires (094).....	MICHELIN X WORKS XDY 315/80R22.5 20 PLY RADIAL REAR TIRES
Unladen Radius (in).....	21.65
Fifth Wheel (578).....	NO FIFTH WHEEL
Requested Min Height (in).....	0.0
Requested Max Height (in).....	1
Fifth Wheel Leg Height (582).....	NO FIFTH WHEEL LEG HEIGHT
Rear Tow Device (587).....	NO REAR TOWING DEVICE
Requested Min Height (in).....	0.0
Requested Max Height (in).....	0.0

Performance calculations are estimates only. If performance calculations are critical, please contact Customer Application Engineering

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TURNING RADIUS



Turning radius graphic and data provided strictly for comparisons between model configurations. Weather, road surfaces, and tire treads affect the results. It is strongly suggested that actual vehicles be measured before constructing any roads/driveways using this information. For specific figures regarding your configuration, please contact your CAE representative.

	Dimensions	Tolerance
Wall to Wall Diameter (ft)	67.2	+/- 3.0
Curb to Curb Diameter (ft)	65.0	+/- 3.0
Turning Radius (ft)	32.0	+/- 1.5

VEHICLE SPECIFICATIONS SUMMARY - TURNING RADIUS

ModelM2112
 Cab Size (829) 112 INCH BBC FLAT ROOF ALUMINUM CONVENTIONAL CAB
 Wheelbase (545)5700MM (224 INCH) WHEELBASE
 Front Tires (093)MICHELIN X WORKS Z 315/80R22.5 20 PLY RADIAL FRONT TIRES
 Width (in) 12.5
 Front Axle (400) DETROIT DA-F-16.0-5 16,000# FL1 71.0 KPI/3.74 DROP SINGLE FRONT AXLE
 Kingpin Intersection (in) 71
 Bumper (556) THREE-PIECE 14 INCH CHROMED STEEL BUMPER WITH COLLAPSIBLE ENDS
 Width (in) 93.5
 Bumper Miter to Front Axle (in) 27.56
 Primary Steering Location (003)LH PRIMARY STEERING LOCATION
 Steering Gear (536)TRW TAS-85 POWER STEERING
 Dual Steering Gear NONE
 Ram NONE
 Rear Axle (420) RS-30-185 30,000# U-SERIES SINGLE REAR AXLE
 Axle Spacing (624) NO AXLE SPACING

Performance calculations are estimates only. If performance calculations are critical, please contact Customer Application Engineering

Fairfield County Fire Services

PTO-MUNCIE

Installed on the apparatus for drive of PTO Pump, generators or other accessories, shall be a Muncie Model CS40 Series Power Take off.

The CS 40 Series power take off is designed for maximum output torque for live engine driven equipment using the Allison World Transmission.

The CS40 PTO allows for up to 600 ft. lbs. of torque.

30" FRONT BUMPER EXTENSION- PAINTED

The front bumper will be extended approximately thirty (30) inches to allow installation of booster reel (SBEF 30-23-34) capable of holding 150' of 1" booster hose. A bright aluminum tread plate (3/16") gravel shield with end caps will be installed.

The bumper will be painted to match the apparatus.

The front bumper will be sufficiently reinforced to accommodate the installation of a booster reel between the frame rails.

FUEL TANK TREAD PLATE

The step type fuel tank will be overlaid with aluminum tread plate (polished). This will include the top, front and both ends of the fuel tank. Step areas will be provided to create easier access to the apparatus cab. The step areas will be fabricated from tread plate that is "No-Slip" rated.

TREADPLATE OFFICER SIDE STEP COVER

The officer side step area shall be covered in bright finish aluminum tread plate to cover and protect the exhaust emissions equipment from damage in the normal operation of the apparatus.

CAB CONSOLE

A center console will be supplied and installed between the driver and officer's seating positions.

The forward area of the apparatus console will have a mounting surface for the emergency lighting switches and electronic siren controls. This area will be located within easy reach of the apparatus driver and officer. The console area will feature a storage area for items such as map books or notebooks at the rear of the console.

The console will be brushed aluminum finish.

WHEEL TRIM KITS

Wheel trim kits consisting of chrome baby moon hubcaps and chrome lug nut covers will be installed on the front and rear axles of the single rear axle chassis.

Fairfield County Fire Services

TIRE PRESSURE MONITOR DEVICE

Each tire will be equipped with an LED tire alert pressure management system (Vecsafe or equal) that will monitor tire pressure. A chrome plated brass sensor will be provided on the valve stem of each tire.

The sensor will calibrate to the tire pressure when installed on the valve stem for pressures between 20 and 120 psi. The sensor will activate an integral battery-operated LED when the pressure of that tire drops 8 or more psi.

Removing the cap from the sensor will indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED will immediately start blinking.

FRONT TOW HOOKS

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

VEHICLE DATA RECORDER AND OCCUPANCY MINDER FURNISHED FREIGHTLINER

The commercial chassis manufacturer will install the Vehicle Data Recorder and Seatbelt Occupancy minder.

Fairfield County Fire Services

12 VOLT ELECTRICAL INSTALLATION AND TESTING

The complete 12-volt wiring system and electrical appliances shall be installed to modern automotive standards. Extreme care shall be exercised to provide for ease of serviceability of the system. The wiring harness shall be installed in protective loom throughout. All wiring shall be specially harnessed with wire locks and clipped to body members. Where wire passes through sheet metal, rubber grommets shall be used to protect both wiring and wire looms. All electrical connections shall be with mechanical type fasteners to terminal boards. A 12-volt DC distribution box with automatic circuit breaker panel is to be provided in body. All wiring shall be identified by number, color and function (clearly labeled by use every 3 inches) throughout the installation. The numbering system shall correspond with the electrical wiring schematic to be furnished with the apparatus. Extreme care must be taken in the installation to avoid engine manifold, engine exhaust, and muffler that could expose the wiring to severe overheating during long periods of operation. Proper installation and heat deflection panels must be installed in such area. Separate wiring raceway for DC and AC service is to be provided in the upper section of body.

LOAD MANAGEMENT SYSTEM

A load management system will be provided and installed in the apparatus. The load manager will have sixteen (16) programmable outputs to supply warning and load switching requirements. The load management system will be capable of offering load sequencing, load shedding, fast idle control, low voltage warning, scene mode operation and response mode operation.

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

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

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

The load management system will have an operating temperature range of -40 degrees F to +220 degrees F

Fairfield County Fire Services

NFPA APPARATUS BODY LOAD TESTING

Electrical System Performance Tests per NFPA:

The apparatus low-voltage electrical system shall be tested and certified. The certification shall be delivered to the purchaser with the apparatus. Tests shall be performed when the air temperature is between 0 degrees F and 110 degrees F (-18 C and 43 C)

Test Sequence:

The following three tests shall be performed in the order indicated below. Before each test, the batteries shall be fully charged until the voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for 10 minutes. Failure of any of these tests shall require a repeat of the sequence.

Reserve Capacity Test:

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

Alternator Performance Test at Idle:

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

Alternator Performance Test at Full Load:

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of 2 hours. Activation of the load management system shall be permitted during this test. However, an alarm sounded by excessive battery discharge, as detected by the system required in NFPA 1901, or a system voltage of less than 11.7 volts dc for a 12 volt nominal system or 23.4 volts dc for a 24 volt nominal system, for more than 120 seconds, shall be considered a test failure.

Low-Voltage Alarm Test

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

The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts dc for a 12 volt nominal system or 23.4 volts dc for a 24 volt nominal system shall be considered a test failure.

The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.

Fairfield County Fire Services

NFPA APPARATUS BODY LOAD TESTING, CONT'D.

Documentation: NFPA 1901 13.15

At the time of delivery, the manufacturer shall provide the following:

1. Documentation of the electrical system performance tests.
2. A written load analysis, including the following:
 - a. The nameplate rating of the alternator
 - b. The alternator rating under the conditions specified in NFPA 1901 13.3.2
 - c. Each component load specified in NFPA 1901 13.3.3 comprising the minimum continuous load.
 - d. Additional loads that, when added to the minimum continuous load, determine the total connected load.
 - e. Each individual intermittent load.

COMMERCIAL CHASSIS ELECTRICAL SYSTEM

The commercial chassis electrical system will be provided as furnished by the original chassis manufacturer. A customized interface will be provided and designed, so as not to disturb any of the required chassis functions. The necessary interfaces will only be provided in areas where load management is allowed or with accessory components provided on the apparatus chassis.

ANTENNA INSTALLATION

One (1) antenna mounting base(s) model #MATM with minimum of 25 linear feet of coaxial cable will be provided and installed on the cab roof. The attached antenna wire(s) will be run to the console or other area as may be designated by the fire department.

The Fire Department is responsible to have the correct antenna rod installed once the apparatus is delivered to the customer.

SWITCH PANEL - CONSOLE BACK LIGHTED - 8 SWITCH POSITION

Installed in the console of the cab, convenient to the officer and driver will be eight (8) single pole/single throw switches with backlit legend for easy visibility in any light. The switches are rated at 25 amps each, continuous use.

The switches will be controlled by individual automatic circuit breakers specifically sized for the actual load, with sufficient reserve capacity.

The layout of the console will include siren controls, traffic advisor controls and have space for customer supplied radio controls.

HIGH IDLE SWITCH

The apparatus will be equipped with a manually activated electronic high idle switch.

MASTER BODY LOAD DISCONNECT

A master load disconnect shall be provided between the chassis electrical system and the remainder of the electrical loads on the apparatus.

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BATTERY CHARGING SYSTEM / AIR COMPRESSOR SYSTEM

A Kussmaul model #091-215-12, "Auto Charge 1000 PLC", fully automatic battery charger will be supplied and installed for maintaining the vehicle battery system. Unique electronic sensing circuits sense the battery voltage while eliminating the need for external sensing wires. The output current will be 15 amperes @ 12v DC.

A Kussmaul model #091-9-12V-HP-HOR air compressor will maintain the air pressure in the apparatus chassis air brake system while the vehicle is not in use. The air compressor will have a rated input at 12V DC @ 11 amps and an output of 125 psi max.

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

KUSSMAUL AUTO DRAIN ACHP 120 VAC

A Kussmaul # 091-9B-1-AD Auto Drain ACHP will be installed to protect the Auto Pump from built up moisture.

KUSSMAUL SUPER AUTO EJECT 15 AMP

A Kussmaul Super Auto Eject Model #091-55-15-120, 15 amp 120 volt shore power assembly, cover, solenoid input wire, power cord, and plug shall be installed. The 12 volt solenoid shall eject the shore power cord away from vehicle path upon sensing engine start; after ejection, the weatherproof cover snaps into position over inlet. The unit shall sequence energizing of an Auto Eject, eliminating terminal arching when connecting and disconnecting power cord.

The unit shall have a waterproof back enclosure with watertight cable fittings, which protect mechanism from road contamination. A pre-wired 3 foot AC electrical cord and starting sense wire (side wired) shall be installed.

The assembly shall have the following dimensions: 6.17" high x 4.08" wide x 2.8" deep with 4 lb. weight.

Color of cover shall be (*circle one*): (yellow) (red) (blue) (white) (gray) (black)

ACCESSORY CIRCUIT - 12 VOLT - LOCATED IN CAB

One (1) dedicated circuit; 12-volt, 40 Amp, power and ground on a 3/8" stud and fused at the battery will be provided in the apparatus cab at the specified location determined by the fire department. The circuit will be for future installation of radios or other 12-volt accessories.

Accessory Circuit Location: **TBD**

DOOR OPEN INDICATOR LIGHT

A Truck-Lite Model 30286R -30 Series flashing red LED light will be furnished and installed in the cab, in a prominent location that is visible to both driver and officer of the apparatus to signal when an unsafe condition is present such as an open cab door or body compartment door, extended ladder rack, extended side dumps, extended light tower or any other device which is opened, extended or deployed which may cause damage to the apparatus if it is moved.

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

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The light is 2.00" in diameter and approximately 1.4" high.

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REAR VIEW CAMERA-ASA-TOUGH CAM 1

Installed on the apparatus will be an ASA VOYAGER ToughCam 1 Rear Observation system by Jensen Electronics. The system will consist of a 7" High Performance Color LCD panel monitor with back-lit controls and an integrated audio speaker, anti-glare/anti-scratch protective lens, manual push - button or automatic controls.

The monitor has emergency efficient LED backlighting and provides non-volatile memory for picture and volume.

The ToughCam high performance CMOS Camera provides high performance color optics, is waterproof (IP69K) and provides CMOS Technology. The camera has IR - low light assist and a built-in microphone. The camera is corrosion resistant (ASTM B-117) and is 1.5" h x 1.32" d x 1.06" w and is manufactured from heavy duty aluminum.

The camera is mounted to a VOSHD4MNT 4" high cast/machined aluminum mount with thumbscrew adjustable knuckle. The mount has a black matte finish.

A CEC cable with non-locking connectors and 4-pin round plug is furnished with the system.

The system can be expanded to accommodate up to two (2) additional cameras.

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DOT MARKER LIGHTS & REFLECTORS

Apparatus cab marker lights and signaling devices will be as provided on the apparatus commercial chassis cab from the original chassis manufacturer. FMVSS reflectors will be also provided as required.

FEDERAL MOTOR VEHICLE SAFETY STANDARDS MARKER LIGHTS - SIDE OF BODY

FMVSS approved red LED marker lights with integral reflectors will be furnished and installed at the lower side rear, one (1) on each side.

FMVSS approved yellow side LED marker and turn lights will be furnished and installed on the apparatus lower side, forward of rear axle, one (1) on each side of the apparatus. (For apparatus thirty (30') long or longer.

The FMVSS marker lights are designed with reflective backing and lens as to function as reflectors when the lights are not activated.

FEDERAL MOTOR VEHICLE MARKER LIGHTS - REAR OF BODY

A FMVSS approved red LED clearance light will furnished and installed on the apparatus rear upper, one (1) on each side at the outermost practical location.

A FMVSS approved LED 3-lamp identification bar will be furnished and installed on the apparatus rear center. The lights will be RED in color.

The FMVSS marker lights are designed with reflective backing and lens as to function as reflectors when the lights are not activated.

FMVSS APPROVED - AMBER REFLECTORS - SIDE OF BODY

FMVSS Approved yellow reflectors will be furnished and installed on the apparatus body lower side, as far forward and low as practical, one (1) on each side of the apparatus. (For vehicles thirty (30) feet or long or longer.

FMVSS APPROVED - RED REFLECTORS - REAR OF BODY

FMVSS approved red reflectors will be furnished and installed on the apparatus rear, one (1) on each side at the outermost practical location.

LICENSE PLATE LIGHT - LED

One (1) Tecniq model #L10 LED license plate light will be furnished and installed above the mounting position of the license plate. The light will be clear in color and will have a chrome finish.

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STOP, TAIL, TURN, & BACK-UP LIGHTING

Two (2) Whelen M6 series, 4-5/16" x 6-3/4", Red LED combination stop and tail lights will be furnished and installed, one (1) on each side at the rear of the apparatus body.

Two (2) Whelen M6 series, 4-5/16" x 6-3/4", Amber LED turn signal lights (with arrow) will be furnished and installed, one (1) on each side of the apparatus body at the rear. The lights will be installed one (1) on each side, on a vertical plane with the stop / tail lights.

Two (2) Whelen M6 series, 4-5/16" x 6-3/4", White LED back-up lights will be furnished and installed, one (1) on each side, on a vertical plane with the stop / tail / turn signals. These will activate when the apparatus transmission is placed in reverse gear.

Two (2) Whelen M6FCV4 mounting flanges, will be provided and installed one (1) on each side. The lights listed above will be mounted in one common cast aluminum mounting flange. The fourth (4th) opening will be for the lower rear warning lights.

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

WALKWAY LIGHTS COVERED BY FOLDING STEP LIGHTS

Required walkway and step area lighting requirements are covered by underlit folding step lights.

ROOF MOUNT - BROW LIGHT - 150W LED - ABOVE WINDSHIELD

One (1) Akron SceneStar ELSS-SLDC LED apparatus roof mount flood light will be furnished and installed. The mounting bracket will attach to the lamp head and be machined to conform to roof radius of the apparatus.

The lamp head will have a single row of LED modules and will draw 12 amps while generating 14,000 lumens.

The lamp head and brackets will be powder coated white.

The Akron brow mounted flood light(s) will be located above the windshield in the center of the apparatus cab.

BROW LIGHT SWITCH IN CAB

There will be a switch to turn the brow light on and off mounted in the cab warning light switch control panel.

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SCENE LIGHTING PACKAGE, WHELEN M9

Six (6) Whelen M9 Series Model # M9LZC scene lights shall be provided. The scene lights shall incorporate Linear Super-LED® and Smart LED® technology. The M9LZC configuration shall consist of 24 clear Super-LEDs and a clear gradient optic polycarbonate lens. The scene lights shall have specialized TIR optics for ideal scene illumination. The M9LZC shall have a rugged powder coat heat sink and a waterproof wire entry grommet. The M9LZC shall meet KKK 1822F and AMD024 specifications.

The lens/reflector assembly shall be sealed and resistant to water, moisture, dust, and other environmental conditions. The hard-coated lens shall provide extended life/luster protection against UV and chemical stresses. The light engine shall be installed at the rear of the unit and be vacuum tested to ensure proper sealing. The PC board shall be conformal coated for additional protection. The M9LZC shall have 6,500 useable lumens.

DRIVER SIDE OF BODY

Two (2) Whelen M9LZC super LED scene lights will be provided and installed one rearward and one forward on the driver side of the apparatus body in a chrome plated flange.

OFFICER SIDE OF BODY

Two (2) Whelen M9LZC super LED scene lights will be provided and installed one rearward and one forward on the officer side of the apparatus body in a chrome plated flange.

REAR OF BODY

Two (2) Whelen M9LZC super LED scene lights will be provided and installed, one on each side of the rear apparatus body panel in a chrome plated flange.

SCENE LIGHT SWITCHES

The scene lights will be controlled by three (3) individual switches located on the warning light switch control panel in the cab. Each switch will be individually labeled as "driver side scene lighting" "officer side scene lighting" and "rear scene lighting."

REAR SCENE LIGHTS ACTIVATE IN REVERSE

The rear scene lights will automatically activate when the apparatus is placed in reverse gear.

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GROUND LIGHTING - CAB - ROM

One (1) *ROM V4 12" LED* ground light will be provided under each side cab door entrance step, total two (2) total. The lights will be mounted in ROM standalone aluminum mounting track with mounting slots at each end. The ground lights will turn on automatically with each respective door jamb switch and also by a master ground light switch in the warning light switch console.

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

GROUND LIGHTING - FRONT BUMPER - ROM

One (1) *ROM V4 12" LED* ground light will be provided under each side of the front bumper total two (2).

The lights will be mounted in ROM standalone aluminum mounting track with mounting slots at each end.

The ground lights will be activated by a master ground light switch in the cab and will be wired through the load management system.

GROUND LIGHTING - FRONT BODY - ROM

One (1) *ROM V4 12" LED* ground light will be provided under each front body corner, two (2) total. The lights will be mounted in ROM standalone aluminum mounting track with mounting slots at each end. The ground lights will be activated by a master ground light switch in the cab and will be wired through the load management system.

GROUND LIGHTING - REAR - ROM

One (1) *ROM V4 12" LED* ground light will be provided under each rear body corner, two (2) total. The lights will be mounted in ROM standalone aluminum mounting track with mounting slots at each end. The ground lights will be activated by a master ground light switch in the cab and will be wired through the load management system.

ENGINE COMPARTMENT WORK LIGHTS

Two (2) LED work lights will be furnished and installed inside the engine enclosure to provide illumination in this area. The lights will be controlled by a switch located under the hood in the area of the driver side firewall.

COMPARTMENT LIGHTING, ROM

The apparatus compartments shall be illuminated by ROM DuroStrip LED lights which shall be installed integral with the roll up door framing. The DuroStrip lighting shall exceed NFPA 1901 Lighting Requirements of 250 Lumens per foot. The lighting shall be installed on both sides of the compartments extending a minimum of 80% of the height of the compartment and shall be tested to Military Standards MIL-STD-810A for shock and vibration. The lights shall have a seven (7) year warranty, unless otherwise specified, lighting color shall be white.

COMPARTMENT LIGHTING SWITCH - DOOR CONTROLLED

Each apparatus compartment light will be controlled by an individual door activated switch. When compartment door is open the magnetic switch will activate the compartment lighting. When the door is closed the switch will de-activate the compartment lighting.

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The system is contained in the composite striker block which protects it from the elements. The "Smart-Switch" minimizes the possibility of wiring malfunction

The door switches are wired to the "DO NOT MOVE APPARATUS" door warning light in the cab.

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NFPA AUDIBLE AND LIGHTING WARNING PACKAGE

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

LIGHT PACKAGE ACTUATION CONTROLS

The entire warning light package will be actuated with a single warning light switch located on the cab switch panel. The wiring for the warning light package will engage all of the lights required for "Clearing Right of Way" mode when the vehicle parking brake is not engaged. An automatic control system will be provided to switch the warning lights to the "Blocking Right of Way" mode when the vehicle parking brake is engaged.

WARNING LIGHT FLASH PATTERN

All of the perimeter warning lights will be set to an NFPA compliant flash pattern by the apparatus manufacturer.

WARNING LIGHT SYSTEM CERTIFICATION

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

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

Any large truck as defined by NFPA will have the lower zone warning lights mounted no higher than 62" to the optical center of the warning light from ground level.

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NFPA ZONE A UPPER - WHELEN FREEDOM IV 60"

A Whelen Edge® Ultra Freedom IV™ Linear Super-LED® LC Series 60" lightbar model # F4XRWWR will be installed. The lightbar shall incorporate an anodized extruded heavy duty aluminum base and cover chassis with two front and rear red corner modules, two interior white modules, and two interior red modules. The front and rear of each corner module shall consist of 12 red Linear Super-LEDs installed on a conformal coated PCB board with a thermal pad/aluminum bracket heat sink assembly. The long red interior Linear Super-LED lights shall incorporate 12 red Super-LED installed on a conformal coated PCB board with a thermal pad/aluminum bracket heat sink assembly. The long white interior Linear Super-LED lights shall incorporate 12 white Super-LEDs installed on a conformal coated PCB board with a thermal pad/aluminum bracket heat sink assembly. The all modules will utilize a Diamond Optix™ metalized reflector and two optic collimators. All electronic components shall be conformal coated to provide additional protection. The outer lens construction shall consist of two clear Uni-Dome top lenses with a clear center lens and utilize two liquid injection molded wiper seal dividers for maximum protection against environmental elements. Metal top shields installed on the Uni-Domes and center lens shall provide protection from climatic conditions and provides passive solar radiation to direct heat away from internal components. **All lenses to be clear.**

The lightbar shall have an electronic LC I/O board. The solid state I/O board shall be microprocessor controlled. The I/O board shall have built-in reverse polarity protection and output-short protection. The I/O board shall have the ability to flash twenty two Super-LED warning lights. There shall be a data bank of 12 Scan-Lock™ flash patterns including steady burn with low power and cruise light functions. The cruise light function shall allow the user the four corner modules as marker courtesy lights. The lightbar will have the capability to install a traffic advisor in the rear of the lightbar. The I/O board shall also have outputs to add takedown, alley lights, and auxiliary lights for each set of lights to be controlled in pairs.

All light heads shall be installed in the lightbar with the aid of black polycarbonate snap-in mounting brackets. The solid state lightbar shall be vibration resistant. The lightbar will contain a 17' 2/c 8GA unterminated power cable and 17' 17/c 22GA unterminated control cable. All electronic components are covered by a five year factory warranty.

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WHELEN UPPER WARNING LIGHT PACKAGE, SURFACE MOUNT, M9

Four (4) Whelen M9 Series Model # M9RC warning lights shall be provided. The warning lights shall incorporate Linear Super-LED® and Smart LED® technology. The M9RC configuration shall consist of 24 red Super-LEDs and a clear optic polycarbonate lens.

The lights will be installed as follows

NFPA ZONES B & D REAR, UPPER

Installed on the apparatus exterior sides, as far rearward on the upper portion of the body as possible, will be two (2) Whelen M9R Super LED red warning lights.

NFPA ZONES C, UPPER

Installed on the rear of the apparatus exterior, in the upper outer corners, will be two (2) Whelen M9R Super LED red warning lights.

The M9RC shall utilize optic collimators and a metalized reflector for maximum illumination. The warning lights shall include an internal flasher with 164 Scan-Lock™ flash patterns including a variety of CA Title 13 compliant patterns, left/right, top/bottom, in/out, and steady burn. The M9RC shall also provide synchronize and low power features. The warning lights shall meet KKK 1822F, NFPA 1901, and SAE specifications.

The lens/reflector assembly shall be sealed and resistant to water, moisture, dust, and other environmental conditions. The hard-coated lens shall provide extended life/luster protection against UV and chemical stresses. The light engine shall be installed at the rear of the unit and be vacuum tested to ensure proper sealing. The PC board shall be conformal coated for additional protection.

All lights will be installed using M9FC Chrome Flange. Lens Color is to be Clear

NFPA LOWER LEVEL LIGHTING PACKAGE, M6

The following lower level warning light package will be installed as follows:

NFPA ZONE A. LOWER

Two (2) Whelen M6 Super LED warning lights will be installed on the front of the apparatus, one (1) each side.

NFPA ZONES B & D, LOWER FRONT

Two (2) Whelen M6 Super LED warning lights will be installed on the front forward edge of either the cab or the extended front bumper, one (1) each side.

NFPA ZONES B & D, LOWER MIDSHIP

Two (2) Whelen M6 Super LED warning lights will be installed adjacent to the rear fender housing, one (1) each side.

NFPA ZONES B & D, LOWER REAR

Two (2) Whelen M6 Super LED warning lights will be installed at the rearmost portion of the sides of the apparatus, one (1) each side.

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NFPA ZONE C, LOWER

Two (2) Whelen M6 Super LED warning lights will be installed below the stop, turn and backup lights, one (1) each side.

All M6 Super LED Lights will be installed in chrome flanges.

TRAFFIC ADVISOR

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

The solid state traffic advisor will be vibration resistant. The TAL65 will include model TACTLD1 control head that includes remote flash control. The TACTLD1 will have four programmable directional sequence flash patterns of left, right, split, and flash. The LED display on the control head will replicate the TAL65 directional sequence. The traffic advisor control head will have a rear panel dip switch for the ability to set eight additional Scan-Lock™ flash patterns. The LED modules are covered by a five year factory warranty. The TAL65 will have for mounting PEM nuts/thu-bolt end caps with stainless steel hardware to surface mount.

BACK-UP ALARM

A Code 3, model # CA248 NFPA APPROVED, 97 dBA back-up alarm, will be provided and installed at the rear of the apparatus under the tailboard. The back-up alarm will activate automatically when the transmission is placed in reverse gear and the ignition is in the "on" position.

AIR HORN(S) FURNISHED BY CHASSIS MANUFACTURER

The air horns on the chassis will be furnished by the chassis manufacturer and installed on each side of the chassis hood.

The air horn(s) will be controlled by a foot switch on the officer's side and the steering horn button on driver's side. An air horn/electric DOT horn selector switch will be provided on the dash for the driver's steering horn button.

ELECTRONIC SIREN

One (1) Whelen # 295SLSA1, 100 watt electronic siren will be provided featuring: bottom mount control head in cab, "Si-Test" self-diagnostic feature, six (6) function siren, radio repeat and public address.

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

SIREN SPEAKER (S)

One (1) Whelen, model # SA315P siren speaker will be installed under the bumper and will wired to the electronic siren.

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HALE SIDEKICK MODULE -

PUMP

- 500 GPM
- SINGLE STAGE
- PTO DRIVEN

A Hale model MBP-500 PTO driven pump will be provided and installed.

PUMP ASSEMBLY

The pump will be of a size and design to mount on the chassis rails of commercial and custom truck chassis and have a maximum capacity of 500 gallons per minute (U.S. GPM), NFPA rated performance.

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

The engine will provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.

The entire pump, both suction and discharge passages will be hydrostatically tested to a pressure of 600 PSI. The pump will be fully tested at the pump manufacturer's factory to performance specs as outlined by the latest NFPA Pamphlet No. 1901. Pump will be free from objectionable pulsation and vibration. The pump body and related parts will be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI. All moving parts in contact with water will be of high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.

PUMP SHAFT

The pump shaft will be rigidly supported by two deep groove ball bearings for minimum deflection. The pump shaft will be heat-treated, electric furnace, corrosion resistant, stainless steel.

IMPELLER

The pump impeller will be hard, fine grain bronze of the mixed flow design: accurately machined, hand ground and individually balanced. The vanes of the impeller intake eye will be hand ground. The impeller will be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower. Impeller will be keyed to pump shaft and locked in place with a stainless steel lock nut.

GEARBOX

Hale Silencer Series Pumps are equipped with a B Series Gearbox that utilizes helical gears to reduce operating noise. To accommodate a wide range of engines, transmissions, and PTOs, this speed increasing gearbox is available in a variety of ratios. All Silencer series pumps feature a standard water cooler that uses water flowing through the pump to lower gearbox temperatures when required.

PUMP RATIO

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

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

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MAIN PUMP MOUNTS-PTO

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

U.L. TEST POINTS

Two (2) U.L. test points shall be mounted on the pump panel for testing of the vacuum and pressures. The test points shall be a single piece with individual ports for suction and discharge.

CERTIFICATION

The pump will perform and meet the following tests:

- 100% of rated capacity @ 150 PSI net pump press.
- 100% of rated capacity @ 165 PSI net pumps press.
- 70% of rated capacity @ 200 PSI net pump press.
- 50% of rated capacity @ 250 PSI net pump press.

Pump shall be tested at manufacturer under full NFPA suction conditions.

PUMP CERTIFICATION TEST PLATE

A permanently affixed plate shall be installed at the pump operators position that will provide the rated discharge and pressures together with the speed of the engine as determined by the certification test for each unit, the position of the parallel/series pump used and the no load governed speed of the engine as stated by the engine manufacturer on a certified brake horsepower curve.

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PRIMING PUMP

A Trident Model #31.003.7 air operated priming system shall be installed. The unit shall be of all brass and stainless steel construction and designed for fire pumps of 1,000 GPM (3,750 LPM) or less. Due to corrosion exposure no aluminum or vanes shall be used in the primer design. The primer shall be two-barrel design with ¾" NPT connection to the fire pump.

The primer shall be mounted above the pump impeller so that the priming line will automatically drain back to the pump. The primer shall also automatically drain when the panel control actuator is not in operation. The inlet side of the primer shall include a brass 'wye' type strainer with removable stainless steel fine mesh strainer to prevent entry of debris into the primer body.

Performance, Safety, and NFPA Compliance

The priming system shall be capable to a vertical lift to 22 inches of mercury and shall be fully compliant to applicable NFPA standards for vertical lift. The system shall create vacuum by using air from the chassis air brake system through a two-barrel multi-stage internal "venturi nozzles" within the primer body. The noise level during operation of the primer shall not exceed 75 Db.

Air Flow Requirements

The primer shall require a minimum of 13.2 cubic foot per minute air compressor and shall be capable of meeting drafting requirements at high idle engine speed. The air supply shall be from a chassis supplied 'protected' air storage tank with a pressure protection valve. The air supply line shall have a pressure protection valve set between 70 to 80 PSIG.

Primer Control

The primer control shall have a manually operated, panel mounted "push to prime" air valve; which will direct air pressure from the air brake storage tank to the primer body. To prevent freezing, no water shall flow to and from the panel control.

This priming system will be capable of priming at up to four (4) locations.

MASTER PUMP DRAIN

The pump shall be equipped with a Class 1 Master Pump drain to allow draining of the lower pump cavities, volute and selected water carrying lines and accessories. The drain shall have an all brass body with a stainless steel return spring.

6" STEAMER INLET

One 6" (15.24cm) steamer inlets will be provided on the left side. The inlet shall have long handle chrome vented caps and a screen.

RELIEF VALVE

There shall be one (1) suction side stainless steel relief pump valve provided on the pump system.

PUMP MODULE PANEL

The pump module panel shall be 14 gauge brushed stainless steel.

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PIPING AND MANIFOLDS

All the plumbing and/or piping in the pump module shall be of 304 stainless steel or flexible piping for long life. All stainless steel castings shall be a minimum of schedule 40. All NPT pipe thread connections larger than ¾" connections shall be avoided in the construction of the plumbing system. The following valves shall have groove connection: rear discharge, tank fill, all 2" and 2-½" (5.08 and 6.35cm) pre-connect valves.

The flexible piping shall be black SBR synthetic rubber hose with 300 working pounds and 1200 pounds burst pressure for sizes 1.5 through 4". Sizes ¾", 1" and 5" are rated at 250 pound working and 1000 pound 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 degrees F to 210 degrees F. Full flow couplings are precision machined from high tensile strength stainless steel. All female couplings are brass. ¾" and 1" male and Victaulic couplings are brass.

PUMP COOLER AND ENGINE COOLER VALVES

An engine cooler and pump cooler valve shall be installed in the instrument panel. The valves shall be a 1/4" multi-turn valve installed thru the instrument panel and labeled.

TOTAL PRESSURE GOVERNOR PLUS (TPG+)

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

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

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

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

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MASTER GAUGES

Class 1 3-½(8.89cm) gauges shall be provided. The master discharge gauge shall indicate pressure from 0 to 600 PSI. The master intake gauge shall indicate pressure from -30hg to 600 PSI. The gauges shall be Interlube filled pressure gauges and handle pressures from 0 to 600 PSI. The pressure gauge shall be fully filled with pulse and vibration dampening Interlube® to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature material and be sealed from the water system using an isolating Sub Z diaphragm located in the stem.

DISCHARGE GAUGES

Individual Class 1 2-½(6.35cm) line gauges for each 2" (5.08cm) or larger discharge shall be provided and mounted adjacent to the discharge valve control handle. The gauges shall indicate pressure from 0 to 400 PSI. The pressure gauge shall be fully filled with pulse and vibration dampening Interlube® to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature material and be sealed from the water system using an isolating Sub Z diaphragm located in the stem. A colored bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

VALVE CONTROLS

Class 1 locking push pull control rods shall be provided for valve actuation as required. The chrome plated zinc handles shall have a recessed area for 1" x 3" (2.54 x 12.70cm) identification tags. The controls shall be locked in any position.

DISCHARGE VALVES

The valves including the ball shall be constructed of 304 stainless steel. The valves shall be bi-directional with full flow capability. The valves shall be of fixed pivot ball design with a flow pressure rating to meet NFPA-1901 standards. The valve shall have a single piece seat and seal design and shall have an operating pressure of 400 psi. All 3.0" (7.62cm) discharge valves shall be supplied with a true slow close mechanism per NFPA specifications. The valve shall be warranted for a period of ten (10) years on all stainless steel components, against defects in design and manufacturing processes.

INDIVIDUAL DRAINS

All 2" (5.08cm) or larger discharge outlets shall be equipped with a ¾" ball valve drain valve or larger.

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2" TANK FILL

One (1) 2"(5.08cm) discharge with a stainless steel valve shall be plumbed to the tank. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 1 1/2"(3.81cm) valve outlet terminates with 1 1/2"(3.81cm) grooved connection. Valve shall be controlled at the side panel with a chrome-plated push/pull locking "T" handle mounted on the pump panel.

4" TANK TO PUMP

One (1) 4" stainless steel valve shall be installed between the water tank and the pump. The valve shall be a quarter turn ball type. The valve shall be actuated with an air cylinder. The valve shall be controlled with a switch at the pump panel.

LEFT SIDE AUXILLARY SUCTION

One (1) 2-1/2" (6.35cm) intake with a stainless steel valve shall be located on the left side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The valve shall be controlled at the side pump panel with a Swift handle. The valve shall come equipped with a chrome plug, chain, inlet strainer, 2-1/2" (6.35 cm) NST chrome inlet swivel and 3/4" drain valve.

DRIVER SIDE FRONT DISCHARGE

One (1) 2-1/2" (6.35cm) discharge with a stainless steel valve shall be located on the left side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-1/2" (6.35cm) outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2-1/2" (6.35cm) MNST threads. A chrome vented cap and chain shall also be supplied. The valve shall be controlled at the side panel with a Swift handle. There shall be a Class 1 2 1/2" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn 3/4" drain valve. The discharge must be capable of flowing 700 GPM or greater.

DRIVER SIDE REAR DISCHARGE

One (1) 2-1/2" (6.35cm) discharge with a stainless steel valve shall be located on the left side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-1/2" (6.35cm) outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2-1/2" (6.35cm) MNST threads. A chrome vented cap and chain shall also be supplied. The valve shall be controlled at the side panel with a Swift handle. There shall be a Class 1 2 1/2" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn 3/4" drain valve. The discharge must be capable of flowing 700 GPM or greater.

1" DISCHARGE - FRONT BUMPER HOSE REEL

One (1) 1" discharge with a stainless steel valve shall be located on the front bumper. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The valve shall be actuated with an electric motor. The valve shall be controlled with a switch at the pump panel. There shall be a Class 1 2 1/2" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn 3/4" drain valve.

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HORIZONTAL PRECONNECT # 1

A preconnected discharge will be supplied and plumbed from the apparatus pump to a hose tray on top of the driver side compartments. The hose preconnect tray will be constructed of aluminum treadplate.

The preconnect will be designed to have a minimum total capacity of *three and one half (3.5) cubic feet as required by NFPA - 1901* to house a minimum of 200 feet of 1-3/4" fire hose.

The preconnected discharge will terminate above the hose tray bottom (floor) with an inch and one half (1-1/2") NSTM chicksan swivel adapter. The preconnect hose tray bottom (floor) will be smooth aluminum. The pre-connected fire hose will be able to be pulled off from the rear of the fire apparatus without hose kinking at the coupling connection.

The preconnected discharge will be plumbed using two inch (2") schedule ten (10) stainless steel piping and / or flexible hose; forty five degrees (45°) elbows and a limited number of ninety degree (90°) sweep elbows in an assembly from the pump to the pre-connected hose tray.

A minimum of one (1) grooved pipe coupling will be supplied and assembled in a manner that will allow for flex and ease of service.

The crosslay discharge will be controlled Akron Brass 2" #8920 valve and an Innovative Controls "Push/Pull" control handle.

HOSEREEL

A Hannay electric rewind hose reel will be installed between the frame rails in the extended front bumper. The hose reel will be constructed from polished aluminum and will remain unpainted. The reel will have the capacity of 150' of 1" booster hose. The reel will include a 1/2 horsepower motor.

The booster reel discharge will be plumbed from the valve to the hose reel location; the plumbing will use two inch (2") high pressure hose and/or stainless steel piping.

The reel valve control will be located on the pump panel.

A weather resistant momentary switch to control the rewind feature of the reel will be installed adjacent to the reel on the front bumper.

HOSE ROLLER – SET

A Hannay CH-2 hose roller set will be installed on the reel to assist with hose rewind.

HINGED ALUMINUM TREADPLATE COVER ON FRONT BUMPER

The front bumper installed hose reel will be covered by an aluminum tread plate cover that will be hinged at the rear by a full length stainless steel piano type hinge and latched at the front by a quarter-turn latch.

The lid will be raised to completely cover the reel. One (1) TecNiq LED light will be installed with a switch that will activate the light when the lid is opened and the parking brake applied.

The door will be wired to the "DO NOT MOVE" door open warning light.

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2000 GALLON POLY WATER TANK

UPF POLY-TANK IIE THE NEW GENERATION

The tank shall have a capacity of 2000 U.S. Gallons Complete with a Lifetime Warranty.

The tank manufacturer shall mark the tank and furnish notice that indicates proof of warranty. The purpose of the markings and notice is to inform department personnel who store, stock, or use the tank that the unit is under warranty. Markings may be brief but should include a short statement that a warranty exists, the substance of the warranty, its duration, and who to notify if the tank is found to be defective.

CONSTRUCTION

The UPF POLY-TANK IIE shall be constructed of 1/2 inch thick PT2ETM polypropylene sheet stock. This material shall be a non-corrosive stress relieved thermo-plastic, natural in color, and U.V. stabilized for maximum protection.

The booster tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments. All joints and seams shall be nitrogen welded and tested for maximum strength and integrity. The top of the booster tank is fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removability. The transverse swash partitions shall be manufactured of 3/8 inch PT2ETM polypropylene (natural in color) and extend from approximately 4 inches off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8 inch PT2ETM polypropylene (natural in color) and extend from the floor of the tank through the cover to allow for positive welding and maximum integrity. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are welded to each other as well as to the walls of the tank.

FILL TOWER AND COVER

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2 inch PT2ETM polypropylene and shall be a minimum dimension of 8 inch x 8 inch outer perimeter. The tower shall be located in the left front corner of the tank unless otherwise specified by the purchaser in Special Provisions. The tower shall have a 1/4 inch thick removable polypropylene screen and a PT2ETM polypropylene hinged-type cover. Inside the fill tower, approximately 4 inches down from the top, shall be fastened a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 4 inches that is designed to run through the tank and shall be piped behind the rear wheels where specified by the purchaser in Special Provisions so as to maximize traction.

The tank cover shall be constructed of 1/2 inch thick PT2ETM polypropylene, natural in color, and UV stabilized, to incorporate a multi three-piece locking design which allows for individual removal and inspection if necessary. The tank cover shall be recessed 3/8 inch from the top of the tank and shall be welded to both sides and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2 inch polypropylene dowels spaced a maximum of 30 inches apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2 inch x 13 inches apart to accommodate the lifting eyes.

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2000 GALLON POLY WATER TANK, CONT'D.

SUMP

There shall be one (1) sump constructed of 1/2 inch PT2ETM polypropylene and be located in the left front quarter of the tank, On all tanks that require a front suction, a 3 inch schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3 inch NPT threaded outlet on the bottom for a drain plug. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 2 inches above the sump.

An additional sump will be installed for each quick dump installed on the apparatus to improve free flow evacuation of water from the tank, which will decrease dump time and increase amount of water to be evacuated from the tank. This sump will extend a minimum of 7" below the bottom of the tank to allow for all of the water to be evacuated.

The sump will also be designed as to allow the gate or "plunger" control on the valve to open in such a manner that will not block the exit flow of the water in any way. Failure to incorporate this design into the tank will be cause for immediate rejection of the bid.

OUTLETS

There will be two (2) standard tank outlets: one for tank-to-pump suction line which shall be a minimum of 3 inch NPT coupling; and, one for a tank fill line which shall be a minimum of 3 inch pipe, NPT coupling. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1,000 G.P.M. The addition of rear suction fittings, nurse valve fittings, dump valves fittings, and through tank sleeves to accommodate rear discharge piping must be specified in Special Provisions. All auxiliary outlets and inlets must meet all NFPA 1900 guidelines in effect at the time of manufacture.

MOUNTING

The UPF POLY-TANK IIE shall rest on the body cross members in conjunction with such additional cross members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor. In cases where overall height of the tank exceeds 40 inches, cross member spacing must be decreased to allow for not more than 400 square inches of unsupported area.

The tank must be isolated from the cross members through the use of hard rubber strips with, a minimum thickness and width dimension of .250 inch x 2 inch and a minimum Rockwell Hardness of 60 durometer. Additionally, the tank must be supported around the entire bottom outside perimeter and captured both front and rear as well as side to side to prevent tank from shifting during vehicle operation.

A picture frame type cradle mount shall be utilized with a minimum of 2 inch x 2 inch x .250 inch mild steel, stainless steel, or aluminum angle. Where aluminum or steel tubing and channel sub frames are incorporated in the body structure, the use of corner angles having a minimum dimension of 4 inch x 4 inch x .250 inch by 6 inches high are permitted for the purpose of capturing the tank.

Although the tank is designed on a free floating suspension principle, it is required that the tank have adequate hold down restraints to minimize movement during vehicle operation. If proper retention has not been incorporated into the apparatus hose floor structure, an optional mounting restraint system shall be located on top of the tank, half way between the front and the rear on each side of the tank. These stops can be constructed of steel, stainless steel or aluminum angle having minimum dimensions of 3 inch x 3 inch x .250 inch and shall be approximately 6 to 12 inches long. These brackets must incorporate a hard rubber isolating pad with a minimum thickness of .250 inch affixed on

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the underside of the angle. The angle should then be bolted to the body side walls of the vehicle while extending down to rest on the top outside edge of the upper side wall of the tank.

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2000 GALLON POLY WATER TANK, CONT'D.

Internal mounting block design and hose bed floor must be so designed that the floor slat supports extend full width from side wall to side wall and are not permitted to drop off the edge of the tank or in any way come in contact with the individual covers where a puncture could occur. Hose floor loading must support up to 200 lbs. per sq. foot and must be evenly distributed whenever possible. Other equipment such as generators, portable pumps, etc. must not be mounted directly to the tank top unless provisions have been designed into the poly-tank for that purpose. The tank shall be completely removable without disturbing or dismantling the apparatus structure.

CAPACITY CERTIFICATION

All water and foam tanks shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. Each Poly-Tank® III is delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on weight. Engineering estimates for capacity calculations shall not be permitted for capacity certification.

CENTER OF GRAVITY

A center of gravity calculation shall be determined for each tank and provided as requested in order to provide the apparatus manufacturer with the necessary data to design and certify the apparatus with respect to the NFPA requirements regarding rollover stability. This information may be used by the apparatus manufacturer to assist in the calculation of the apparatus's ability to meet the tilt table static rollover threshold or calculated Center of Gravity requirements per NFPA. A center of gravity and weight calculation for both empty and full conditions shall be required with each tank.

TANKNOLOGY™ TAG

A tag shall be installed on the apparatus in a convenient location and contain pertinent information including a QR code readable by commercially available smart phones. The information contained on the tag shall include the capacity of the water and foam (s), the maximum fill and pressure rates, the serial number of the tank, the date of manufacture, the tank manufacturer, and contact information. The QR code will allow the user to connect with the tank manufacturer for additional information and assistance.

WARRANTY

For normal fire department applications, the tank shall have a limited Lifetime warranty that provides warranty service for the life of the fire apparatus in which the tank is installed. Warranties are transferable if the apparatus ownership changes by requesting the transfer from UPF. In applications where the tank will be subject to severe conditions, the tank may have a warranty unique to the application that is clearly defined for each such application. POLY-TANK® is a registered trademark of United Plastic Fabricating, Inc. PT3™, PolyProSeal™, Full-Floor Design™ and Tanknology™ are all trademarks of United Plastic Fabricating, Inc. ©2012 Unit

VENT & OVERFLOW PIPING

The water fill tower will be constructed with an eight inch (8") I.D. schedule 40 P.V.C. combination vent / overflow pipe running from the fill tower, through the apparatus tank to bottom of the apparatus tank to allow water to overflow behind the apparatus chassis rear axle.

With the increased size of the vent tubing, the fill tower dimensions will be increased to 12" x 12" outer perimeter measurements.

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NEWTON 10" STAINLESS STEEL DUMP WITH ELECTRONIC ACTUATOR - REAR

The rear of the water tank will be equipped with a 10" Newton Stainless Steel Dump Valve, model #1080-34. The dump valve will be electronically actuated. The dump valve setup will be capable of discharging the water tank contents at a rate of at least 1800 GPM.

NEWTON SWIVEL CHUTE - #6012SW -34 STAINLESS STEEL

The Newton Dump will feature a stainless-steel "swivel" chute attachment. The swivel allows for water to be off loaded from the apparatus to either the rear, right side or left side of the apparatus by turning the swivel chute.

SWITCHING - REAR DUMP - DRIVER SIDE BODY REAR

The apparatus rear dump switching will be installed on the driver's side of the rear apparatus body panel. This switch will be a "toggle" type switch installed inside a cast protective enclosure with a hinged door. A light will be provided and installed inside the cast enclosure to provide illumination for the switching area. This light will activate whenever the apparatus marker lights are turned to the "on" position.

SWITCHING - REAR DUMP - OFFICER SIDE BODY REAR

The apparatus rear dump switching will be installed on the officer's side of the rear apparatus body panel. This switch will be a "toggle" type switch installed inside a cast protective enclosure with a hinged door. A light will be provided and installed inside the cast enclosure to provide illumination for the switching area. This light will activate whenever the apparatus marker lights are turned to the "on" position.

3" DRIVER SIDE DIRECT TANK FILL

One (1) 3" NST direct tank fill port will be supplied and installed at the rear of the apparatus body, as low as possible on the driver side. This direct tank fill will be gated with an Akron three inch (3") ball valve, including swing handle. The direct tank fill will feature a 30° elbow terminating with a 2-1/2" NST female swivel connection. There will be a quarter turn drain valve installed to bleed off excess pressure, the drain valve hose will be routed beneath the apparatus rear step area.

3" OFFICER SIDE DIRECT TANK FILL

One (1) 3" NST direct tank fill port will be supplied and installed at the rear of the apparatus body, as low as possible on the officer's side. This direct tank fill will be gated with an Akron three inch (3") ball valve, including swing handle. The direct tank fill will feature a 30° elbow terminating with a 2-1/2" NST female swivel connection. There will be a quarter turn drain valve installed to bleed off excess pressure, the drain valve hose will be routed beneath the apparatus rear step area.

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ITL-40 TANK LEVEL GAUGE

The apparatus shall be equipped with a Class1 "ITL-40" Tank Level Gauge for indicating water or foam level. The Tank Level Gauge shall indicate the liquid level or volume on an easy to read LED display and show increments of 1/8 of a tank.

Each tank level gauge system shall include:

- 1) A pressure transducer that is mounted on the outside of the tank in an easily accessible area. Sealed foam tanks will require zero pressure vacuum vents.
- 2) A super bright LED display viewable from 180 degrees with a visual indication at nine accurate levels.
- 3) A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power. Additional (slave) displays (if requested) are to be easily integrated and will receive data from the same source as the Master Display. No additional transducers shall be required.
- 4) The system shall include the ability to display "text messages"
- 5) The system shall include built-in diagnostic capabilities.

WATER TANK INDICATOR MOUNTED IN CAB

A Class 1 model #106878 miniature tank indicator will be installed in the apparatus cab at the location specified by the customer. The indicator will show the volume of water in the tank on four LED's on the display. The miniature display will be rocker size.

The miniature indicator will receive input information from the primary water tank level indicator. A Class 1 #106877 driver module will be provided to facilitate communication between the miniature indicator and the primary indicator.

Location in cab of water tank indicator: TBD

TANK INDICATOR REMOTE LIGHT DRIVER

A Class 1 remote light driver shall be installed. The driver shall provide four (4) separate outputs to control remote lights. The lights shall show 1/4, 1/2, 3/4, and full tank. When power is applied the driver shall run a test and cycle each remote light on and off. When the tank is less than 1/4 full the 1/4 tank light shall blink.

The remote light driver shall receive input information from the Class 1 pump panel indicator.

Location of tank indicator remote light driver shall be: behind the pump panel

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TANK WATER LEVEL LIGHTHEAD

Three (3) Whelen Strip-Lite™ series 5mm LED model # PSTANK will be provided and installed on the exterior of the apparatus at the location specified by the customer. The 12v water level light will incorporate 24 green, 24 blue, 24 amber, and 24 red 5mm LEDs and a clear non-optic hard coated green LEDs indicates a full tank, the blue indicates half, the amber indicates quarter, and red indicates empty. The hard coated lens will provide extended life/luster protection against UV and chemical stresses. The lens will be sealed and resistant to water, moisture, dust, and other environmental conditions. The encapsulated PC board will provide additional protection against environmental elements. The solid state water level light will be vibration resistant. A tank sensor for water level will be provided and installed in the on-board apparatus tank. The PSTANK light is covered by a five year factory warranty.

Location of water tank indicators will be:

- One (1) each side of body adjacent to the front scene light
- One (1) on the rear of the body, centered as high as possible.

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DESIGN OF APPARATUS BODY

With knowledge of the extreme conditions encountered in the fire service, the tough, reliable, heavy-duty body must be constructed to withstand the torsional and dynamic stress placed upon fire apparatus in real world "mission critical" conditions.

All aluminum must be 5052-H32 or 6061-T6. The 6061-T6 aluminum has an ultimate tensile strength of 45,000 psi and yield strength of 40,000 psi. The hardness is measured at 95 on the Brinell measure and B60 on the Rockwell scale.

The 5052-H32 possess ultimate tensile strength of 33,000 psi and yield strength of 28,000 psi. Its Brinell Hardness measure is 60

The manufacturer shall only use aluminum that has a minimum of 95.7% pure aluminum in its products and must conform to AMS QQ-A-250/8 and ASTM B209. Weight is 2.654 lbs. per sq. Ft.

The design and materials are specifically chosen for the mission of the apparatus. All welds are performed with utmost care and thoroughly inspected after each weld operation and prior to sheet metal being installed on the frame.

A three dimensional CAD drawing will be available prior to beginning construction of the vehicle.

The apparatus body side and compartment assemblies will be designed and constructed in a manner that provides the maximum strength and durability under any and all apparatus operating conditions to ensure that yield stress is not exceeded.

Sheet and tubular extrusions will be precision cut with tolerances not to exceed .001" using the latest in CNC Water Jet or laser cutting methods.

All fabricated parts and body structural members will be protected from corrosion. A dissimilar metals isolation barrier will be supplied to protect against electric corrosion. The design of the body will incorporate removable panels for accessing spring hangers, rear body mounts and fuel tank sending units.

The apparatus body assembly will be of an all-welded configuration. The apparatus body will be isolated completely from the cab and pump module structure.

APPARATUS BODY SUB-FRAME - ALUMINUM

The apparatus body sub-frame will be an all welded configuration utilizing a combination of 3" x 2" x 3/16" 6061-T6 thick walled structural tubing; 2" x 2" x 3/16" 6061-T6 thick walled structural tubing; and 3" x 3/4" flat-bar structural channel.

The sub-frame will be designed to totally support the full length and width of the apparatus body and will be welded to the apparatus body side compartments by use of reinforcement plates. This configuration incorporates the apparatus compartments into an integral part of the apparatus body weldment.

The sub-frame will be bolted to the apparatus chassis frame at a minimum of six (6) points using 1/2" minimum grade 8 spring loaded "U" bolts.

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APPARATUS BODY TANKER- SINGLE AXLE

The apparatus body and compartments shall be constructed of 3/16" 5052-H34 aluminum sheet and tubular extrusions. The body is designed specifically for emergency use and built to meet heavy duty fire service uses.

The body shall be MIG welded construction for maximum strength and integrity for the entire life of the apparatus.

Due to the rigorous duty of emergency apparatus, any non-heatable alloys in structural areas shall not be used, required or permitted in the construction.

The body shall be sized to fit a 2000 gallon polypropylene booster tank. The body shall be fitted with f compartments and fitted to a pump enclosure.

Both the body and the pump enclosure shall be free standing, modular units, not built on the chassis, but mounted on the chassis with minimal chassis modifications.

All horizontal surface and the rear body surface shall be welded aluminum fire apparatus quality diamond plate. All compartment seams shall be sealed by using permanent pliable silicone caulking. The compartments shall have 4 inch x 4 inch louvered vent panels for adequate ventilation.

DRIVER'S SIDE COMPARTMENTATION

One (1) compartment, with a roll up door, will be provided behind the rear wheels. Compartment dimensions 32" high x 48" wide x 25" deep

OFFICER'S SIDE COMPARTMENTATION

One (1) compartment, with a roll up door, will be provided forward of the rear wheels. Compartment dimensions 32" high x 48" wide x 25" deep

One (1) compartment, with a roll up door, will be provided behind the rear wheels. Compartment dimensions 32" high x 48" wide x 25" deep.

Above the low side compartment shall be storage area for 2100 gallon folding tank. The storage area shall be fully enclosed and have a polished stainless steel access door on the rear of the apparatus.

The exterior finish of the compartment shall be **painted to match the rest of the body.**

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SCBA STORAGE DRIVER SIDE - FRONT SECTION OF FENDER

A storage compartment will be inserted into the fender to provide a storage area for three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size). The storage area will be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius) and will be 26" deep. The compartment will have a non-abrasive lined cradle storage area for each of the three (3) devices.

This storage compartment will provide a minimum of 2.3 cubic feet of storage space.

SCBA STORAGE DRIVER SIDE - REAR SECTION OF FENDER

A storage compartment will be inserted into the fender to provide a storage area for three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size). The storage area will be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius) and will be 26" deep. The compartment will have a non-abrasive lined cradle storage area for each of the three (3) devices.

This storage compartment will provide a minimum of 2.3 cubic feet of storage space.

SCBA STORAGE OFFICER SIDE - FRONT SECTION OF FENDER

A storage compartment will be inserted into the fender to provide a storage area for three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size). The storage area will be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius) and will be 26" deep. The compartment will have a non-abrasive lined cradle storage area for each of the three (3) devices.

This storage compartment will provide a minimum of 2.3 cubic feet of storage space.

SCBA STORAGE OFFICER SIDE REAR SECTION OF FENDER

A storage compartment will be inserted into the fender to provide a storage area for three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size). The storage area will be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius) and will be 26" deep. The compartment will have a non-abrasive lined cradle storage area for each of the three (3) devices.

This storage compartment will provide a minimum of 2.3 cubic feet of storage space.

FENDER STORAGE COMPARTMENT DOORS PAINTED

The SCBA or extinguisher compartment doors will be finish painted job color. The doors will have a spring loaded full length stainless steel piano type hinge with chrome plated thumb latches.

The compartment doors will be wired to the "door ajar" warning lights in the cab of the apparatus.

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HOSE BED

The hose bed will be located directly above the booster tank and will be free from all sharp objects such as bolts, nuts, etc., to avoid damage to fire hose.

The hose bed will provide approximately 141 cubic feet of hose storage area for 2 ½" or larger fire hose, exceeding NFPA 1901 minimum pumper hose storage requirements. The hose bed depth will be 16".

The apparatus weight analysis will be based on 800' of 2 ½" hose unless otherwise specified. If the hose load to be carried exceeds this minimum, the purchaser must advise the manufacturer prior to contract so adequate chassis carrying capacity can be provided.

For added strength and rigidity, the hose bed side walls will be (3) inches thick. The top edge of the front wall will be flanged inward two (2) inches and downward one (1) inch.

HOSE BED PARTITIONS

One (1) fully adjustable 3/16", brushed finish, aluminum hose bed partition will be provided. The partitions will be easily adjustable by means of Unistrut channels located at the front and rear of the hose bed. Partitions will be removable for access to the booster tank.

HAND HOLD CUTOUTS

The tailboard end of the partitions will have a 6" slot cut into the partition to act as a hand hold to assist in access to the hose bed.

HOSE BED FLOORING

Flooring to be constructed from extruded aluminum and be properly spaced for ventilation. The flooring will be smooth and free from sharp edges to avoid hose damage. The hose bed floor will be removable to provide access to inner body framework.

HOSE BED COVER

An apparatus hose bed cover will be supplied and installed. The hose bed cover will be made from twenty-two (22) ounce, heavy-duty vinyl coated polyester fabric (TXN 226). The hose bed cover will be sewn with ultraviolet resistant thread and will have two inch (2") wide nylon webbing sewn around the outer perimeter to provide additional strength.

The cover will be fastened to the top front body flange with Velcro and quarter turn fasteners. The cover will be fastened to the top side body flanges with Velcro. A weighted flap will be provided on the rear of the cover with two (2) bungee cords.

The hose bed cover will be **red** in color.

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ROM ROLL UP DOORS

There shall be R•O•M Series IV roll-up shutter doors installed on each exterior compartment. Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum.

Shutter slats will feature a double wall extrusion 0.315" thick with a concave interior surface to minimize loose equipment jamming the shutter door closed. Shutter slats will feature an interlocking end shoe to prevent side to side binding of the shutter door during operation. Slat must have interlocking joints with an inverted locking flange. Slat inner seal shall be a one piece PVC extrusion; seal design will be such to prevent metal to metal contact while minimizing dirt and water from entering the compartment.

Shutter door track shall be one piece design with integral overlapping flange to provide a clean finished look without the need of caulk. Door track shall feature an extruded Santoprene rubber double lip low profile side seal with a silicone co-extruded back to reduce friction during shutter operation.

Shutter bottom rail shall be a one piece double wall extrusion with integrated finger pull. Finger pull shall be curved upward with a linear striated surface to improve operator grip while operating the shutter door. Bottom rail shall have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene; it will be a double "V" seal to prevent water and debris from entering compartment. Bottom rail lift bar shall be a one piece "D" shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bar shall have a wall thickness of 0.125". Lift bar shall be supported by no less than two pivot blocks; pivot blocks shall be constructed from Type 66 Glass filled reinforced nylon for superior strength. Bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Shutter door shall have an enclosed counter balance system. Counter balance system shall be 4" in diameter and held in place by 2 heavy duty 18 gauge zinc plated plates. Counter balance system shall have 2 over-molded rubber guide wheels to provide a smooth transition from vertical track to counter balance system; no foam material of any kind shall be permitted or used in this area.

A magnetic door ajar switch shall be provided and installed within the shutter door strike block. Strike block will be mounted to the door track outside of the compartment. Door switch will be controlled by a magnetic end cap installed into the shutter lift bar. Door switch will provide a ground signal to a relay or multiplexing device to control compartment lighting and/or warn operator door is open.

Shutter door assembly shall be manufactured and assembled in the United States, no exceptions

SWEEP-OUT COMPARTMENT FLOORS

Compartment floors will be welded to the compartment walls and have a sweep out design for easy cleaning.

Compartment with hinged doors will have the door opening flanges bend down to produce the sweep-out design.

Compartment with roll-up style doors will have the external floor flange stepped down, 1/2" high x 2" deep, to produce a sealing surface for the roll-up doors below the compartment floor. The sweep out design will also permit easy cleaning.

COMPARTMENT TOPS

The compartment tops will be covered with a polish finished aluminum tread plate on both sides.

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COMPARTMENT DRIP MOLDING

Compartment tops over all apparatus side compartments will have a forty five 45° flange formed out to provide protection against water runoff. A second extruded drip molding piece will be provided between lower compartments and other high side compartments, when auxiliary compartments are provided.

COATED FASTENERS

All fasteners on the exterior will be stainless steel coated screws. The screw threads will be coated with a reusable, self-locking, sealant material that will provide vibration resistance. The screw heads will be coated with a sealant element that will prevent galvanic corrosion between dissimilar metals. The non-coated screws will only be used when provided as part of a vendor supplied component installation.

COMPARTMENT LOUVERS

Ventilation between apparatus compartments to atmosphere will be provided and located to avoid water entry into the compartments of the apparatus.

ACCESS PANELS

Removable access panels will be supplied in all lower compartments (if applicable) to access spring pins, fuel tank sender, electrical junction compartment and apparatus rear body mounts.

Protective panels will be located in the rear apparatus compartments that provide access to the lights and associated wiring. The covers will also serve as protective covers to prevent accidental damage to lights or wiring from tools or equipment located in the compartment.

TURTLE TILE ON COMPARTMENT FLOOR OR ON SHELVES

Each compartment and tray shall have black Turtle Tile installed:

BODY RUB RAILS

Aluminum tread plate rub rails will be supplied and installed at the base of the apparatus body, extending outward a minimum of 3/4", downward 2" and flanged inward 1". The apparatus rub rails will extend the full length of the main apparatus body and wrap around the rear apparatus body corners. The rub rails will be designed to bolt onto the apparatus body from the underside of the compartment area. This design will be used to prevent damage to the body side panels in the event of initial impact to this area. The body rub rails will be installed to provide ease of replacement.

BEAVERTAIL

The apparatus rear body beavertail area will be supplied with a squared off appearance to maximize the available compartment area, while providing additional support to the rear step support structure. The apparatus beavertail panels will be assembled in conjunction with the rear apparatus body corner panels. The assembly will provide a vertical mounting surface for apparatus tail lights at the rear portion of the apparatus body and additional storage space.

The inside of the beavertails will be supplied with a polished finish aluminum tread plate overlay.

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REAR STEP

The apparatus rear step will be eighteen (18) inches deep and will be supported by the rear beavertails. The step will be fabricated using "Grip Strut" and will be reinforced rigidly.

The rear edge of the step will be designed to accommodate the apparatus rear clearance lighting. This step will be bolted into place using a minimum of 1/2" gap between the step and the apparatus body panel.

STORAGE WELL - REAR BUMPER

The apparatus rear bumper assembly will have two (2) storage wells that provide storage for a three inch (3") fifty foot (50') section of fire hose. The storage wells will be fabricated using aluminum with a perforated floor design and mounted to the top of the apparatus tailboard.

REAR STEP - INTERMEDIATE

There will be an eight inch (8") bolt on intermediate rear step installed on the apparatus. The step will be fabricated using 3/16" aluminum tread plate. The step will a minimum of eight inches (8") deep by the full width of the apparatus rear tailboard.

PROTECTION PANELS - FRONT OF BODY

The apparatus will feature aluminum tread plate overlays and panels that will be installed on the front of the body compartment to protect the body.

PROTECTION PANEL - LOWER BODY REAR

The apparatus will feature aluminum tread plate overlays and panels that will be installed the full width of the apparatus body, in the area below the rear compartment and above the tailboard.

GRAB RAILS

All of the hand rails will be 1-1/4" outside diameter, knurled bright anodized aluminum extrusion, and designed to meet the latest NFPA 1901 requirements.

The use of molded gaskets installed between the handrail stanchion castings and the body surfaces will be used to prevent an electrolytic reaction between dissimilar metals and to protect the body paint.

LOCATION OF GRAB RAILS

The apparatus grab rails will be provided at the following specified locations. To comply with the latest NFPA 1901 requirements, additional grab rails will be provided adjacent to any additional steps.

TWO (2) REAR VERTICAL HAND RAILS

Two (2) vertical rails will be provided and installed on the rear edge of the apparatus beavertails; one (1) on each side.

ONE (1) HORIZONTAL HANDRAIL BELOW HOSEBED

One (1) horizontal, full width handrail will be provided and installed on the rear of the apparatus, below the level of the apparatus hose bed.

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FOLDING STEP(S) - OFFICER SIDE REAR OF BODY

Innovative Controls LED Lit folding step(s) with gasket(s), # 3004234-33-1-1-1-0, featuring a textured chrome plate finish will be supplied and installed on the officer side rear of body. This will provide NFPA compliant access (maximum of 18" height between steps) to an upper horizontal walking surface.

The step features dual LED lighting that provides step lighting and walkway area lighting. The step is 8.7" wide and 6.7" deep.

The step lighting will be wired to activate when the apparatus parking brake is applied.

APPARATUS SURFACES - STEPPING, STANDING & WALKING

All exterior surfaces of the apparatus that are designated by the manufacturer as stepping, standing or walking areas will be constructed of textured treadbrite aluminum. These areas will provide slip resistance on the surfaces, even when the surface is wet. All interior surfaces that are designated by the manufacturer as stepping, standing or walking areas shall be slip resistant when the surface is dry.

The degree of slip resistance will be in accordance with the latest edition of NFPA 1906.

There will be a sign on the rear of apparatus stating: "DO NOT RIDE ON REAR STEP, SERIOUS INJURY OF DEATH MAY RESULT."

SAFETY SIGN(S) - REAR STEP / CROSS WALKWAY(S)

NFPA required safety sign(s) will be located on the apparatus at the rear step, and at any cross walkway(s) to advise (warn) personnel that riding in or on these areas is prohibited while the apparatus is in motion.

WHEEL WELL LINERS - REAR

The apparatus will feature 1/8" wheel well liners; the wheel well liners will be welded to the apparatus sub-frame. The wheel well liners will extend from the outer wheel well body panel into the apparatus frame. Removable vertical splash shields located inward of the wheels, will be supplied and installed to allow access to hydraulic components. The fender liners will be completely washable. These liners will be designed to protect the front and rear compartments and main body supports from road grime, salt, dirt and corrosion.

FENDERETTES - REAR

The apparatus single axle fenders will be supplied with replaceable, stainless steel polished fenderettes. The fenderettes will feature a rubber gasket molding between the fender and the apparatus body panel.

MUD FLAPS - FRONT

The apparatus will be supplied with heavy duty mud flaps behind the front wheels.

MUD FLAPS - REAR

The apparatus will be supplied with heavy duty mud flaps behind the rear wheels.

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TOW EYES - REAR

The apparatus will be supplied with two (2) painted tow eyes at the rear of the apparatus. The tow eyes will be constructed of forged alloy steel and will be bolted directly to the apparatus chassis frame rails with grade eight (8) bolts and will extend below the apparatus body. The tow eyes will be smooth and free from sharp edges. The tow eyes will have a minimum eyelet hose of 3" and be rated for maximum pull of 42,000 lbs. The tow eyes will be painted.

ROLL OUT TRAY, FLOOR MOUNT, 300 LB CAPACITY

Three (3) 2 inch deep x 3/16 inch thick aluminum full width, full depth tray mounted on a 100% extension Grant roll out slide with a 300 lb. distributed capacity will be installed as directed.

UNISTRUT INSTALLED IN ALL COMPARTMENTS

Unistrut aluminum shelving channel ("C" channel) shall be installed in all compartments for easy installation of future shelving.

PORTABLE TANK STORAGE SYSTEM

A port-a-tank storage compartment will be installed on the officer side and integrated into the body. The compartment will be fabricated from .188" aluminum plate and shall be designed to accommodate a 2100 gallon port-a-tank. The compartment shall fully enclose the tank on each end, across the top, and on the outer side.

The exterior of the compartment will be a continuation of the body side and the outer face will be finish painted as a part of the body.

Access to the compartment will be from the rear of the apparatus, with a vertically hinged aluminum tread plate door with a "D" ring latch. The door will be wired to the "DO NOT MOVE APPARATUS" warning light in the cab.

The floor of the compartment will be equipped with rollers and "nylatron" slide pads to allow for the tank to be easily removable and to also protect the floor of the compartment.

FOLDING PORTABLE TANK

There will be a "Fol-Da-Tank" #*FDTA-2100* portable folding tank included with the apparatus. This tank will have a capacity of 2100 U.S. Gallons. The frame of the tank will be constructed of aluminum.

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PAINT, PREPARATION AND FINISH

The apparatus body will be painted Sikkens with color chosen by the fire department. The paint process will meet or exceed current state regulations concerning paint operations. Pollution control will include measures to protect the atmosphere, water, and soil. The manufacturer will, upon demand, provide evidence that the manufacturing facility is in compliance with South Carolina EPA rules and regulations.

The exterior will have no mounted components prior to painting to assure full coverage of metal treatments and paint to the exterior surfaces of the body. Any vertically or horizontally hinged smooth-plate compartment doors will be painted separately to assure proper paint coverage on body, door jambs and door edges.

The manufacturer's paint process will feature Sikkens high solid LV products and be performed in the following steps:

- Corrosion Prevention - all aluminum surfaces will be pre-treated with the Alodine 5700 conversion coating to provide superior corrosion resistance and excellent adhesion of the base coat.
- Sikkens Sealer/Primer LV - acrylic urethane sealer/primer will be applied to guarantee excellent gloss hold-out, chip resistance and a uniform base color.
- Sikkens High Solid LVBT650 (Base coat) - a lead-free, chromate-free high solid acrylic urethane base coat will be applied, providing excellent coverage and durability. A minimum of two (2) coats will be applied.
- Sikkens High Solid LVBT650 (Clear coat) - high solid LV clear coat will be applied as the final step in order to ensure full gloss and color retention and durability. A minimum of two (2) coats will be applied.

Any location where the material is penetrated after painting, for the purpose of mounting steps, hand rails, doors, lights, or other specified components will be treated at the point of penetration with a corrosion inhibiting pre-treatment (ECK Corrosion Control). The pre-treatment will be applied to the aluminum sheet metal or aluminum extrusions in all locations where the aluminum has been penetrated. All hardware used in mounting steps, hand rails, doors, lights, or other specified components will be individually treated with the corrosion inhibiting pre-treatment.

After the paint process is complete, the gloss rating of the unit will be tested with a 20 degree gloss meter. Coating thickness will be measured with a digital MIL gauge and the orange peel with a digital wave scan device.

BODY PRIMER & PREPARATION

All exposed welds will be ground smooth for final finishing of areas to be painted. The compartments and doors are totally degreased and phosphatized. After final body work is completed, grinding (36 and 80 grit), and finish sanding will be used in preparation for priming.

BODY FINISH PAINT

The apparatus body will be finish sanded and prepared for final paint. Upon completion of final preparation, the apparatus body will be painted utilizing the highest quality, state of the art, low V.O.C., polyurethane base paint. Finish paint will be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

The entire body will be buffed and detailed.

IFB 0219 Fire Service Tanker

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BODY PAINT

The inside and underside areas of the complete apparatus body assembly will be painted black using a Sikkens Paint System, prior to the installation of the body on the chassis.

The entire apparatus body will be buffed and detailed.

COMPARTMENT INTERIOR - UNFINISHED ALUMINUM

The compartment interiors of the apparatus will be left unfinished smooth aluminum.

BODY PAINT

The body paint finish will be Sikkens paint system in a single color, to match customer furnished paint codes and requirements.

TOUCH-UP PAINT

One (1) pint of each exterior color paint for touch-up purposes will be supplied when the apparatus is delivered to the end user.

FINALIZATION & DETAILING

Prior to delivery of the completed apparatus, the interior and exterior be cleaned and detailed. The finalization process detailing will include installation of NFPA required labels, checking fluid levels, sealing and caulking required areas of the cab and body, rust proofing, paint touch-up, etc.

COMMERCIAL CHASSIS PAINT, 2ND COLOR, BY CHASSIS MANUFACTURER

The commercial cab shall be painted a second color (white) from the cab window line up by the chassis manufacturer.

COMPUTER GENERATED LETTERING

The lettering and striping of the apparatus will be custom designed utilizing state of the art computer software and computerized cutting machines. The manufacturer must have a full time artist / design department that is capable of producing all lettering, decals, and striping to meet the requirements of the Fire Department. The artwork for the lettering and striping will be kept on record by the apparatus manufacturer to allow for ease in duplication for the Fire Department.

LETTERING FONT

The lettering will be designed and cut with the font selected by the Fire Department.

Font Selected: **BLOCK TYPE FONT**

REFLECTIVE LETTERING ON REAR OF APPARATUS

There will be white reflective lettering on the back of the apparatus to read "KEEP BACK 500 FT."

The lettering will be minimum 6" in height.

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LETTERING - FRONT CAB DOORS - 60 LETTERS

The apparatus will feature Gold Leaf, with drop shadow lettering that will be supplied and installed on the apparatus cab driver's and officer's doors per the fire department requirements. The lettering design will fit within the space available on the apparatus front cab doors.

CHEVRON STRIPING- PAINTED FRONT BUMPER

The front facing vertical surface of the painted front bumper will be covered with alternating strips of reflective striping per NFPA recommendations.

The chevron striping will be six inch (6") Diamond Grade Scotch-Lite. The Scotch-Lite Diamond Grade chevrons will be Red and Fluorescent Yellow Green in color to match the rear chevrons.

REAR CHEVRON STRIPING

At least 50% of the rear facing vertical surface will be covered with alternating strips of reflective striping per NFPA recommendations.

The chevron striping will be six inch (6") Diamond Grade Scotch-Lite. The Scotch-Lite Diamond Grade chevrons will be Red and Fluorescent Yellow Green in color.

SCOTCH-LITE STRIPE

A six (6) inch high "Scotch-Lite" stripe will be provided. The stripe will be applied on a minimum of 60 percent of each side of the unit, including cab, fenders and front bumper (depending upon height of front bumper. front of the unit. The Scotch-Lite stripe layout will be determined by the Fire Department.

DOT COMPLIANT TRUCK EMERGENCY KIT - METAL CASE

Shipped with the apparatus is a DOT compliant truck emergency kit, consisting of the following:

- Three (3) FMVSS125 Compliant folding reflective triangles
- One (1) 2.5 lb. 1A10BC UL listed fire extinguisher USCG approved
- Three (3) 20 minute flares.

The items are placed in a hinged lid metal case with latch.

ASSORTED HARDWARE FURNISHED WITH APPARATUS

1 -Bag of assorted stainless steel nuts and bolts

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WARRANTY, STARTING ON IN-SERVICE DATE

Warranty coverage by the manufacturer shall begin when the customer places the unit in service. This date may not exceed 60 days from the date of delivery to the customer.

ONE (1) YEAR COMMERCIAL CHASSIS WARRANTY

The bidder hereby warrants to the original purchaser (first end users) that any new products manufactured by the manufacturer will be free from defects in material and workmanship under normal use, maintenance and service for a period of one (1) year from date of delivery, subject to the conditions and exceptions stated herein.

Under this warranty, the manufacturer's obligation is limited to the repair or replacement at the manufacturer's option, at its factory, by its representative, or by its authorized service facility, of any part found to be defective by the manufacturer. If the manufacturer deems it necessary, all parts for which warranty claim is made, will be returned to the manufacturer, transportation charges prepaid, for examination by the manufacturer who will be the sole judge as to whether such part was defective in material or workmanship under normal use, maintenance or service.

The Commercial Chassis Warranty start date will begin upon departure of the completed apparatus from the manufacturer (unless chassis is customer provided, at which point the chassis warranty start period will be as agreed upon between the customer and the chassis dealership from whom it was purchased).

ONE (1) YEAR BRIGHTWORK WARRANTY

The manufacturer shall warrant all bright finish components used in the against defects and workmanship provided the apparatus is used in a normal reasonable manner. This warranty is extended only to the original user-purchaser for a period of one (1) year from the date of delivery/acceptance to the original user-purchaser, whichever occurs first.

The expressed warranty excludes corrosion or degradation of bright finished components caused by damage to the component.

FIVE (5) YEAR LETTERING WARRANTY

The manufacturer shall provide a five (5) year warranty against defects in material and workmanship for all graphic processes. Any valid claims must be made in writing within 15 days of the determination of any defects. The manufacturer shall at its option make any necessary repairs either at a local authorized service center or at the factory, if required. The manufacturer shall make the final decision as to where the repairs are to be made and any transportation costs are the owner's responsibility. The manufacturer shall at its option repair or replace any verified defects in workmanship or materials at no cost to the owner provided all the requirements of this warranty have been met.

The manufacturer shall not be liable to the original purchaser or anyone else for consequential, incidental, special, or direct damages, including, but not limited to, any claims for loss of profits, down time, loss of use or inconvenience.

SEVEN (7) YEAR PAINT WARRANTY

The paint finish shall be warranted for a period of seven (7) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

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NEW SHEET METAL BODY WARRANTY

The manufacture shall warrants to the original purchaser (first end user) that any new fire apparatus body manufactured shall be free from structural defects under normal use, maintenance, or service for a period of **TWENTY (20) years** from date of delivery, subject to the conditions and exceptions stated herein.

10- STAINLESS STEEL PLUMBING WARRANTY

The stainless steel plumbing shall be warranted for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

LIFETIME WATER TANK WARRANTY

The water tank shall be warranted by the water tank manufacturer for the "Lifetime" of the unit. A copy of the manufacturer's warranty shall be supplied to define additional details of the warranty provisions.

AKRON HEAVY DUTY VALVES WARRANTY

Akron Brass warrants Heavy Duty Swing-Out Valves for a period of ten (10) years after purchase against defects in material or workmanship. Akron Brass will repair or replace any Heavy Duty Swing Out Valve which fails to satisfy this warranty.

STANDARD HALE FIRE PUMP WARRANTY

Hale Products, Incorporated ("Hale") hereby warrants to the original buyer that products manufactured by Hale shall be free of defects in material and workmanship for a period of five (5) years from the date product is first placed into service or five and one-half (5 1/2) years from date of shipment by Hale, whichever period shall be first to expire. Within this warranty period Hale will cover parts and labor for the first two (2) years and parts only for years three (3) through five (5).

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