Sullivan County Purchasing
3411 Hwy 126, Suite 201
Blountville, TN 37617
423-323-6400

Kristinia Davis, Purchasing Agent
kris.davis@sullivancountytn.gov

TRIPLE COMBINATION PUMPER FIRE FIGHTING APPARATUS

RFP # BLFCTYFD2020(KD)

DATE TO OPEN BIDS:
SEPTEMBER 19, 2019
2:00 PM

OFFICE OF THE SULLIVAN COUNTY PURCHASING AGENT
3411 HIGHWAY 126 – SUITE 201
BLOUNTVILLE, TN 37617-0569

KRISTINIA DAVIS
PURCHASING AGENT

PHONE 423/323-6400
FAX 423/323-7249
E-MAIL: kris.davis@sullivancountytn.gov

REQUEST FOR PROPOSAL

RFP Name / Number	Triple Combination Pumper / # BLFCTYFD2020(KD)
Department	Bluff City Volunteer Fire Department
Due Date / Time	**Thursday, September 19, 2019 / 2:00 p.m.**
Bid Location / Mail Address	Sullivan County Purchasing Department Kristinia Davis, Purchasing Agent 3411 Hwy 126, Suite 201 Blountville, TN 37617
Bid Contact / Telephone	Kristinia Davis (423) 323-6400; kris.davis@sullivancountytn.gov

The Sullivan County Purchasing Department is soliciting this Complimentary Request for Proposal (RFP) on behalf of **BLUFF CITY VOLUNTEER FIRE DEPARTMENT** regarding the purchase of a **TRIPLE COMBINATION PUMPER FIRE FIGHTING APPARATUS.** Sealed proposals are desired from reputable manufacturers of Automotive Fire/Rescue Apparatus in accordance with the attached specifications.

All RFPs and required enclosures shall be presented, signed and delivered to the Sullivan County Purchasing Department (address denoted above) no later than **THURSDAY, SEPTEMBER 19, 2019 @ 2:00 P.M. LATE RESPONSES WILL NOT BE CONSIDERED**! Sullivan County is not responsible for delays in mail deliveries or courier services.

RFP must be presented in a **sealed** envelope, **clearly identifying RFP #BLFCTYFD2020(KD) on the outside.** Telephone, fax or e-mail responses are not acceptable!

All responses to this RFP **must be submitted in duplicate.** Any exception to this requirement may disqualify responding vendor from award consideration.

All RFPs offered must be in strict conformance to the language, specifications, requirements, terms and conditions as stated herein. This RFP must be completed in totality and signed by an authorized agent of the responding company. Any erasures, strike overs and/or changes to prices written in numerals should be initialed by the responding vendor. Any exception to this requirement will disqualify responding vendor from award consideration.

It is the responsibility of each responding vendor to ascertain that all requirements are satisfied. It will be assumed that the vendor has made investigations to be fully informed as to the extent and character of the requirements. Failure to submit an RFP which conforms to the specified content and format requirements will be sufficient cause to disqualify vendor. Additionally, material deficient or incomplete response to the RFP requirements will be cause to disqualify vendor.

If a responding vendor represents more than one fire apparatus company, vendor shall offer only the superior unit that meets and/or exceeds specifications herein. Each responding vendor shall only submit one proposal. Multiple offers from the same vendor will not be acceptable.

During the evaluation period, bidders may be asked to further clarify their proposals or answer questions that may arise during the evaluation of bid. It is the responsibility of the vendor to make clarifications, in writing, on the fire apparatus manufacturer's letterhead and signed by the President and/or General Manager of the manufacturing company. These written clarifications must be received within seventy-two (72) hours of when they were requested by the Sullivan County Purchasing Agent. Failure to respond within the allowed time period could deem the bid proposal unresponsive and cause for rejection.

The Sullivan County Purchasing Agent has the right to accept or reject any/all proposals and to waive any informalities or irregularities and/or to reject a bid from any responding vendor who, in the judgment of the purchasing agent, is not

in a position to perform the contract, and/or to reject a bid based on unacceptable provisions of a responding vendor's contract. Bluff City Volunteer Fire Department (Buyer) does not obligate itself to accept the lowest and/or any bid. If all responses should be deemed unacceptable, the purchasing agent shall prepare a written determination outlining the nature of such rejection. Should another RFP be prepared, all rejected responses shall remain closed to public inspection until the evaluation of new RFP responses is completed.

Sullivan County, its officers, agents and employees shall be held harmless from liability from any claims, damages and actions of any nature rising from the use of any materials furnished by the responding firm, provided that such liability is not attributable to negligence on the part of the using agency or failure of the using agency to use the materials in the manner outlined.

Any remedies in the vendor's response, including agreement, license agreement, terms, conditions, literature, etc. that may be considered an agreement to waive the legal rights of the citizens of Sullivan County shall be considered cause for rejection.

By submission of this RFP, the vendor certifies total compliance with Title VI and Title VII of the Civil Rights Act of 1964, as amended, and all regulations promulgated thereof.

Failure of Sullivan County to enumerate any federal, state or county regulation in its entirety within this RFP is not cause for the vendor to exclude same.

RFP responses received by the purchasing agent will be tabulated and submitted to the Bluff City Volunteer Fire Department to evaluate for final selection and award.

CONTACT FOR QUESTIONS REGARDING THE BID PROCESS:

KRISTINIA DAVIS @ 423-323-6400

Kris.davis@sullivancountytn.gov

OR

alan.mahaffey@sullivancountytn.gov

COLOR-CODED
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ALL RFP'S MUST BE SUBMITTED IN COLOR-CODED FORMAT OR TABS MAY BE USED TO CLEARLY IDENTIFY THE FOLLOWING:

(Note: Vendor's duplicate copy may be printed on white paper.)

REQUEST FOR PROPOSAL	**YELLOW**
COST ANALYSIS	**LIME**
SPECIFICATIONS / COMPLIANCE	**WHITE**
EXHIBITS SECTION	**BLUE**

COST SHEET

RFP # BLFCTYFD2020(KD)

FIRE FIGHTING APPARATUS

BLUFF CITY VOLUNTEER FIRE DEPARTMENT

NEW 2020 FIRE FIGHTING APPARATUS TO MEET OR EXCEED SPECIFICATIONS AS REQUESTED

PURCHASE PRICE = $_____

DELIVERY DATE (in calendar days):_____

**** PRICE MUST BE GUARANTEED FOR 90 DAYS FROM BID OPENING DATE****

PAYMENT TERMS

THE TERMS FOR PAYMENT SHALL BE "PAYMENT IN FULL ON DELIVERY AND ACCEPTANCE" FOR THE FIRE APPARATUS.

The undersigned is an authorized representative of the vendor submitting bid and offers the following price (guaranteed for 90 days) for the Fire Fighting Apparatus as specified in the RFP documentation and in compliance with all requirements.

COMPANY NAME _____

AUTHORIZED REPRESENTATIVE NAME (PRINTED) _____

REPRESENTATIVE'S SIGNATURE _____ **DATE** _____

PHONE _____ **FAX** _____ **EMAIL** _____

SPECIFICATIONS

For

Bluff City Volunteer Fire Department

Triple Combination Pumper

INTRODUCTION
PROPOSAL REQUIREMENTS

GENERAL INFORMATION

It shall be the intent of these specifications to cover the furnishing of all necessary labor, equipment and material for the delivery of a complete fire apparatus. These detailed specifications cover the requirements as to the type of construction, finish, equipment and tests to which the fire apparatus shall conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor.

Images and illustrative material in this specification are as accurate as known at the time of publication, but are subject to change without notice. Images and illustrative material is for reference only, and may include optional equipment and accessories and may not include all standard equipment.

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

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

INSTRUCTIONS TO BIDDERS

The purchaser's standards for bidding automotive fire apparatus must be strictly adhered to, and all bid forms and questions must be complete and submitted with the bid. **Omissions and variations may result in immediate rejection of the bid.**

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of 20 years. Furthermore, in order to insure fair, ethical, and legal competition, neither the original equipment manufacturer (O.E.M.) nor parent company of the O.E.M. shall have ever been fined or convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market (no exception).

If a bidder represents more than one fire apparatus company or brands of apparatus, they must only bid the top of the line that meets specification.

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified.

Any apparatus manufacturer or their parent company who has had a performance bond called in the last 10 years, shall not be eligible to bid. Any bids from these manufactures shall be immediately rejected (no exception).

Each bid shall be accompanied by a set of manufacturer's set of specifications consisting of a detailed description of the apparatus, construction methods, and equipment proposed to which the apparatus furnished under contract shall conform. These specifications shall indicate size, type, model and make of all components parts and equipment, providing proof of compliance with each and every item in the departments advertised specifications. A letter only, even though written on company letterhead, shall not be sufficient. **An exception to this requirement shall not be acceptable.**

In accordance with the current edition of NFPA 1901 standards, the proposal shall specify whether the fire department or apparatus dealership shall provide required loose equipment.

The purchaser will utilize this advertised specification to compare all submitted bid proposals. To facilitate comparison, all bid proposal specifications shall be submitted in the same sequence as the advertised specification. Any bidder who fails to submit a set of bid proposal specifications, or who photo copies and submits these specifications as their own construction details will be considered non responsive. This shall render such proposal ineligible for award.

The purchaser's specification shall, in all cases, govern the construction of the apparatus, unless a properly documented exception or deviation was approved. Any bid indicating that the manufacturer's proposal shall supersede the purchaser's specification will be considered a complete substitute and immediately rejected.

THE PURCHASER HAS THE RIGHT TO REJECT ANY BIDS WHICH DOES NOT MEET THESE SPECIFICATIONS AND IS THE SOLE DECIDER TO DEEM WHICH BID IS IN THE BEST INTEREST OF THE PURCHASER.

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. Bluff City Volunteer Fire Department is tax-exempt and will provide tax exemption to successful bidder.

ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the specifications or other contract documents shall be made to any Bidder verbally. Every request for such interpretation shall be in writing and emailed to the Purchasing Agent, Kristinia Davis @ kris.davis@sullivancountytn.gov and must be received at least ten (10) days prior to the date fixed for the opening of the bids to be given consideration. Any and all such interpretations and any supplemental instructions shall be in the form of written addenda to the specifications which, if issued, shall be posted on www.sullivancountytn.gov under Purchasing (Solicitations) and shall be e-mailed to all prospective Bidders not later than forty-eight (48) hours prior to the date fixed for the opening of bids.

Failure of any Bidder to receive any such addendum or interpretation shall not relieve any Bidder from any obligation under his bid as submitted. All addenda so issued become a part of the contract documents.

EXCEPTIONS

These specifications are based upon design and performance criteria which have been developed by the fire department as a result of extensive research and careful analysis. Subsequently these specifications reflect the only type of fire apparatus that is acceptable at this time and all specifications herein contained are considered as minimum. Therefore, exceptions to the specifications may not be accepted.

Bidders shall indicate in the **"yes/no" column** if their bid complies on each item (paragraph) specified.

If a product brand name is specified and is commercially available to all bidders, an exception to such items is not acceptable and such bid may be rejected.

Exceptions shall be allowed if they are equal to or superior to that specified and provided they are listed and fully explained on a separate page. All deviations, no matter how slight, shall be clearly explained on a separate sheet, titled “Exceptions”, in the bid sequence, citing the page and paragraph number(s) of the specifications, how the proposal deviation is different, how the deviation meets or exceeds the specifications and why it is necessary and entitled "EXCEPTIONS TO SPECIFICATIONS". The purchaser reserves the right to require a bidder to provide proof in each case that a substituted item is equal to that specified. The purchaser shall be the sole judge in determination of acceptable substitutes.

Proposals that are found to have deviations without listing them or bids taking total exceptions to these advertised specifications will be rejected (no exception).

Bids not including all exceptions is a material breach and shall result in the bid being immediately rejected (no exception).

CONTRACT AWARD

The Sullivan County Purchasing Agent reserves the right to accept, reject, recommend award or cancel any or all bids and to waive any informalities, irregularities and technicalities, if same is deemed in the best interest of Sullivan County and Bluff City Volunteer Fire Department. Sullivan County and Bluff City Volunteer Fire Department does not obligate itself to accept the lowest and/or any bid offered.

Sullivan County reserves the right on behalf of the fire department, before awarding the contract, to require a bidder to submit evidence of his qualifications as may be deemed necessary. Documentation, which may be required, is financial soundness, technical competency, and other pertinent qualifications of a bidder, including past performance (experience) with Sullivan County or Bluff City Volunteer Fire Department.

Upon award of contract, the sales contract shall be between Bluff City Volunteer Fire Department and the manufacturer of the apparatus. Contracts between the Purchaser and a sales representative, dealer, distributor, or agent of the apparatus manufacturer shall not be acceptable. **(NO EXCEPTION.)**

	Bidder Complies	
	Yes	No
GENERAL DESIGN AND CONSTRUCTION The cab, chassis, pump module, and body are to be entirely designed, assembled and painted by the prime vehicle manufacturer, which minimizes third party involvement on engineering, design, service and warranty issues. All bidders shall provide a list of the company, manufacturing location, and engineering source for each individual major component, including but not limited to the welded cab assembly, the pumphouse module assembly, the chassis assembly, body and electrical system. Apparatus using any subcontracted cab, chassis, pump module, electrical system or body will not be acceptable. The apparatus shall be designed with due consideration to distribution of load between the front and rear axles. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association. The bidder shall make accurate statements as to the apparatus weight and dimensions. **QUALITY AND WORKMANSHIP** All steel welding shall follow American welding Society D1.1-2004 recommendations for structural steel welding. All aluminum welding shall follow American welding Society and ANSI D1.2-2003 requirements for structural welding of aluminum. All sheet metal welding shall follow American Welding Society B2.1-2000 requirements for structural welding of sheet metal. Flux core arc welding to use alloy rods, type 7000, American welding Society standards A5.20-E70T1. Employees classified as welders are tested and certified to meet the American Welding Society codes upon hire and every three (3) years thereafter. The manufacturer shall be required to have an American welding Society certified welding inspector in plant during working hours to monitor weld quality. **ISO 9001 CERTIFICATION** The manufacturer shall also be certified to operate a Quality Management System under the requirements of ISO 9001. These standards sponsored by the International organization for Standardization (ISO) specify the quality systems that shall be established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance shall be included with the bid.		

	Bidder Complies	
	Yes	No
To demonstrate the quality of the product and service, each bidder shall provide a list of at least three (3) fire departments/municipalities in the region that have bought a second time from the representing dealer. (**NO EXCEPTION)**		
DELIVERY Apparatus, to ensure proper break in of all components while still under warranty, **shall be delivered under its own power** - rail or truck freight shall not be acceptable. A qualified delivery representative shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in proper operation, care and maintenance of the equipment delivered.		
MANUALS AND SERVICE INFORMATION The manufacturer shall supply at time of delivery, complete operation and maintenance manuals covering the complete apparatus as delivered. A permanent plate shall be mounted in the drivers compartment which specifies the quantity and type of fluid required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.		
SAFETY VIDEO Since video is much more effective than written documentation and can be replayed for new personnel and as a refresher for existing personnel, an apparatus safety video, in DVD format shall be provided at time of delivery. This video shall address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus. Safety procedures for the following shall be included on the video: vehicle pre trip inspection, chassis operation, pump operation and maintenance.		
PERFORMANCE TESTS AND REQUIREMENTS A road test shall be conducted with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axle shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. Vehicle shall adhere to the following parameters: A) The apparatus, when fully equipped and loaded, shall have not less than 25 percent nor more than 50 percent of the weight on the front axle, and not less than 50 percent nor more than 75 percent on the rear axle. B) The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed rpm of the engine.		

	Bidder Complies	
	Yes	No
C) The service brakes shall be capable of stopping a fully loaded vehicle in 35 feet at 20 mph on a level concrete highway. The air brake system shall conform to Federal Motor vehicle Safety Standards (FMVSS) 121. D) The apparatus, fully loaded, shall be capable of obtaining a speed of 50 mph on a level concrete highway with the engine not exceeding the governed rpm (full load). **FAILURE TO MEET TEST** In the event the apparatus fails to meet the test requirements of these specifications on the first trial, second trials may be made at the option of the bidder within 30 days of the date of the first trial. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes to conform to any clause of the specifications, within 30 days after notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not constitute acceptance. **SERVICE AND WARRANTY SUPPORT (DEALERSHIP)** TO ENSURE FULL SERVICE AFTER DELIVERY, THE SELLING BIDDER/DEALERSHIP MUST BE CAPABLE OF PROVIDING SERVICE WHEN REQUIRED. The bidder/dealership shall show that the company is in position to render prompt service and to furnish replacement parts. Each bidder/dealership must be able to display that they are actively in the fire apparatus service business by operating in conjunction with a factory authorized service center and parts repository capable of satisfying the warranty service requirements and parts requirements of the vehicle(s) being purchased. **SERVICE CENTER** The bidder/dealership must state the location of this authorized service center. This service center must have a staff of factory-trained mechanics, well versed in all aspects of service for all major components of the apparatus. The service center must be within one hundred (100) miles of the Fire Department.- **NO EXCEPTIONS** **SERVICE AND WARRANTY SUPPORT (MANUFACTURER)** To provide an additional layer of service support, the successful manufacturer must also own a least two separate service facilities, one located in the northern portion of the US to service both Canada and the northern US states and one in the south to service the southern states.		

	Bidder Complies	
	Yes	No
The manufacturer shall stock parts dedicated to service and replacement parts to ensure quick response and minimize down time. Furthermore, the manufacturer shall house the inventory in a dedicated facility, with a dedicated shipping area that ensures service parts are given priority. The bidder shall provide detailed documentation of service and replacement part resources. Parts identification shall be provided to both the dealer and the Fire Department through an on line web based application for the specific truck reflected in this specification. Access will be granted using the specific VIN number of the vehicle. The online web application will provide the ability to view complete bills of materials, digital photographs, parts drawings, assembly drawings, and access to all current operation, maintenance and service publications. The manufacturer must also maintain a 24 hour/ 7 day a week, toll free emergency hot line. The manufacturer shall employ a staff of adequate size specifically dedicated to providing customer support and parts for the fielded fleet of vehicles it has produced. The manufacturer must be capable of providing both in-house and on-site service for the apparatus. The manufacturer shall offer regional factory hands-on repair and maintenance training classes. The manufacturer shall employ a minimum of four certified EVT technicians on staff, not only providing technical expertise in the repair of fire apparatus, but also demonstrating the commitment to service after the sale. **LIABILITY** The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract. **INSURANCE PROVIDED BY BIDDER** **COMMERCIAL GENERAL LIABILITY INSURANCE** The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance: Each Occurrence $1,000,000 Products/Completed Operations Aggregate $1,000,000		

	Bidder Complies	
	Yes	No
Personal and Advertising Injury $1,000,000 General Aggregate $2,000,000 Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form and shall include Contractual Liability coverage for bodily injury and property damage subject to the terms and conditions of the policy. The policy shall include purchaser as an additional insured when required by written contract. **COMMERCIAL AUTOMOBILE LIABILITY INSURANCE** The successful bidder shall, during the performance of the contract keep in force at least the following minimum limits of commercial automobile liability insurance: Each Accident Combined Single Limit: $1,000,000 **UMBRELLA/EXCESS LIABILITY INSURANCE** The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance: Aggregate: $3,000,000 Each Occurrence: $3,000,000 The umbrella policy shall be written on an occurrence basis and at a minimum provide excess to the Bidder's General Liability, Automobile Liability and Employer's Liability policies. The required limits can be provided by one (1) or more policies provided all other insurance requirements are met. Coverage shall be provided by a carrier(s) rated A- or better by A.M. Bests. All policies shall provide a 30-day notice of cancellation to the named insured. The Certificate of Insurance shall provide the following cancellation clause: Should any of the above described polices be cancelled before the expiration date thereof, notice shall be delivered in accordance with the policy provisions**. Bidder agrees to furnish owner with a current Certificate of Insurance with the coverages listed above along with its bid. The certificate shall show the purchaser as certificate holder.** **INSURANCE PROVIDED BY MANUFACTURER** **PRODUCT LIABILITY INSURANCE** The manufacturer shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of Product Liability insurance:		

	Bidder Complies	
	Yes	No
Each Occurrence $1,000,000 Products/Completed Operations Aggregate $1,000,000 Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form. The manufacturer's policy shall include the owner as additional insured when required by written contract between the Owner and authorized dealer. **UMBRELLA/EXCESS LIABILITY INSURANCE** The manufacturer shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance: Each Occurrence: $25,000,000 Aggregate: $25,000,000 The umbrella policy shall be written on an occurrence basis and provide excess to the manufacturer's General Liability/Products policies. The required limits can be provided by one (1) or more policies provided all other insurance requirements are met. Coverage shall be provided by a carrier(s) rated A- or better by A.M. Best. All policies shall provide a 30-day notice of cancellation to the named insured. The Certificate of Insurance shall provide the following cancellation clause: Should any of the above described polices be cancelled before the expiration date thereof, notice shall be delivered in accordance with the policy provisions. Manufacturer agrees to furnish owner with a current Certificate of Insurance with the coverages listed above along with the bid. The certificate shall show the purchaser as the certificate holder. **SINGLE SOURCE MANUFACTURER- NO EXCEPTIONS** Bids shall only be accepted from a single source apparatus manufacturer. The definition of single source is a manufacturer that designs and manufactures their products using an integrated approach, including the chassis, cab weldment, cab, pumphouse (including the sheet metal enclosure, valve controls, piping and operators panel) and body being designed, fabricated and assembled on the bidder's premises. The electrical system (hardwire or multiplex) shall be both designed and integrated by the same apparatus manufacturer. The warranties relative to these major components (excluding component warranties such as		

	Bidder Complies	
	Yes	No
engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body, pumphouse, cab weldment and chassis). The bidder shall provide evidence that they comply with this requirement. The bidder shall state the location of the factory where the apparatus is to be built. **NFPA 2016 STANDARDS** This unit shall comply with the NFPA standards effective January 1, 2016, except for fire department specifications that differ from NFPA specifications. These exceptions shall be set forth in the Statement of Exceptions. Certification of slip resistance of all stepping, standing and walking surfaces shall be supplied with delivery of the apparatus. All horizontal surfaces designated as a standing or walking surface that are greater than 48.00" above the ground must be defined by a 1.00" wide line along its outside perimeter. Perimeter markings and designated access paths to destination points shall be identified on the customer approval print and are shown as approximate. Actual location(s) shall be determined based on materials used and actual conditions at final build. Access paths may pass through hose storage areas and opening or removal of covers or restraints may be required. Access paths may require the operation of devices and equipment such as the aerial device or ladder rack. A plate that is highly visible to the driver while seated shall be provided. This plate shall show the overall height, length, and gross vehicle weight rating. The manufacturer shall have programs in place for training, proficiency testing and performance for any staff involved with certifications. An official of the company shall designate, in writing, who is qualified to witness and certify test results. **NFPA COMPLIANCY** Apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications shall be indicated in the proposal as "non-NFPA". **PUMP TEST** The pump shall be tested, approved, and certified by an ISO certified independent third party testing agency at the manufacturer's expense. The test results, along with the pump manufacturer's certification of hydrostatic test, the engine manufacturer's certified brake horsepower curve, and the manufacturer's record of pump construction details shall be		

	Bidder Complies	
	Yes	No
forwarded to the Fire Department. **GENERATOR TEST** If the unit has a generator, the generator shall be tested, approved, and certified by an ISO certified independent third-party testing agency at the manufacturer's expense. The test results shall be provided to the Fire Department at the time of delivery. **WEEKLY CONSTRUCTION PHOTO REPORTS - NO EXCEPTIONS** Digital photo reports shall be e-mailed to the Fire Chief once a week starting when the custom chassis and/or body begins production. These reports shall show all 4 sides of the vehicle, the interior of the cab from each door, the pump panel area and the interior of each compartment. Interactive websites shall not be acceptable because they typically do not show enough detail. **BID BOND** All bidders shall provide a bid bond as security for the bid in the form of a 5% bid bond to accompany their bid. This bid bond shall be issued by a Surety Company who is listed on the U.S. Treasury Department list of acceptable sureties as published in Department Circular 570. The bid bond shall be issued by an authorized representative of the Surety Company and shall be accompanied by a certified power of attorney dated on or before the date of bid. The bid bond shall include language, which assures that the bidder/principal shall give a bond or bonds as may be specified in the bidding or contract documents, with good and sufficient surety for the faithful performance of the contract, including the Basic One (1) Year Limited Warranty, and for the prompt payment of labor and material furnished in the prosecution of the contract. Failure to provide an original, acceptable, valid bid bond with the proposal shall result in the immediate rejection of the bidder's proposal. Proposals received from bidders who do not manufacture the chassis shall provide a warranty that shall be issued jointly and severally by, and signed by, both the bidder and the chassis manufacturer. If the successful bidder does not manufacture the chassis, the bidder shall supply a warranty bond, in addition to their performance bond, along with their signed contract. This warranty bond shall guarantee all terms and conditions of the Basic One (1) Year Limited Warranty and names both the bidder and chassis manufacturer as co-principals. This warranty bond shall be issued for the contract amount and shall remain in force for a term which is consistent with the term of the Basic One (1) Year Limited Warranty. Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle shall apply only to the Basic One (1) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle shall not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any)		

	Bidder Complies	
	Yes	No
of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision shall prevail. **PERFORMANCE & PAYMENT BOND** A performance and payment bond shall not be included. If requested at a later date, one shall be provided to the purchaser for an additional cost and the following shall apply: The successful bidder shall furnish a Performance and Payment bond (Bond) equal to 100% of the total contract amount within 30 days of the notice of award. Such Bond shall be in a form acceptable to the Owner and issued by a surety company included within the Department of Treasury's Listing of Approved Sureties (Department Circular 570) with a minimum A.M. Best Financial Strength Rating of A and Size Category, a minimum Financial Strength rating of A+ is required. Bidder and Bidder's surety agree that the Bond issued hereunder, whether expressly stated or not, also includes the surety's guarantee of the vehicle manufacturer's Bumper to Bumper warranty period included within this proposal. Owner agrees that the penal amount of this bond shall be simultaneously amended to 25 percent of the total contract amount upon satisfactory acceptance and delivery of the vehicle(s) included herein. Notwithstanding anything contained within this contract to the contrary, the surety's liability for any warranties of any type shall not exceed three (3) years from the date of such satisfactory acceptance and delivery, or the actual Bumper to Bumper warranty period, whichever is shorter. **FAIR, ETHICAL AND LEGAL COMPETITION** In order to ensure fair, ethical, and legal competition, neither original equipment manufacturer (OEM) nor parent company of the OEM shall have ever been fined or convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market. **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.		

	Bidder Complies	
	Yes	No
• That all requirements of the law including amendatory provisions as to non-collusive bidding have been complied with. **APPROVAL DRAWING** A drawing of the proposed apparatus shall be provided for approval before construction begins. The sales representative shall also have a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc. A "revised" approval drawing of the apparatus shall be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing. **ELECTRICAL WIRING DIAGRAMS** Two (2) electrical wiring diagrams, prepared for the model of chassis and body, shall be provided. **CHASSIS** Chassis provided shall be a new, tilt-type custom fire apparatus. The chassis shall be manufactured in the apparatus body builder's facility eliminating any split responsibility. The chassis shall be designed and manufactured for heavy-duty service, with adequate strength and capacity for the intended load to be sustained and the type of service required. **WHEELBASE** The wheelbase of the vehicle shall be no greater than 174.50. **GVW RATING** The gross vehicle weight rating shall be a **minimum** of 42,000. **FRAME** The chassis frame shall be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails shall be heat-treated steel measuring 10.25” x 3.50” x .375”. Each rail shall have a section modulus of 16.00 cubic inches, yield strength of 120,000 psi, and a resisting bending moment (rbm) of 1,921,069 inch-pounds. **FRAME REINFORCEMENT** A full-length mainframe “C” liner shall be provided. The liner shall be an internal “C” design, heat-treated steel measuring 9.38” x 3.13” x 0.25”.		

	Bidder Complies	
	Yes	No
Each reinforcement member shall have a section modulus of 3.90 cubic inches, yield strength of 120,000 psi and resisting bending moment (rbm) or 938,762 in-lb. **FRONT AXLE** The front axle shall be a reverse "I" beam type with inclined king pins. It shall be a Dana axle, Model D-2000F, with a minimum capacity of 18,000 lb. **(Or Equal)** **FRONT SUSPENSION** The front springs shall be a Standens, three (3)-leaf, taper leaf design, 54.00" long x 4.00" wide, with a ground rating of 18,000 lb. The two (2) top leaves shall wrap the forward spring hanger pin. The top leaf shall also wrap the rear spring hanger pin. Both the front and rear eyes shall be Berlin style wraps that shall place the eyes in the horizontal plane within the main leaf. This shall reduce bending stress from acceleration and braking. A steel encased rubber bushing shall be used in the spring eye. The steel encased rubber bushing shall be maintenance free and require no lubrication. **(Or Equal)** **SHOCK ABSORBERS** Heavy-duty telescoping shock absorbers shall be provided on the front axle. **FRONT OIL SEALS** Oil seals with viewing window shall be provided on the front axle. **FRONT TIRES** Front tires shall be Goodyear® 315/80R22.50 radials, 20 ply G291 tread, rated for 18,180 lb maximum axle load and 68 mph maximum speed. **Or Equalivant as to size rated to Axle and builder design to meet engineering specifications.** The tires shall be mounted on Alcoa 22.50" x 9.00" polished aluminum disc wheels with a ten (10) stud, 11.25" bolt circle. **Or Equalivant as to size rated to Axle and builder design to meet engineering specifications.** **REAR AXLE** The rear axle shall be a Dana, Model S26-190, with a **minimum** capacity of 27,000 lb. **(Or Equal)** **TOP SPEED OF VEHICLE** A rear axle ratio shall be furnished to allow the vehicle to reach a top speed of 68 mph. **REAR SUSPENSION** The rear suspension shall be Standens, semi-elliptical, 3.00" wide x 53.00" long, 12-leaf pack		

	Bidder Complies	
	Yes	No
with a ground rating of 27,000 lb. The spring hangers shall be castings. The two (2) top leaves shall wrap the forward spring hanger pin, and the rear of the spring shall be a slipper style end that shall ride in a rear slipper hanger. To reduce bending stress due to acceleration and braking, the front eye shall be a berlin eye that shall place the front spring pin in the horizontal plane within the main leaf. A steel encased rubber bushing shall be used in the spring eye. The steel encased rubber bushing shall be maintenance free and require no lubrication. **(Or Equal)** **REAR OIL SEALS** Oil seals shall be provided on the rear axle(s). **REAR TIRES** Rear tires shall be four (4) Goodyear® 12R22.50 radials, 16 ply all season G622 RSD tread, rated for 27,120 lb maximum axle load and 75 mph maximum speed. **Or Equalivant as to size rated to Axle and builder design to meet engineering specifications.** The tires shall be mounted on Alcoa 22.50" x 8.25" polished aluminum disc wheels with a ten (10) stud 11.25" bolt circle. **Or Equalivant as to size rated to Axle and builder design to meet engineering specifications.** **TIRE BALANCE** All tires shall be balanced with Counteract balancing beads. The beads shall be inserted into the tire and eliminate the need for wheel weights. **TIRE PRESSURE MANAGEMENT** There shall be a tire alert pressure management system provided, that shall monitor each tire's pressure. A sensor shall be provided for each tire for a total of six (6) tires. The sensor shall calibrate to the tire pressure when installed on the valve stem for pressures between 10 and 200 psi. The sensor shall activate an integral battery operated LED when the pressure of that tire drops 5 to 8 psi. Removing the cap from the sensor shall indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED shall immediately start to flash. **FRONT HUB COVERS** Stainless steel hub covers shall be provided on the front axle. An oil level viewing window shall be provided. **REAR HUB COVERS** A pair of stainless steel high hat hub covers shall be provided on rear axle hubs. **CHROME LUG NUT COVERS**		

	Bidder Complies	
	Yes	No
Chrome lug nut covers shall be supplied on front and rear wheels. **MUD FLAPS** Mud flaps shall be installed behind the front and rear wheels of the apparatus. **AUTOMATIC TIRE CHAINS** One (1) pair of Onspot automatic tire chains shall be provided tire chains. System shall be electric over air operated with a locking switch on cab instrument panel. System to be operable at speeds up to 35 mph. **WHEEL CHOCKS** There shall be one (1) pair of folding Ziamatic, AC-44, aluminum alloy wheel blocks provided. **WHEEL CHOCK BRACKETS** There shall be one (1) pair of horizontal mounting brackets provided for the Ziamatic AC-44 wheel chocks. The brackets shall be mounted under LS3. A safety latch shall be provided to prevent accidental loss of the wheel Model SQCH-44-H, horizontal mounting wheel chock brackets provided for the Ziamatic, Model SAC-44-E, folding wheel chocks. **ANTI-LOCK BRAKE SYSTEM** The vehicle shall be equipped with a Meritor WABCO 4S4M, anti-lock braking system. The ABS shall provide a 4-channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology shall control the anti-lock braking system. Each wheel shall be monitored by the system. When any particular wheel begins to lockup, a signal shall be sent to the control unit. This control unit shall then reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system shall eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control. **BRAKES** The service brake system shall be full air type by Bendix®. Front brakes shall be Model ADB22X™, disc type with automatic pad wear adjustment and 17.00" rotors for improved stopping distance. The rear brakes shall be Bendix™ 16.50" x 8.63" cam operated with automatic slack adjusters. **AIR COMPRESSOR, BRAKE SYSTEM** The air compressor shall be a Cummins/WABCO with 18.7 cubic feet per minute output. **BRAKE SYSTEM** The brake system shall include: • Brake treadle valve		

	Bidder Complies	
	Yes	No
• Heated automatic moisture ejector on air dryer • Total air system minimum capacity of 4,272 cubic inches • Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi • Spring set parking brake system • Parking brake operated by a push-pull style control valve • A parking "brake on" indicator light on instrument panel • Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, with an automatic spring brake application at 40 psi • A pressure protection valve to prevent all air operated accessories from drawing air from the air system when the system pressure drops below 80 psi (550 kPa) • 1/4 turn drain valves on each air tank The air tank shall be primed and painted to meet a minimum 750 hour salt spray test. To reduce the effects of corrosion, the air tank shall be mounted with stainless steel brackets **(no exception).** **BRAKE SYSTEM AIR DRYER** The air dryer shall be a WABCO System Saver 1200 IWT, with internal wet tank, spin-on coalescing filter cartridge and 100 watt heater. **BRAKE LINES** Color-coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom where necessary in the chassis. **AIR INLET** One (1) air inlet with 3D series male coupling shall be provided. It shall allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet shall be located forward in the driver side lower step well of cab. A check valve shall be provided to prevent reverse flow of air. The inlet shall discharge into the "wet" tank of the brake system. A mating female fitting shall also be provided with the loose equipment. **ADDITIONAL AIR TANK** An additional air tank with 1,454 cubic inch displacement shall be provided to increase the capacity of the air system. This tank shall be dedicated for air horn use.		

	Bidder Complies	
	Yes	No

The air tank shall be primed and painted to meet a minimum 750 hour salt spray test. To reduce the effects of corrosion, the air tank shall be mounted with stainless steel brackets **(No Exception).**

The output flow of the engine air compressor varies with engine rpm. Full compressor output is only achieved at governed engine speed. Engine speed may be limited by generators, pumps and other PTO driven options.

ENGINE

The chassis shall be powered by an electronically controlled engine as described below:

Make:	Cummins
Model:	L9
Power:	450 hp at 2100 rpm
Torque:	1250 lb-ft at 1400 rpm
Governed Speed:	2200 rmp
Fuel:	Diesel
Cylinders:	Six (6)
Displacement:	543 cubic inches (8.9L)
Starter:	Delco 39MT™
Fuel Filters:	Spin-on style primary filter with water separator and water-in-fuel sensor. Secondary spin-on style filter.

The engine shall include On-board diagnostics (OBD), which provides self-diagnostic and reporting. The system shall give the owner or repair technician access to state of health information for various vehicle sub systems. The system shall monitor vehicle systems, engine and after treatment. The system shall illuminate a malfunction indicator light on the dash console if a problem is detected.

HIGH IDLE

A high idle switch shall be provided, inside the cab, on the instrument panel, that shall automatically maintain a preset engine rpm. A switch shall be installed, at the cab instrument panel, for activation/deactivation.

The high idle shall be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light shall be provided, adjacent to the switch. The light shall illuminate when the above conditions are met. The light shall be labeled "OK to Engage High Idle."

ENGINE BRAKE

	Bidder Complies	
	Yes	No
A Jacobs® engine brake is to be installed with the controls located on the instrument panel within easy reach of the driver. The driver shall be able to turn the engine brake system on/off and have a high, medium and low setting. The engine brake shall activate when the system is on and the throttle is released. The high setting of the brake application shall activate and work simultaneously with the variable geometry turbo (VGT) provided on the engine. The engine brake shall be installed in such a manner that when the engine brake is slowing the vehicle the brake lights are activated. The ABS system shall automatically disengage the auxiliary braking device when required. **CLUTCH FAN** A fan clutch shall be provided. The fan clutch shall be automatic when the pump transmission is in "Road" position, and constantly engaged when in "Pump" position. **ENGINE AIR INTAKE** The engine air intake shall be located above the engine cooling package. It shall draw fresh air from the front of the apparatus through the radiator grille. The ember separator is designed to prevent road dirt and recirculating hot air from entering the engine. The ember separator shall be easily accessible by tilting the cab. **EXHAUST SYSTEM** The exhaust system shall be stainless steel from the turbo to the engine's after treatment device, and shall be 4.00" in diameter. The exhaust system shall include a single module aftertreatment device to meet current EPA standards. An insulation wrap shall be provided on all exhaust pipes between the turbo and aftertreatment device to minimize the heat loss to the aftertreatment device. The exhaust shall terminate horizontally ahead of the right-side rear wheels. A tailpipe diffuser shall be provided to reduce the temperature of the exhaust as it exits. Heat deflector shields shall be provided to isolate chassis and body components from the heat of the tailpipe diffuser. **RADIATOR** The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system standards. For maximum corrosion resistance and cooling performance, the entire radiator core shall be constructed using long life aluminum alloy. The radiator core shall consist of aluminum fins, having a serpentine design, brazed to aluminum tubes. No solder joints or leaded material of		

	Bidder Complies	
	Yes	No
any kind shall be acceptable in the core assembly. The radiator core shall have a minimum front area of 1060 square inches. Supply tank shall be made of heavy duty glass-reinforced nylon and the return tank shall be mode of aluminum. Both tanks shall be crimped onto the core assembly using header tabs and a compression gasket to complete the radiator core assembly. There shall be a full steel frame around the inserts to enhance cooling system durability and reliability. The radiator shall be compatible with commercial antifreeze solutions. The radiator assembly shall be isolated from the chassis frame rails with rubber isolators to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven terrain. The radiator shall include a de-aeration/expansion tank. For visual coolant level inspection, the radiator shall have a built-in sight glass. The radiator shall be equipped with a 15 psi pressure relief cap. A drain port shall be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system. Shields or baffles shall be provided to prevent recirculation of hot air to the inlet side of the radiator. **COOLANT LINES** Gates, or Goodyear, rubber hose shall be used for all engine coolant lines installed by the chassis manufacturer. Hose clamps shall be stainless steel constant torque type to prevent coolant leakage. They shall react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose. **FUEL TANK** A 65 gallon fuel tank shall be provided and mounted at the rear of the chassis. The tank shall be constructed of 12-gauge, hot rolled steel. It shall be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank shall be mounted with stainless steel straps (no exception). A 0.75" drain plug shall be provided in a low point of the tank for drainage. A fill inlet shall be located on the left hand side of the body and be covered with a hinged, spring loaded, stainless steel door that is marked "Ultra Low Sulfur - Diesel Fuel Only."		

	Bidder Complies	
	Yes	No
A 0.50" diameter vent shall be provided running from top of tank to just below fuel fill inlet. The tank shall meet all FHWA 393.67 requirements including a fill capacity of 95 percent of tank volume. All fuel lines shall be provided as recommended by the engine manufacturer. **DIESEL EXHAUST FLUID TANK** A 4.5 gallon diesel exhaust fluid (DEF) tank shall be provided and mounted in the driver's side body rearward of the rear axle. A 0.50" drain plug shall be provided in a low point of the tank for drainage. A fill inlet shall be provided and marked "Diesel Exhaust Fluid Only". The fill inlet shall be located adjacent to the engine fuel inlet behind a common hinged, spring loaded, polished stainless steel door on the driver side of the vehicle. The tank shall meet the engine manufacturers requirement for 10 percent expansion space in the event of tank freezing. The tank shall include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing. The stainless steel flip door for selecting between DEF fill and the diesel fill shall be spring loaded to default to covering the DEF fill. **TRANSMISSION** An Allison 5th generation, Model EVS 3000P, electronic, torque converting, automatic transmission shall be provided. The transmission shall be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display shall indicate when service is due. Two (2) PTO openings shall be located on both sides of converter housing (positions 4 o'clock and 8 o'clock) as viewed from the rear. A transmission temperature gauge with red light and audible alarm shall be installed on the cab dish. **TRANSMISSION SHIFTER** A five (5)-speed push button shift module shall be mounted to right of driver on console. Shift position indicator shall be indirectly lit for after dark operation. The transmission ratio shall be:		

	Bidder Complies	
	Yes	No

1st	3.49 to 1.00
2nd	1.86 to 1.00
3rd	1.41 to 1.00
4th	1.00 to 1.00
5th	0.75 to 1.00
R	5.03 to 1.00

TRANSMISSION COOLER

A Modine plate and fin transmission oil cooler shall be provided using engine coolant to control the transmission oil temperature.

DOWNSHIFT MODE (w/engine brake)

The transmission shall be provided with an aggressive downshift mode.

This shall provide earlier transmission downshifts to 2nd gear, resulting in improved engine braking performance.

DRIVELINE

Drivelines shall be a heavy-duty metal tube and be equipped with Spicer® 1810 universal joints.
The shafts shall be dynamically balanced before installation.

A splined slip joint shall be provided in each driveshaft where the driveline design requires it. The slip joint shall be coated with Glidecoat® **(OR EQUAL).**

STEERING

Steering gear shall be provided with integral heavy-duty power steering. For reduced system temperatures, the power steering shall incorporate an air to oil cooler and Vickers® V20NF hydraulic pump with integral pressure and flow control. All power steering lines shall have wire braded lines with crimped fittings.

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

STEERING WHEEL

The steering wheel shall be 18.00" in diameter, have tilting and telescoping capabilities, and a 4-spoke design.

LOGO AND CUSTOMER DESIGNATION ON DASH

The steering wheel shall have an emblem containing the fire apparatus manufacturer's logo and customer name. The emblem shall have three (3) rows of text for the customer's department name. There shall be a maximum of eight (8) characters in the first row, 11 characters in the second row and 11 characters in the third row.

The first row of text shall be: Bluff City

	Bidder Complies	
	Yes	No

The second row of text shall be: Fire

The third row of text shall be: Department

BUMPER

A one (1)-piece, ten (10) gauge, 304-2B type polished stainless steel bumper, a minimum of 10.00" high, shall be attached to a bolted modular extension frame constructed of 50,000 psi tensile steel "C" channel mounted directly behind it to provide adequate support strength.

The bumper shall be extended 19.00" from front face of cab.

Documentation shall be provided, upon request, to show that the options selected have been engineered for fit-up and approval for this modular bumper extension. A chart shall be provided to indicate the option locations and shall include, but not be limited to the following options: air horns, mechanical sirens, speakers, hose trays (with hose capacities), winches, lights, discharge, and suction connections.

GRAVEL PAN

A gravel pan, constructed of bright aluminum treadplate, shall be furnished between the bumper and cab face. The gravel pan shall be properly supported from the underside to prevent flexing and vibration of the aluminum treadplate.

CENTER HOSE TRAY

A hose tray, constructed of aluminum, shall be placed in the center of the bumper extension.

The tray shall have a capacity of 125' of 1.75" double jacket cotton-polyester hose. Black rubber grating shall be provided at the bottom of the tray. Drain holes are also provided.

CENTER HOSE TRAY RESTRAINT

There shall be one (1) pair of hose tray restraint straps located over the center mounted tray.

The restraints shall be a pair of 2.00" wide black nylon straps with Velcro® fasteners provided. The strap(s) shall be used to secure the hose in the tray.

TOW HOOKS

Two (2) chromed steel tow hooks shall be installed under the bumper and attached to the front frame members. The tow hooks shall be designed and positioned to allow up to a 6,000 lb straight horizontal pull in line with the centerline of the vehicle. The tow hooks shall not be used for lifting of the apparatus.

CAB

The cab shall be designed specifically for the fire service and manufactured by the chassis

	Bidder Complies	
	Yes	No
builder. The cab shall be built by the apparatus manufacturer in a facility located on the manufacturer's premises **(NO EXCEPTON).** For reasons of structural integrity and enhanced occupant protection, the cab shall be a heavy-duty design, constructed to the following minimal standards. The cab shall have 12 main vertical structural members located in the A-pillar (front cab corner posts), B-pillar (side center posts), C-pillar (rear corner posts), and rear wall areas. The A-pillar shall be constructed of solid A356-T5 aluminum castings. The B-pillar and C-pillar shall be constructed from 0.13" wall extrusions. The rear wall shall be constructed of two (2) 2.00" x 2.00" outer aluminum extrusions and two (2) 2.00" x 1.00" inner aluminum extrusions. All main vertical structural members shall run from the floor to 4.625" x 3.864" x 0.090" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a 0.25" thick corner casting at each of the front corners of the roof assembly. The front of the cab shall be constructed of a 0.13" firewall plate, covered with a 0.090" front skin (for a total thickness of 0.22"), and reinforced with a full width x 0.50" thick cross-cab support located just below the windshield and fully welded to the engine tunnel. The cross-cab support shall run the full width of the cab and weld to each A-pillar, the 0.13" firewall plate, and the front skin. The cab floors shall be constructed of 0.125" thick aluminum plate and reinforced at the firewall with an additional 0.25" thick cross-floor support providing a total thickness of 0.375" of structural material at the front floor area. The front floor area shall also be supported with two (2) triangular 0.30" wall extrusions that also provides the mounting point for the cab lift. This tubing shall run from the floor wireway of the cab to the engine tunnel side plates, creating the structure to support the forces created when lifting the cab. The cab shall be 96.00" wide (outside door skin to outside door skin) to maintain maximum maneuverability (no exception). The forward cab section shall have an overall height (from the cab roof to the ground) of approximately 99.00". The crew cab section shall have a 10.00" raised roof, with an overall cab height of approximately 109.00". The overall height listed shall be calculated based on a truck configuration with the lowest suspension weight rating, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension shall increase the overall height listed. The floor to ceiling height inside the crew cab shall be 64.50" in the center and outboard positions. The crew cab floor shall measure 36.00" from the rear wall to the front of the rear facing seat		

	Bidder Complies	
	Yes	No
risers. The engine tunnel, at the rearward highest point (knee level), shall measure 51.50" to the rear wall. The crew cab shall be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants. The cab shall be a full tilt cab style. A 3-point cab mount system with rubber isolators shall improve ride quality by isolating chassis vibrations from the cab. **CAB ROOF DRIP RAIL** For enhanced protection from inclement weather, a drip rail shall be furnished on the sides of the cab. The drip rail shall be painted to match the cab roof and bonded to the sides of the cab. The drip rail shall extend the full length of the cab roof. **INTERIOR CAB INSULATION** The cab shall include 1.00" insulation in the ceiling, 1.50" insulation in the side walls, and 2.00" insulation in the rear wall to maximize acoustic absorption and thermal insulation. **FENDER LINERS** Full circular inner fender liners in the wheel wells shall be provided. **PANORAMIC WINDSHIELD** A 1-piece safety glass windshield shall be provided with over 2,775 square inches of clear viewing area. The windshield shall be full width and shall provide the occupants with a panoramic view. The windshield shall consist of three (3) layers: outer light, middle safety laminate, and inner light. The outer light layer shall provide superior chip resistance. The middle safety laminate layer shall prevent the windshield glass pieces from detaching in the event of breakage. The inner light shall provide yet another chip resistant layer. The cab windshield shall be bonded to the aluminum windshield frame using a urethane adhesive. A custom frit pattern shall be applied on the outside perimeter of the windshield for a finished automotive appearance. **WINDSHIELD WIPERS** Three (3) electric windshield wipers with washer shall be provided that meet FMVSS and SAE requirements. **ENGINE TUNNEL** Engine hood side walls shall be constructed of 0.375" aluminum. The top shall be constructed of 0.125" aluminum and shall be tapered at the top to allow for more driver and passenger elbow room.		

	Bidder Complies	
	Yes	No
The engine hood shall be insulated for protection from heat and sound. The noise insulation keeps the dBA level within the limits stated in the current NFPA 1901 standards. The engine tunnel shall be no higher than 17.00" off the crew cab floor **(NO EXCEPTION).** **INTERIOR CREW CAB REAR WALL ADJUSTABLE SEATING (PATENT PENDING)** The interior rear wall of the crew cab shall have mounting holes every 2.75" to allow for adjustability of the forward-facing crew cab seating along the rear wall. Seats shall be adjustable with use of simple hand tools allowing departments flexibility of their seating arrangement should their department needs change. **CAB REAR WALL EXTERIOR COVERING** The exterior surface of the rear wall of the cab shall be overlaid with bright aluminum treadplate except for areas that are not typically visible when the cab is lowered . **CAB LIFT** A hydraulic cab lift system shall be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves. Lift controls shall be located on the right side pump panel or front area of the body in a convenient location. The cab shall be capable of tilting 43 degrees to accommodate engine maintenance and removal. The cab shall be locked down by a 2-point normally closed spring loaded hook type latch that fully engages after the cab has been lowered. The system shall be hydraulically actuated to release the normally closed locks when the cab lift control is in the raised position and cab lift system is under pressure. When the cab is completely lowered and system pressure has been relieved, the spring loaded latch mechanisms shall return to the normally closed and locked position. The hydraulic cylinders shall be equipped with a velocity fuse that protects the cab from accidentally descending when the control is located in the tilt position. For increased safety, a redundant mechanical stay arm shall be provided that must be manually put in place on the left side between the chassis and cab frame when the cab is in the raised position. This device shall be manually stowed to its original position before the cab can be lowered. **Cab Lift Interlock** The cab lift system shall be interlocked to the parking brake. The cab tilt mechanism shall be active only when the parking brake is set and the ignition switch is in the on position. If the		

	Bidder Complies	
	Yes	No
parking brake is released, the cab tilt mechanism shall be disabled. **GRILLE** A single piece polished stainless steel grille and framework shall be provided on the front center of the cab. **DOOR JAMB SCUFFPLATES** All cab door jambs shall be furnished with a polished stainless steel scuffplate, mounted on the striker side of the jamb. **SIDE OF CAB MOLDING** Chrome molding shall be provided on both sides of cab. **MIRRORS** Velvac®, Model 2025, low mount chrome mirrors shall be mounted, one (1) on each of the cab doors. The mirror shall include a replaceable 98 square inch flat glass and a top mount convex glass. Overall mirror dimensions shall be 8.50" wide x 17.75" high. Mirror head shall have a highly polished chrome finish. Both flat mirror heads shall be adjustable by an electric remote control switch inside the cab within easy reach of the driver. Both convex mirror heads shall be adjustable by an electric remote control switch inside the cab within easy reach of the driver. All mirror heads shall also be heated with the control within easy reach of the driver. The Velvac **two (2)-year** warranty on material and workmanship and **two (2)-year** warranty on chrome finish shall be provided. **DOORS** To enhance entry and egress to the cab, the forward cab doors shall be a minimum of 37.50" wide x 75.50" high. The crew cab doors shall be located on the sides of the cab and shall be constructed in the same manner as the forward cab doors. The crew cab door openings shall be a minimum of 34.30" wide x 85.50" high. The forward cab and crew cab doors shall be constructed of extruded aluminum with a nominal material thickness of 0.093". The exterior door skins shall be constructed from 0.090" aluminum. A customized, vertical, pull-down type door handle shall be provided on the exterior of each cab door. The exterior handle shall be designed specifically for the fire service to prevent accidental activation and shall provide 4.00" wide x 2.00" deep hand clearance for ease of use with heavy gloved hands. Each door shall also be provided with an interior flush, open style paddle handle that shall be readily operable from fore and aft positions and be designed to prevent accidental activation. The interior handles shall provide 4.00" wide x 1.25" deep hand clearance for ease of use		

	Bidder Complies	
	Yes	No
with heavy gloved hands. The cab doors shall be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. The keys shall be Model 751. The locks shall be capable of activating when the doors are open or closed. The doors shall remain locked if locks are activated when the doors are opened, then closed. A full length, heavy duty, stainless steel, piano-type hinge with a 0.38" pin and 11 gauge leaf shall be provided on all cab doors. There shall be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit. A chrome grab handle shall be provided on the inside of each cab door for ease of entry. The cab steps at each cab door location shall be located inside the cab doors to protect the steps from weather elements. **DOOR PANELS** The inner cab door panels shall be constructed out of brushed stainless steel. **MANUAL CAB DOOR WINDOWS** All cab entry doors shall contain a conventional roll down window. **CAB STEPS** The forward cab and crew cab access steps shall be a full size two (2) step design to provide largest possible stepping surfaces for safe ingress and egress. The bottom steps shall be designed with a grip pattern punched into bright aluminum treadplate material to provide support, slip resistance, and drainage. The bottom steps shall be a bolt-in design to minimize repair costs should they need to be replaced. The forward cab steps shall be a minimum 25.00" wide, and the crew cab steps shall be 21.65" wide with a 10.00" minimum depth. The inside cab steps shall not exceed 16.50" in height. The vertical surfaces of the step well shall be aluminum treadplate. **CAB EXTERIOR HANDRAILS** A 1.25" diameter slip-resistant, knurled aluminum handrail shall be provided adjacent to each cab and crew cab door opening to assist during cab ingress and egress. **STEP LIGHTS** There shall be six (6) white LED step lights installed for cab and crew cab access steps. • One (1) light for the driver's access steps. • Two (2) lights for the driver's side crew cab access steps. • Two (2) lights for the passenger's side crew cab access steps.		

	Bidder Complies	
	Yes	No
• One (1) light for the passenger's side access step. In order to ensure exceptional illumination, each light shall provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light. The lights shall be activated when the battery switch is on and the adjacent door is opened. **FENDER CROWNS** Stainless steel fender crowns shall be installed at the cab wheel openings. **INTERIOR CREW CAB DOOR HANDRAIL** A handrail shall be provided on each interior crew cab door pan. The handrails shall be mounted at a 45 degree angle. These are in addition to the standard crew cab door handle. **CREW CAB WINDOWS** One (1) fixed window with tinted glass shall be provided on each side of the cab, to the rear of the front cab door. The windows shall be sized to enhance light penetration into the cab interior. The windows shall measure 18.70" wide x 23.75" high. **CAB INTERIOR** The cab interior shall be constructed of primarily metal (painted aluminum) to withstand the severe duty cycles of the fire service. The officer side dash shall be a flat faced design to provide easy maintenance and shall be constructed out of painted aluminum. The instrument cluster shall be surrounded with a high impact ABS plastic contoured to the same shape of the instrument cluster. The engine tunnel shall be painted aluminum to match the cab interior. For durability and ease of maintenance, the cab interior side walls shall be painted aluminum. The rear wall shall be painted aluminum. Headliner shall be installed in both forward and rear cab sections. Headliner material shall be vinyl. A sound barrier shall be part of its composition. Material shall be installed on aluminum sheet and securely fastened to interior cab ceiling. Forward portion of cab headliner shall permit easy access for service of electrical wiring or other maintenance needs. All wiring shall be placed in metal raceways. Routing through holes in tubing shall not be accepted due to chaffing that installation shall cause.		

	Bidder Complies	
	Yes	No
CAB INTERIOR UPHOLSTERY The cab interior upholstery shall be dark silver gray. **CAB INTERIOR PAINT** The cab interior metal surfaces, excluding the rear heater panels, shall be painted fire smoke gray, vinyl texture paint. The rear heater panels shall be painted black, vinyl textured paint. **CAB FLOOR** The cab and crew cab floor areas shall be covered with Polydamp™ acoustical floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler. The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has a 0.25" thick closed cell foam (no water absorption) which offers a sound dampening material for reducing sound levels. **CAB DEFROSTER** To provide maximum defrost and heating performance, a 43,500 BTU heater-defroster unit with 350 CFM of air flow shall be provided inside the cab. The defroster unit shall be strategically located under the center forward portion of the vacuum formed instrument panel. For easy access, a removable vacuum formed cover shall be installed over the defroster unit. The defroster shall include an integral aluminum frame air filter, high performance dual scroll blowers, and ducts designed to provide maximum defrosting capabilities for the 1-piece windshield. The defroster ventilation shall be built into the design of the cab dash instrument panel and shall be easily removable for maintenance. The defroster shall be capable of clearing 98 percent of the windshield and side glass when tested under conditions where the cab has been cold soaked at 0 degrees Fahrenheit for 10 hours, and a 2 ounce per square inch layer of frost/ice has been able to build up on the exterior windshield. The defroster system shall meet or exceed SAE J382 requirements. A defrost fan shall be located on each side of the cab, recessed in the outboard overhead console. The fans shall use recirculated air from within the cab to blow air towards the driver and officer side windows for additional defrost capabilities. The defroster fan speed control shall also control the overhead defrost fans. When the defroster is set to low or medium, the overhead defroster fan speed shall be medium. When the defroster is set to high, the overhead defroster fan speed shall also be high. **CAB/CREW CAB HEATER** Two (2) 44,180 BTU auxiliary heaters with 276 CFM (each unit) of air flow shall be provided inside the crew cab, one (1) in each outboard rear-facing seat riser. The heaters shall include high performance dual scroll blowers, one (1) for each unit. Outlets for the heaters shall be located below each rear facing seat riser and below the fronts of the driver and passenger seats, for efficient airflow. An extruded aluminum plenum shall be		

	Bidder Complies	
	Yes	No
incorporated in the cab structure that shall transfer heat to the forward cab seating positions. The heater/defroster and crew cab heaters shall be controlled by a single integral electronic control panel. The heater control panel shall allow the driver to control heat flow to the front and rear simultaneously. The control panel shall include variable adjustment for temperature and fan control, and be conveniently located on the dash in clear view of the driver. The control panel shall include highly visible, progressive LED indicators for both fan speed and temperature. **AIR CONDITIONING** A high performance, customized air conditioning system shall be furnished inside the cab and crew cab. The air conditioning system shall be capable of cooling the average cab temperature from 100 degrees Fahrenheit to 75 degrees Fahrenheit within 30 minutes at 50 percent relative humidity. The cooling performance test shall be run only after the cab has been heat soaked at 100 degrees Fahrenheit for a minimum of 4 hours. A radiator mounted condenser with a 59,644 BTU output that meets and exceed the performance specification shall be installed. Mounting the condenser below the cab or body would reduce the performance of the system and shall not be acceptable. One (1) evaporator unit shall be installed in the center roof with two (2) cores, one (1) for the cab and one (1) for the crew cab. The evaporator unit shall have an adequate BTU rating to meet the performance specifications. Adjustable air outlets shall be strategically located on the evaporator cover per the following: • Four (4) shall be directed towards the driver's location • Four (4) shall be directed towards the officer's location • Seven (7) shall be directed towards the crew cab area The air conditioner refrigerant shall be R-134A and shall be installed by a certified technician. The air conditioner shall be controlled by a single electronic control panel. For ease of operation, the control panel shall include variable adjustment for temperature and fan control and be conveniently located on the dash in clear view of the driver. **Gravity Drain Tubes** Two (2) condensate drain tubes shall be provided for the air conditioning evaporator. The drip pan shall have two (2) drain tubes plumbed separately to allow for the condensate to exit the drip pan. No pumps shall be provided. **SUN VISORS**		

	Bidder Complies	
	Yes	No
Two (2) smoked Lexan™ sun visors provided. The sun visors shall be located above the windshield with one (1) mounted on each side of the cab. There shall be no retention bracket provided to help secure each sun visor in the stowed position. **GRAB HANDLES** A black rubber covered grab handle shall be mounted on the door post of the driver and officer's side cab door to assist in entering the cab. The grab handles shall be securely mounted to the post area between the door and windshield. **ENGINE COMPARTMENT LIGHTS** There shall be one (1) Whelen, Model 3SC0CDCR, 12 volt DC, 3.00" white LED light(s) with Whelen, Model 3FLANGEC, chrome flange kit(s) installed under the cab to be used as engine compartment illumination. These light(s) shall be activated automatically when the cab is raised. **ACCESS TO ENGINE DIPSTICKS** For access to the engine oil and transmission fluid dipsticks, there shall be a door on the engine tunnel, inside the crew cab. The door shall be on the rear wall of the engine tunnel, on the vertical surface. The engine oil dipstick shall allow for checking only. The transmission dipstick shall allow for both checking and filling. The door shall have a rubber seal for thermal and acoustic insulation. One (1) flush latch shall be provided on the access door. **SEATING CAPACITY** The seating capacity in the cab shall be four (4). **DRIVER SEAT** A Seats Incorporated, 911, knee action air ride, high-back style seat shall be provided in the cab for the driver. **OFFICER SEAT** A Seats Incorporated, 911, SCBA seat shall be provided in the cab for the officer. The SCBA cavity shall be adjustable front to rear in 0.50" increments to accommodate different size SCBA bottles. Moving the SCBA cavity shall be accomplished by unbolting, relocating and re-bolting in the desired location. **RADIO COMPARTMENT**		

	Bidder Complies	
	Yes	No
A radio compartment shall be provided under the officer's seat. The inside compartment dimensions shall be 16.00" wide x 7.50" high x 15.00" deep, with the back of the compartment angled up to match the cab structure. A drop-down door with a chrome plated lift and turn latch shall be provided for access. The compartment shall be constructed of smooth aluminum and painted to match the cab interior. **REAR FACING LEFT SIDE EMS CABINET** A rear facing cabinet shall be provided in the crew cab at the left side outboard position. The cabinet shall be 23.00" wide x 43.00" high x 26.75" deep with one (1) Gortite rollup door with satin anodized finish, non-locking. The frame to frame opening shall be 20.50" wide x 37.75" high. The minimum clear door opening of the cabinet shall be 17.75" wide x 31.87" high. The cabinet shall include two (2) infinitely adjustable shelves with a 1.25" up-turned lippainted to match the cab interior. The cabinet shall include louvers provided on the back side of the cabinet for ventilation. The cabinet shall be constructed of smooth aluminum and painted to match the cab interior. **Cabinet Light** There shall be one (1) white LED strip light installed on the right side of the interior cabinet door opening and one (1) white LED strip light installed on the left side of the interior cabinet door opening. The lights shall be controlled by an automatic door switch. **REAR FACING RIGHT SIDE CABINET** A rear facing cabinet shall be provided in the crew cab at the right side outboard position. The cabinet shall be 22.00" wide x 43.00" high x 26.75" deep with one (1) Gortite rollup door with satin anodized finish, non-locking. The frame to frame opening shall be 19.50" wide x 37.75" high. The minimum clear door opening of the cabinet shall be 16.75" wide x 31.87" high. The cabinet shall include two (2) infinitely adjustable shelves with a 1.25" up-turned lippainted to match the cab interior. The cabinet shall include louvers provided on the back side of the cabinet for ventilation. The cabinet shall be constructed of smooth aluminum and painted to match the cab interior.		

	Bidder Complies	
	Yes	No
Cabinet Light There shall be one (1) white LED strip light installed on the right side of the interior cabinet door opening and one (1) white LED strip light installed on the left side of the interior cabinet door opening. The lights shall be controlled by an automatic door switch. **FORWARD FACING CENTER SEATS** There shall be two (2) forward facing, Seats Incorporated 911 SCBA seats provided at the center position in the crew cab. The seats shall be spaced an additional 5.50" apart to provide more room for each occupant. The SCBA cavity shall be adjustable front to rear in 0.50" increments to accommodate different size SCBA bottles. Moving the SCBA cavity shall be accomplished by unbolting, relocating and re-bolting in the desired location. **SEAT UPHOLSTERY** All seat upholstery shall be gray Turnout Tuff material. **AIR BOTTLE HOLDERS** All SCBA type seats in the cab shall have a "Hands-Free" auto clamp style bracket in its backrest. For efficiency and convenience, the bracket shall include an automatic spring clamp that allows the occupant to store the SCBA bottle by simply pushing it into the seat back. For protection of all occupants in the cab, in the event of an accident, the inertial components within the clamp shall constrain the SCBA bottle in the seat and shall exceed the NFPA standard of 9G. Bracket designs with manual restraints (belts, straps, buckles) that could be inadvertently left unlocked and allow the SCBA to move freely within the cab during an accident, shall not be acceptable. There shall be a quantity of three (3) SCBA brackets. **SEAT BELTS** All cab and tiller cab (if applicable) seating positions shall have red seat belts. The seat belts shall be furnished with a single automatic retractor. To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length shall meet or exceed the current edition of NFPA 1901 and CAN/ULC - S515 standards. The 3-point shoulder type belts shall also include the ReadyReach D-loop assembly to the shoulder belt system. The ReadyReach feature adds an extender arm to the D-loop location placing the D-loop in a closer, easier to reach location. To ensure safe operation, the seat shall be equipped with seat belt sensors in the seat cushion and belt receptacle that shall activate an alarm indicating a seat is occupied but not buckled. **HELMET STORAGE PROVIDED BY FIRE DEPARTMENT** NFPA 1901, 2016 edition, section 14.1.7.4.1 requires a location for helmet storage be provided.		

	Bidder Complies	
	Yes	No

There is no helmet storage on the apparatus as manufactured. The fire department shall provide a location for storage of helmets.

CAB DOME LIGHTS

There shall be four (4) dual LED dome lights with black bezels provided. Two (2) lights shall be mounted above the inside shoulder of the driver and officer and two (2) lights shall be installed and located, one (1) on each side of the crew cab.

The color of the LED's shall be red and white.

The white LED's shall be controlled by the door switches and the lens switch.

The color LED's shall be controlled by the lens switch.

In order to ensure exceptional illumination, each white LED dome light shall provide a minimum of 10.1 foot-candles (fc) covering an entire 20.00" x 20.00" square seating position when mounted 40.00" above the seat.

PORTABLE HAND LIGHTS, PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 5.9.4 requires two portable hand lights mounted in brackets fastened to the apparatus.

The hand lights are not on the apparatus as manufactured. The fire department shall provide and mount these hand lights.

CAB INSTRUMENTATION

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

GAUGES

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

- Voltmeter gauge (volts):
    - Low volts (11.8 VDC)
        - Amber telltale light on indicator light display with steady tone alarm
    - High volts (15.5 VDC)

	Bidder Complies	
	Yes	No
▪ Amber telltale light on indicator light display with steady tone alarm • Engine Tachometer (RPM) • Speedometer MPH (Major Scale), KM/H (Minor Scale) • Fuel level gauge (Empty - Full in fractions): o Low fuel (1/8 full) ▪ Amber indicator light in gauge dial with steady tone alarm • Engine Oil pressure Gauge (PSI): o Low oil pressure to activate engine warning lights and alarms ▪ Red indicator light in gauge dial with steady tone alarm • Front Air Pressure Gauges (PSI): o Low air pressure to activate warning lights and alarm ▪ Red indicator light in gauge dial with steady tone alarm • Rear Air Pressure Gauges (PSI): o Low air pressure to activate warning lights and alarm ▪ Red indicator light in gauge dial with steady tone alarm • Transmission Oil Temperature Gauge (Fahrenheit): o High transmission oil temperature activates warning lights and alarm ▪ Amber indicator light in gauge dial with steady tone alarm • Engine Coolant Temperature Gauge (Fahrenheit): o High engine temperature activates an engine warning light and alarms ▪ Red indicator light in gauge dial with steady tone alarm • Diesel Exhaust Fluid Level Gauge (Empty - Full in fractions): o Low fluid (1/8 full) ▪ Amber indicator light in gauge dial		

	Bidder Complies	
	Yes	No
INDICATOR LAMPS To promote safety, the following telltale indicator lamps shall be located on the instrument panel in clear view of the driver. The indicator lamps shall be "dead-front" design that is only visible when active. The colored indicator lights shall have descriptive text or symbols . The following amber telltale lamps shall be present: • Low coolant • Trac cntl (traction control) (where applicable) • Check engine • Check trans (check transmission) • Air rest (air restriction) • DPF (engine diesel particulate filter regeneration) • HET (engine high exhaust temperature) (where applicable) • ABS (antilock brake system) • MIL (engine emissions system malfunction indicator lamp) (where applicable) • Regen inhibit (engine emissions regeneration inhibit) (where applicable) • Side roll fault (where applicable) • Front air bag fault (where applicable) • Aux brake overheat (auxiliary brake overheat) (where applicable) • The following red telltale lamps shall be present: • Ladder rack down • Parking brake • Stop engine • The following green telltale lamps shall be present: • Left turn • Right turn • Battery on		

	Bidder Complies	
	Yes	No
• Ignition • Aux brake (auxiliary brake engaged) (where applicable) • The following blue telltale lamps shall be present: • High beam **ALARMS** Audible steady tone warning alarm: A steady audible tone alarm shall be provided whenever a warning condition is active. **INDICATOR LAMP AND ALARM PROVE-OUT** A system shall be provided which automatically tests telltale indicator lights and alarms located on the cab instrument panel. Telltale indicators and alarms shall perform prove-out for 3 to 5 seconds when the ignition switch is moved to the on position with the battery switch on. **CONTROL SWITCHES** For ease of use, the following controls shall be provided immediately adjacent to the cab instrument panel within easy reach of the driver. All switches shall have backlit labels for low light applications. Headlight/Parking light switch: A three (3)-position maintained rocker switch shall be provided. The first switch position shall deactivate all parking and headlights. The second switch position shall activate the parking lights. The third switch shall activate the headlights. Panel back lighting intensity control switch: A three (3)-position momentary rocker switch shall be provided. Pressing the top half of the switch, "Panel Up" increases the panel back lighting intensity and pressing the bottom half of the switch, "Panel Down" decreases the panel back lighting intensity. Pressing the half or bottom half of the switch several times shall allow back lighting intensity to be gradually varied from minimum to maximum intensity level for ease of use. Ignition switch: A three (3)-position maintained/momentary rocker switch shall be provided. The first switch position shall turn off and deactivate vehicle ignition. The second switch position shall activate vehicle ignition and shall perform prove-out on the telltale indicators and alarms for 3 to 5 seconds after the switch is turned on. A green indicator lamp is activated with vehicle ignition. The third momentary position shall temporarily silence all active cab alarms. An alarm "chirp" may continue as long as alarm condition exists. Switching ignition to off position shall terminate the alarm silence feature and reset function of cab alarm system. Engine start switch: A two (2)-position momentary rocker switch shall be provided. The first switch position is the default switch position. The second switch position shall activate the vehicle's engine. The switch actuator is designed to prevent accidental activation.		

	Bidder Complies	
	Yes	No
Hazard switch shall be provided on the instrument panel or on the steering column. Heater and defroster controls. Turn signal arm: A self-canceling turn signal with high beam headlight controls. Windshield wiper control shall have high, low, and intermittent modes. Parking brake control: An air actuated push/pull park brake control. Chassis horn control: Activation of the chassis horn control shall be provided through the center of the steering wheel. High idle engagement switch: A maintained rocker switch with integral indicator lamp shall be provided. The switch shall activate and deactivate the high idle function. The "OK To Engage High Idle" indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch shall indicate when the high idle function is engaged. "OK To Engage High Idle" indicator lamp: A green indicator light shall be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement. Emergency switching shall be controlled by multiple individual warning light switches for various groups or areas of emergency warning lights. An Emergency Master switch provided on the instrument panel that enables or disables all individual warning light switches is included. An additional "Emergency Master" button shall be provided on the lower left hand corner of the gauge panel to allow convenient control of the "Emergency Master" system from inside the driver's door when standing on the ground. **CUSTOM SWITCH PANELS** The design of cab instrumentation shall allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There shall be positions for up to four (4) switch panels in the lower instrument console and up to six (6) switch panels in the overhead visor console. All switches have backlit labels for low light conditions. **DIAGNOSTIC PANEL** A diagnostic panel shall be provided and accessible while standing on the ground. The panel shall be located inside the driver's side door left of the steering column. The diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches shall		

	Bidder Complies	
	Yes	No
allow ABS systems to provide blink codes should a problem exist. The diagnostic panel shall include the following: • ENGINE/TRANSMISSION/ABS J1939 Diagnostic Port • ABS Diagnostic Switch and Indicator - The switch and amber indicator shall allow access to diagnostic mode and display of standard ABS system fault blink codes that may be generated by the ABS system • DPF REGEN (Diesel Particulate Filter Regeneration Switch) (where applicable) shall be provided to request regeneration of the engine emission system. An amber indicator shall be provided on top of the switch that shall illuminate in a "CHECK ENGINE" condition • REGEN INHIBIT (Diesel Particulate Filter Regeneration Inhibit Switch) (where applicable) shall be provided that shall request that regeneration be temporarily prevented. A green indicator shall be provided on top of the Regen Inhibit switch that shall illuminate when the Regen Inhibit feature is active. Regen Inhibit shall be disabled upon cycling of the ignition switch to the off state. **AIR RESTRICTION INDICATOR** A high air restriction warning indicator light (electronic) shall be provided. **"DO NOT MOVE APPARATUS" INDICATOR** A flashing red indicator light, located in the driving compartment, shall be illuminated automatically per the current NFPA requirements. The light shall be labeled "Do Not Move Apparatus If Light Is On." The same circuit that activates the Do Not Move Apparatus indicator shall activate a pulsing alarm when the parking brake is released. **SWITCH PANELS** The built-in switch panels shall be located in the lower console or overhead console of the cab. Switches shall be rocker type with an indicator light, of which is an integral part of the switch. **WIPER CONTROL** Wiper control shall consist of a two (2)-speed windshield wiper control with intermittent feature and windshield washer controls. **SPARE CIRCUIT** There shall be two (2) pair of wires, including a positive and a negative, installed on the apparatus.		

	Bidder Complies	
	Yes	No
The above wires shall have the following features: • The positive wire shall be connected directly to the battery power • The negative wire shall be connected to ground • Wires shall be protected to 15 amps at 12 volts DC • Power and ground shall terminate officer side dash area • Termination shall be with heat shrinkable butt splicing • Wires shall be sized to 125 percent of the protection The circuit(s) may be load managed when the parking brake is set. **CUSTOMER SUPPLIED RADIO WIRING** There shall be one (1) 12 volt combination wiring leads of which each shall include one (1) battery switched, one (1) ignition and one (1) negative for use with radio equipment. Each lead shall be 18.00" long and be provided instrument panel area with antennae lead. The leads shall be clearly marked in a coil and terminate with butt splices. A breaker rated for 30 amps shall be provided for circuit protection of the battery switched lead with a minimum of 10 gauge wire. A breaker rated for 7.5 amps shall be provided for circuit protection of the ignition lead. The wires shall be colored coded as follows: • red for battery switched • yellow for ignition • black for ground **INFORMATION CENTER** There shall be an LCD display integral to the cab gauge panel provided that shall display the following information: • Total distance • Trip distance • Total hours		

	Bidder Complies	
	Yes	No
• Trip hours • PTO "A" hours • PTO "B" hours **VEHICLE DATA RECORDER** There shall be a vehicle data recorder (VDR) capable of reading and storing vehicle information provided. The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A USB cable can be used to connect the VDR to a laptop to retrieve required information. The program to download the information from the VDR will be available to download on-line. The vehicle data recorder shall be capable of recording the following data via hardwired and/or CAN inputs: • Vehicle Speed - MPH • Acceleration - MPH/sec • Deceleration - MPH/sec • Engine Speed - RPM • Engine Throttle Position - % of Full Throttle • ABS Event - On/Off • Seat Occupied Status - Yes/No by Position • Seat Belt Buckled Status - Yes/No by Position • Master Optical Warning Device Switch - On/Off • Time - 24 Hour Time • Date - Year/Month/Day **Seat Belt Monitoring System** A seat belt monitoring system (SBMS) shall be provided. The SBMS shall be capable of monitoring up to 10 seating positions indicating the status of each seat position per the following: • Seat Occupied & Buckled = Green LED indicator illuminated		

	Bidder Complies	
	Yes	No
• Seat Occupied & Unbuckled = Red LED indicator with audible alarm • No Occupant & Buckled = Red LED indicator with audible alarm • No Occupant & Unbuckled = No indicator and no alarm The SBMS shall include an audible alarm that shall warn that an unbuckled occupant condition exists and the parking brake is released, or the transmission is not in park. **RADIO ANTENNA MOUNT** There shall be one (1) standard 1.125", 18 thread antenna-mounting base(s) installed on the right side on the cab roof with high efficiency, low loss, coaxial cable(s) routed to the instrument panel area. A weatherproof cap shall be installed on the mount. **VEHICLE CAMERA SYSTEM** There shall be a color vehicle camera system provided with the following: • One (1) camera located at the rear of the apparatus, pointing rearward, displayed automatically with the vehicle in reverse. The camera image shall be displayed on a 7.00" LCD display located in view of the driver in the custom dash, per instrument panel layout. The display shall include manual camera activation capability and audio from the active camera. The following components will be included: • One (1) MO700136DC, display • One (1) SV-CW134639CAI, camera • All necessary cables **VEHICLE CAMERA GUARD** There shall be one (1) aluminum treadplate guard(s) fastened over the vehicle camera(s) located rear of truck . **ELECTRICAL POWER CONTROL SYSTEM** A compartment shall be provided in or under the cab to house the vehicle's electrical power and signal circuit protection and control components. The power and signal protection and control compartment shall contain circuit protection devices and power control devices. Power and signal protection and control components shall be protected against corrosion, excessive heat, excessive vibration, physical damage and water spray. Serviceable components shall be readily accessible. Circuit protection devices, which conform to SAE standard, shall be utilized to protect each		

	Bidder Complies	
	Yes	No
circuit. All circuit protection devices shall be sized to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers shall be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258. When required, automotive type fuses conforming to SAE J554, J1284, J1888 or J2077 shall be utilized to protect electronic equipment. Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the maximum current for which the circuit is protected. Visual status indicators shall be supplied to identify control safety interlocks and vehicle status. In addition to visual status indicators, audible alarms designed to provide early warning of problems before they become critical shall be used. **VOLTAGE MONITOR SYSTEM** A voltage monitor system shall be provided to indicate the status of each battery system connected to the vehicle's electrical load. The monitor system shall provide visual and audio warning when the system voltage is above or below optimum levels. **POWER AND GROUND STUDS** Spare circuits shall be provided in the primary distribution center for two-way radio equipment. The spare circuits shall consist of the following: • One (1) 12-volt DC, 30 amp battery direct spare • One (1) 12-volt DC ground and un-fused switched battery stud located in or adjacent to the power distribution center **EMI/RFI PROTECTION** The electrical system proposed shall include means to control undesired electromagnetic and radio frequency emissions. State of the art electrical system design and components shall be used to ensure radiated and conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions are suppressed at their source. The apparatus proposed shall have the ability to operate in the electromagnetic environment typically found in fire ground operations. The contractor shall be able to demonstrate the EMI and RFI testing has been done on similar apparatus and certifies that the vehicle proposed meets SAE J551 requirements. EMI/RFI susceptibility shall be controlled by applying immune circuit designs, shielding, twisted pair wiring and filtering. The electrical system shall be designed for full compatibility with low level control signals and high powered two-way radio communication systems. Harness and cable routing shall be given careful attention to minimize the potential for conducting and radiated EMI-RFI susceptibility.		

	Bidder Complies	
	Yes	No
ELECTRICAL All 12-volt electrical equipment installed by the apparatus manufacturer shall conform to modern automotive practices. All wiring shall be high temperature crosslink type. Wiring shall be run, in loom or conduit, where exposed and have grommets where wire passes through sheet metal. Automatic reset circuit breakers shall be provided which conform to SAE Standards. Wiring shall be color, function and number coded. Function and number codes shall be continuously imprinted on all wiring harness conductors at 2.00" intervals. Exterior exposed wire connectors shall be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Electrical wiring and equipment shall be installed utilizing the following guidelines: 1. All holes made in the roof shall be caulked with silicon, rope caulk is not acceptable. Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof. 2. Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in it. Exposed area shall be defined as any location outside of the cab or body. 3. Electrical components designed to be removed for maintenance shall not be fastened with nuts and bolts. Metal screws shall be used in mounting these devices. Also a coil of wire shall be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work. 4. Corrosion preventative compound shall be applied to all terminal plugs located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation (of the plug). 5. All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area. 6. All electrical terminals in exposed areas shall have silicon (1890) applied completely over the metal portion of the terminal. All lights and reflectors, required to comply with Federal Motor Vehicle Safety Standard #108, shall be furnished. Rear identification lights shall be recessed mounted for protection. Lights and wiring mounted in the rear bulkheads shall be protected from damage by installing a false bulkhead inside the rear compartments. An operational test shall be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.		

	Bidder Complies	
	Yes	No
The results of the tests shall be recorded and provided to the purchaser at time of delivery. **BATTERY SYSTEM** There shall be four (4) 12 volt Exide®, Model 31S950X3W, batteries that include the following features shall be provided: • 950 CCA, cold cranking amps • 190 amp reserve capacity • High cycle • Group 31 • Rating of 3800 CCA at 0 degrees Fahrenheit • 760 minutes of reserve capacity • Threaded stainless steel studs Each battery case shall be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover shall be manifold vented with a central venting location to allow a 45 degree tilt capacity. The inside of each battery shall consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance. **BATTERY SYSTEM** There shall be a single starting system with an ignition switch and starter button provided and located on the cab instrument panel. **MASTER BATTERY SWITCH** There shall be a master battery switch provided within the cab within easy reach of the driver to activate the battery system. An indicator light shall be provided on the instrument panel to notify the driver of the status of the battery system. **BATTERY COMPARTMENTS** Batteries shall be placed on non-corrosive mats and be stored in well ventilated compartments located under the cab. Heavy-duty battery cables shall be used to provide maximum power to the electrical system. Cables shall be color coded.		

	Bidder Complies	
	Yes	No
Battery terminal connections shall be coated with anti-corrosion compound. Battery solenoid terminal connections shall be encapsulated with semi-permanent rubberized compound. **JUMPER STUDS** One (1) set of battery jumper studs with plastic color-coded covers shall be included on the battery compartments. **BATTERY CHARGER** There shall be an IOTA™, Model DSL 75, battery charger with IQ4, controller provided. The battery charger shall be wired to the AC shoreline inlet through an AC receptacle adjacent to this battery charger. There shall be a Kussmaul™, Model #091-94-12, remote indicator included. The battery charger shall be located in the left body compartment mounted on the left wall as high as possible. The battery charger indicator shall be located behind the driver's door on the outside of the cab. **AUTO EJECT FOR SHORELINE** There shall be one (1) Kussmaul™, Model 091-55-20-120, 20 amp 120 volt AC shoreline inlet(s) provided to operate the dedicated 120 volt AC circuits on the apparatus. The shoreline inlet(s) shall include white weatherproof flip up cover(s). There shall be a release solenoid wired to the vehicle's starter to eject the AC connector when the engine is starting. The shoreline(s) shall be connected to the battery charger. There shall be a mating connector body supplied with the loose equipment. There shall be a label installed near the inlet(s) that state the following: • Line Voltage • Current Ratting (amps) • Phase • Frequency The shoreline receptacle shall be located on the driver side of cab, above wheel.		

	Bidder Complies	
	Yes	No
ALTERNATOR A Delco Remy®, Model 40SI, alternator shall be provided. It shall have a rated output current of 320 amps, as measured by SAE method J56. The alternator shall feature an integral regulator and rectifier system that has been tested and qualified to an ambient temperature of 257 degrees Fahrenheit (125 degrees Celsius). The alternator shall be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output. **ELECTRONIC LOAD MANAGEMENT** An electronic load management (ELM) system that monitors the vehicles 12-volt electrical system, and automatically reduces the electrical load in the event of a low voltage condition and by doing so, ensures the integrity of the electrical system. The ELM shall monitor the vehicle's voltage while at the scene (parking brake applied). It shall sequentially shut down individual electrical loads when the system voltage drops below a preset value. Two (2) separate electrical loads shall be controlled by the load manager. The ELM shall sequentially re-energize electrical loads as the system voltage recovers. **HEADLIGHTS** There shall be four (4) JW Speaker®, Model 8800, 4" x 6" rectangular LED lights mounted in the front quad style, chrome housing on each side of the cab grille: • the outside light on each side shall contain a part number 055***1 low beam module • the inside light on each side shall contain a part number 055***1 high beam module • the headlight to include chrome bezels The low beam lights shall be activated when the headlight switch is on. The high beam and low beam lights shall be activated when the headlight switch and the high beam switch is activated. **DIRECTIONAL LIGHTS** There shall be two (2) Whelen®, Model C6T*, 5.12" high x 7.56" wide x 1.56" deep amber LED populated arrow directional lights provided on the front of the cab, above the headlights. Each light shall be housed in the same quad common bezel as the front warning light. The lens color(s) to be clear. **INTERMEDIATE LIGHT** There shall be two (2) Weldon, Model 9186-8580-29, amber LED turn signal marker lights furnished, one (1) each side, in the rear fender panel. The light shall double as a turn signal and marker light. **CAB CLEARANCE/MARKER/ID LIGHTS** There shall be five (5) amber LED lights provided to indicate the presence and overall width		

	Bidder Complies	
	Yes	No
of the vehicle in the following locations: • Three (3) amber LED identification lights shall be installed in the center of the cab above the windshield. • Two (2) amber LED clearance lights shall be installed, one (1) on each outboard side of the cab above the windshield. **FRONT CAB SIDE DIRECTIONAL/MARKER LIGHTS** There shall be two (2) Weldon, Model 9186-8580-29, amber LED lights installed front of the cab door, one (1) on each side of the cab. The lights shall activate as marker lights with the headlight switch and directional lights with the corresponding directional circuit. **REAR CLEARANCE/MARKER/ID LIGHTING** There shall be a three (3) LED light bar used as identification lights located at the rear of the apparatus per the following: • As close as practical to the vertical centerline • Centers spaced not less than 6.00" or more than 12.00" apart • Red in color • All at the same height There shall be two (2) LED lights installed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following: • To indicate the overall width of the vehicle • One (1) each side of the vertical centerline • As near the top as practical • Red in color • To be visible from the rear • All at the same height There shall be two (2) LED lights installed on the side of the apparatus used as marker lights as close to the rear as practical per the following: • To indicate the overall length of the vehicle		

	Bidder Complies	
	Yes	No

- One (1) each side of the vertical centerline
- As near the top as practical
- Red in color
- To be visible from the side
- All at the same height

There shall be two (2) red reflectors located on the rear of the truck facing to the rear. One (1) each side, as far to the outside as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

There shall be two (2) red reflectors located on the side of the truck facing to the side. One (1) each side, as far to the rear as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

Per FMVSS 108 and CMVSS 108 requirements.

REAR FMVSS LIGHTING

There shall be Whelen® stop/tail and directional lighting provided at the rear of the apparatus in a polished combination housing:

- two (2) Model C6BTT*, 5.12" high x 7.56" wide x 1.56" deep stop/tail lights with red LEDs
- two (2) Model C6T*, 5.12" high x 7.56" wide x 1.56" deep directional lights with amber LEDs in a arrow shape
- the lens color(s) to be the same as the LEDs

Two (2) Whelen Model C6BU, 5.15" high x 7.56" wide x 1.62" deep backup lights with white LEDs shall be provided in the tail light housing at the rear of the apparatus.

LICENSE PLATE BRACKET

There shall be one (1) license plate bracket mounted on the rear of the body.
A white LED light shall illuminate the license plate. A polished stainless steel light shield shall be provided over the light that shall direct illumination downward, preventing white light to the rear.

LIGHTING BEZEL

Two (2) Whelen®, Model PLASC4V, quad light chrome plated composite plastic housings shall be provided at the rear of the apparatus for the brake tail, directional and a third and fourth light.

	Bidder Complies	
	Yes	No
BACK-UP ALARM A PRECO, Model 1040, solid-state electronic audible back-up alarm that actuates when the truck is shifted into reverse shall be provided. The device shall sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum ten (10) dBA above surrounding environmental noise levels. **CAB PERIMETER SCENE LIGHTS** There shall be four (4) Truck-Lite, Model 6060C, white LED lights with grommets provided, one (1) for each cab and crew cab door. These lights shall be activated automatically when the battery switch is on and the exit doors are opened or by the same means as the body perimeter scene lights. **PUMP HOUSE PERIMETER LIGHTS** There shall be two (2) Truck-Lite, Model 6060C, white LED lights with grommets provided under the pump panel running boards, one (1) each side. The lights shall be controlled by the same means as the body perimeter lights. **BODY PERIMETER SCENE LIGHTS** There shall be two (2) Truck-Lite, Model 6060C, white LED lights with grommets provided under at the rear step area of the body, one (1) each side shining to the rear. The perimeter scene lights shall be activated when the parking brake is applied. **STEP LIGHTS** Four (4) white LED step lights shall be provided. One (1) step light shall be provided on each side, on the front compartment face and two (2) step lights at the rear to illuminate the tailboard. In order to ensure exceptional illumination, each light shall provide a minimum of 25 foot-candles (fc) covering an entire 15.00" x 15.00" square placed 10.00" below the light and a minimum of 1.5 fc covering an entire 30.00" x 30.00" square at the same 10.00" distance below the light. These step lights shall be actuated with the pump panel light switch. All other steps on the apparatus shall be illuminated per the current edition of NFPA 1901. **12 VOLT LIGHTING** There shall be one (1) Whelen® Model P*H2*, 17,750 lumens 12 volt DC light(s) with a combination of flood and spot optics provided on the front visor, centered. The painted parts of this light assembly to be white.		

	Bidder Complies	
	Yes	No
The light(s) shall be controlled by a switch at the driver's side switch panel and by a switch at the passenger's side switch panel. These light(s) may be load managed when the parking brake is applied. **12 VOLT DC SCENE LIGHTS** There shall be one (1) Whelen® Model P*H2*, 17,750 lumens 12 volt DC powered lights with white LEDs and a combination of flood and spot optics installed on the apparatus located, passenger side of cab over EMS compartment centered. The light(s) to be installed in a 0 degree vertical recessed bracket. The painted parts of this light assembly to be white. The lights shall be activated by a switch at the driver's side switch panel, by a switch at the driver's side pump panel and when the cab or crew cab doors on the passenger's side are open. The light(s) may be load managed when the parking brake is applied. **DECK LIGHTS** There shall be two (2) Whelen, Model PFBP12C, 12 volt DC LED floodlights with swivel mount provided at the rear of the hose bed, one (1) each side. The lights shall be activated by a control from a switch at the rear of the truck. **HOSE BED LIGHTS** There shall be one (1) additional sets of white 12 volt DC LED light strips with stainless steel protective cover, provided to light the hose bed area. • One (1) light strip shall be installed the entire length of the one each side of the hose bed. The lights shall be activated by a cup switch at the rear of the apparatus no more than 72.00" from the ground. **WALKING SURFACE LIGHT** There shall be Model FRP, 4" round black 12 volt DC LED floodlight(s) with bolt mount provided to illuminate the entire designated walking surface on top of the body. The light(s) shall be activated when the body step lights are on. **WATER TANK** Booster tank shall have a capacity of 1000 gallons and be constructed of polypropylene		

	Bidder Complies	
	Yes	No
plastic by United Plastic Fabricating, Incorporated. The tank shall be designed to achieve a low hose bed. Tank design shall be a stepped design with the forward section of the tank higher than the section of the tank that is below the hose bed. Tank joints and seams shall be nitrogen welded inside and out. Tank shall be baffled in accordance with NFPA Bulletin 1901 requirements. Baffles shall have vent openings at both the top and bottom to permit movement of air and water between compartments. Longitudinal partitions shall be constructed of .38" polypropylene plastic and shall extend from the bottom of the tank through the top cover to allow for positive welding. Transverse partitions shall extend from 4.00" off the bottom of the tank to the underside of the top cover. All partitions shall interlock and shall be welded to the tank bottom and sides. Tank top shall be constructed of .50" polypropylene. It shall be recessed .38" and shall be welded to the tank sides and the longitudinal partitions. Tank top shall be sufficiently supported to keep it rigid during fast filling conditions. Construction shall include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions. Two (2) of the dowels shall be drilled and tapped (.50" diameter, 13.00" deep) to accommodate lifting eyes. A sump that is 8.00" long x 8.00" wide x 6.00" deep shall be provided at the bottom of the water tank. Sump shall include a drain plug and the tank outlet. Tank shall be installed in a fabricated cradle assembly constructed of structural steel. Sufficient crossmembers shall be provided to properly support bottom of tank. Crossmembers shall be constructed of steel bar channel or rectangular tubing. Tank shall "float" in cradle to avoid torsional stress caused by chassis frame flexing. Rubber cushions, .50" thick x 3.00" wide, shall be placed on all horizontal surfaces that the tank rests on. Stops or other provision shall be provided to prevent an empty tank from bouncing		

	Bidder Complies	
	Yes	No
excessively while moving vehicle. Mounting system shall be approved by the tank manufacturer. Fill tower shall be constructed of .50" polypropylene and shall be a minimum of 10.00" wide x 16.00" long. Fill tower shall be furnished with a .25" thick polypropylene screen and a hinged cover. An overflow pipe, constructed of 6.00" schedule 40 polypropylene, shall be installed approximately halfway down the fill tower and extend through the water tank and dump to the rear of the rear axle. **SLEEVE, PLUMBING, THROUGH TANK** One (1) sleeve shall be provided in the water tank for a 3.00" pipe to the rear. **WATER TANK RESTRAINT** A heavy-duty water tank restraint shall be provided. **TANK DUMP** A tank dump shall be installed through the rear body panel in the area over the tailboard. Dump shall be gated with a 10.00" square Newton dump valve, located in the rear compartment. A telescopic extension chute shall be included with the dump valve. **HOSE BED** The hose bed shall be fabricated of .125"-5052 aluminum with a nominal 38,000 psi tensile strength. The hose bed shall be as low as practical. Upper and rear edges of side panels shall have a double break for rigidity, a split tube finish shall not be acceptable. The upper inside area of the beavertails shall be covered with brushed stainless steel to prevent damage to painted surface when hose is removed. Flooring of the hose bed shall be removable aluminum grating with the top surface corrugated to aid in hose aeration. The grating slats shall be a minimum of 0.50" x 4.50" with spacing between slats for hose ventilation. A cross divider shall be provided at the front of the hose bed before the tank transitions from the lower section to the upper section. The divider shall run from the top of the side sheet down below the hose bed grating.		

	Bidder Complies	
	Yes	No
Hose bed shall accommodate 800' of 5" hose, 600' of 3" hose. **HOSE BED DIVIDER** Three (3) adjustable hosebed dividers shall be furnished for separating hose. Each divider shall be constructed of a .25" brushed aluminum sheet. Flat surfaces shall be sanded for uniform appearance, or constructed of brushed aluminum. Divider shall be fully adjustable by sliding in tracks, located at the front and rear of the hose bed. Divider shall be held in place by tightening bolts, at each end. Acorn nuts shall be installed on all bolts in the hose bed which have exposed threads. **HOSE BED HOSE RESTRAINT** The hose in the hose bed shall be restrained by a black nylon Velcro® strap at the top of the hose bed. At the rear of the hose bed, 2.00" black nylon webbing with a 1.50" x 4.00" box pattern shall attach at the top rear outside corners with seat belt buckle fasteners. The webbing shall have straps connected with seat belt buckle fasteners located at the rear body sheet below the hose bed. A cross-divider shall be provided just behind the fill tower. The divider shall be bolted to the side sheet. **RUNNING BOARDS** Running boards shall be fabricated of .125" bright aluminum treadplate. Each running board shall be supported by a welded 2.00" square tubing and channel assembly, which shall be bolted to the pump compartment substructure. Running boards shall be 12.75" deep and spaced .50" away from the pump panel. A splash guard shall be provided above the running board treadplate. **TAILBOARD** The tailboard shall also be constructed of .125" bright aluminum treadplate and spaced .50" from the body, as well as supported by a structural steel assembly. The tailboard area shall be 16.00" deep. The exterior side shall be flanged down and in for increased rigidity of tailboard structure. **REAR WALL, SMOOTH ALUMINUM/BODY MATERIAL** The rear facing surfaces of the center rear wall shall be smooth aluminum.		

	Bidder Complies	
	Yes	No
The bulkheads, the surface to the rear of the side body compartments, shall be smooth and the same material as the body. Any inboard facing surfaces below the height of the hose bed shall be aluminum diamond plate. **TOW BAR** A tow bar shall be installed under the tailboard at center of truck. Tow bar shall be fabricated of 1.00" CRS bar rolled into a 3.00" radius. Tow bar assembly shall be constructed of .38" structural angle. When force is applied to the bar, it shall be transmitted to the frame rail. Tow bar assembly shall be designed and positioned to allow up to a 30-degree upward angled pull of 17,000 lb, or a 20,000 lb straight horizontal pull in line with the centerline of the vehicle. Tow bar design shall have been fully tested and evaluated using strain gauge testing and finite element analysis techniques. **COMPARTMENTATION** Body and compartments shall be fabricated of .125", 5052-H32 aluminum. Side compartments shall be an integral assembly with the rear fenders. Circular fender liners shall be provided for prevention of rust pockets and ease of maintenance. Compartment flooring shall be of the sweep out design with the floor higher than the compartment door lip. The compartment door opening shall be framed by flanging the edges in 1.75" and bending out again .75" to form an angle. Drip protection shall be provided above the doors by means of bright aluminum extrusion, formed bright aluminum treadplate or polished stainless steel. The top of the compartment shall be covered with bright aluminum treadplate rolled over the edges on the front, rear and outward side. These covers shall have the corners welded. Side compartment covers shall be separate from the compartment tops. Front facing compartment walls shall be covered with bright aluminum treadplate.		

	Bidder Complies	
	Yes	No
All screws and bolts which protrude into a compartment shall have acorn nuts on the ends to prevent injury. **UNDERBODY SUPPORT SYSTEM** Due to the severe loading requirements of this pumper a method of body and compartment support suitable for the intended load shall be provided. The backbone of the support system shall be the chassis frame rails which is the strongest component of the chassis and is designed for sustaining maximum loads. The support system shall include .375" thick steel vertical angle supports bolted to the chassis frame rails with .625" diameter bolts. Attached to the bottom of the steel vertical angles shall be horizontal angles, with gussets welded to the vertical members, which extend to the outside edge of the body. A steel frame shall be mounted on the top of these supports to create a floating substructure which shall result in a 500 lb equipment support rating per lower compartment. The floating substructure shall be separated from the horizontal members with neoprene elastomer isolators. These isolators shall reduce the natural flex stress of the chassis from being transmitted to the body. Isolators shall have a broad load range, proven viability in vehicular applications, be of a fail safe design and allow for all necessary movement in three (3) transitional and rotational modes. The neoprene isolators shall be installed in a modified V three (3)-point mounting pattern to reduce the natural flex of the chassis being transmitted to the body. A design with body compartments hanging on the chassis in an unsupported fashion shall not be acceptable. **AGGRESSIVE WALKING SURFACE** All exterior surfaces designated as stepping, standing, and walking areas shall comply with the required average slip resistance of the current NFPA standards. **LOUVERS** Louvers shall be stamped into compartment walls to provide the proper airflow inside the body compartments and to prevent water from dripping into the compartment. Where these louvers are provided, they shall be formed into the metal and not added to the compartment as a separate plate. **TESTING OF BODY DESIGN** Body structural analysis shall be fully tested. Proven engineering and test techniques such as finite element analysis, stress coating and strain gauging shall be performed with special		

	Bidder Complies	
	Yes	No
attention given to fatigue, life and structural integrity of the cab, body and substructure. Body shall be tested while loaded to its greatest in-service weight. The criteria used during the testing procedure shall include: • Raising opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb. • Making a 90 degree turn, while driving at 20 mph to simulate aggressive driving conditions. • Driving the vehicle at 35 mph on a washboard road. • Driving the vehicle at 55 mph on a smooth road. • Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement. Evidence of actual testing techniques shall be made available upon request. **LEFT SIDE COMPARTMENTATION** The left side compartmentation shall consist of three rollup door compartments. A full height, rollup door compartment ahead of the rear wheels shall be provided. The interior dimensions of this compartment shall be 44.00" wide x 66.63" high x 25.88" deep in the lower 25.00" of the compartment and 12.00" deep in the remaining upper portion. The clear door opening shall be a minimum of 38.25" wide x 56.88" high. A rollup door compartment over the rear wheels shall be provided. The interior dimensions of this compartment shall be 66.50" wide x 32.88" high x 12.00" deep. The clear door opening shall be a minimum of 58.25" wide x 23.13" high. A full height, rollup door compartment behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 47.75" wide x 67.63" high x 25.88" deep in the lower 26.00" of height and 12.00" deep in the remaining upper section of the compartment. The clear door opening shall be a minimum of 44.75" wide x 57.88" high. The interior height of the compartments shall be measured from the compartment floor to the ceiling. The spool of the rollup door at the top of the compartment takes up some usable space. The depth of the compartments shall be measured from the back wall to the inside of the door frame. Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.		

	Bidder Complies	
	Yes	No
RIGHT SIDE COMPARTMENTATION The right side compartmentation shall consist of three rollup door compartments. A full height, rollup door compartment ahead of the rear wheels shall be provided. The interior dimensions of this compartment shall be 44.00" wide x 66.63" high x 25.88" deep in the lower 25.00" of the compartment and 12.00" deep in the remaining upper portion. The clear door opening shall be a minimum of 38.25" wide x 56.88" high. A rollup door compartment over the rear wheels shall be provided. The interior dimensions of this compartment shall be 66.50" wide x 32.88" high x 12.00" deep. The clear door opening shall be a minimum of 58.25" wide x 23.13" high. A full height, rollup door compartment behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 47.75" wide x 67.63" high x 25.88" deep in the lower 26.00" of height and 12.00" deep in the remaining upper section of the compartment. The clear door opening shall be a minimum of 44.75" wide x 57.88" high. The interior height of the compartments shall be measured from the compartment floor to the ceiling. The spool of the rollup door at the top of the compartment takes up some usable space. The depth of the compartments shall be measured from the back wall to the inside of the door frame. Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand. **SIDE COMPARTMENT ROLLUP DOOR(S)** There shall be six (6) compartment doors installed on the side compartments. The doors shall be double faced aluminum construction, painted one (1) color to match the lower portion of the body and manufactured by Gortite®. Lath sections shall be an interlocking rib design and shall be individually replaceable without complete disassembly of door. Between each slat at the pivoting joint shall be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals shall allow door to operate in extreme temperatures ranging from 180 to -40 degrees Fahrenheit. Side, top and bottom seals shall be provided to resist ingress of dirt and weather and be made of Santoprene. All hinges, barrel clips and end pieces shall be nylon 66. All nylon components shall withstand temperatures from 300 to -40 degrees Fahrenheit. Hardened plastic shall not be acceptable. A polished stainless steel lift bar to be provided for each roll-up door. Lift bar shall be		

	Bidder Complies	
	Yes	No
located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge shall be supplied over lift bar for additional area to aid in closing the door. Doors shall be constructed from an aluminum box section. The exterior surface of each slat shall be flat. The interior surfaces shall be concave to provide strength and prevent loose equipment from jamming the door from inside. To conserve space in the compartments, the spring roller assembly shall not exceed 3.00" in diameter. A garage style roll door shall not be acceptable. The header for the rollup door assembly shall not exceed 4.00". A heavy-duty magnetic switch shall be used for control of open compartment door warning lights. **REAR COMPARTMENTATION** A rollup door compartment above the rear tailboard shall be provided**.** Interior dimensions of this compartment shall be 40.00" wide x 33.63" high x 25.88" deep in the lower 26.00" of the compartment and 15.75" deep in the remaining upper portion. Depth of the compartment shall be calculated with the compartment door closed. For a chassis with a rear mounted fuel tank, a louvered removable access panel shall be furnished on the back wall of the compartment. Rear compartment shall be open into the rear side compartments. Clear door opening of this compartment shall be 33.25" wide x 26.00" high. Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand. **ROLLUP REAR COMPARTMENT DOOR** There shall be a rear rollup door. The door shall be double faced aluminum construction, an anodized satin finish and manufactured by Gortite®. Lath sections shall be an interlocking rib design and shall be individually replaceable without complete disassembly of door. Between each slat at the pivoting joint shall be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals shall allow door to operate in extreme temperatures ranging from 180 to -40 degrees Fahrenheit. Side, top and bottom seals shall be provided to resist ingress of dirt and weather and be made of Santoprene.		

	Bidder Complies	
	Yes	No
All hinges, barrel clips and end pieces shall be nylon 66. All nylon components shall withstand temperatures from 300 to -40 degrees Fahrenheit. Hardened plastic shall not be acceptable. A polished stainless steel lift bar to be provided for each roll-up door. Lift bar shall be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge shall be supplied over lift bar for additional area to aid in closing the door. Door shall be constructed from an aluminum box section. The exterior surface of each slat shall be flat. The interior surface shall be concave to provide strength and prevent loose equipment from jamming the door from inside. To conserve space in the compartments, the spring roller assembly shall not exceed 3.00" in diameter. A garage style roll door shall not be acceptable. The header for the rollup door assembly shall not exceed 4.00". A heavy-duty magnetic switch shall be used for control of open compartment door warning lights. **DOOR GUARD** There shall be seven (7) compartment doors that shall include a guard/drip pan designed to protect the rollup door from damage when in the retracted position and contain any water spray. The guard shall be fabricated from stainless steel and installed left side rearward compartment, left side over the wheel compartment, left side forward compartment, right side rearward compartment, right side over the wheel compartment, right side forward compartment and rear compartment. **COMPARTMENT LIGHTING** There shall be seven (7) compartment(s) with two (2) white 12 volt DC LED compartment light strips. The dual light strips shall be centered vertically along each side of the door framing. There shall be two (2) light strips per compartment.The dual light strips shall be in all body compartment(s). Any remaining compartments without light strips shall have a 6.00" diameter Truck-Lite, Model: 79384 light. Each light shall have a number 1076 one filament, two wire bulb. Opening the compartment door shall automatically turn the compartment lighting on. **MOUNTING TRACKS** There shall be seven (7) sets of tracks for mounting shelf(s) in LS1, LS2, LS3, RS1, RS2, RS3 and B1. These tracks shall be installed vertically to support the adjustable shelf(s) and shall be full height of the compartment. The tracks shall be painted to match the compartment interior. **ADJUSTABLE SHELVES**		

	Bidder Complies	
	Yes	No
There shall be four (4) shelves with a capacity of 500 lb provided. The shelf construction shall consist of .188" aluminum painted spatter gray with 2.00" sides. Each shelf shall be infinitely adjustable by means of a threaded fastener, which slides in a track. The shelves shall be held in place by .12" thick stamped plated brackets and bolts. The location(s) shall be in LS1 at the depth transition point, in RS1 at the transition point, in RS3 at the transition point and in LS3 at the depth transition point. **SLIDE-OUT FLOOR MOUNTED TRAY** There shall be two (2) floor mounted slide-out tray(s) provided. Each tray shall have 2.00" high sides and a minimum capacity rating of 500 lb in the extended position. Each tray shall be constructed of aluminum painted spatter gray. There shall be two undermount-roller bearing type slides rated at 250lb each provided. The pair of slides shall have a safety factor rating of 2. To ensure years of dependable service, the slides shall be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117. To ensure years of easy operation, the slides shall require no more than a 50lb force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file shall have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance shall be provided upon request. Automatic locks shall be provided for both the "in" and "out" positions. The trip mechanism for the locks shall be located at the front of the tray for ease of use with a gloved hand. The location(s) shall be RS1 and LS1. **RUB RAIL** Bottom edge of the side and rear of the body compartments shall be trimmed with a bright aluminum extruded rub rail. Trim shall be 2.12" high with 1.38" flanges turned outward for rigidity. The rub rails shall not be an integral part of the body construction, which allows replacement in the event of damage.		

	Bidder Complies	
	Yes	No
BODY FENDER CROWNS Polished stainless steel fender crowns shall be provided around the rear wheel openings with a dielectric barrier shall be provided between the fender crown and the fender sheet metal to prevent corrosion. The fender crowns shall be held in place with stainless steel screws that thread directly into a composite nut and not directly into the parent body sheet metal to eliminate dissimilar metals contact and greatly reduce the chance for corrosion. Rubber welting shall be provided between the body and crown. **BODY FENDER LINER** A painted fender liner shall be provided. The liners shall be removable to aid in the maintenance of rear suspension components. **HARD SUCTION HOSE** Two (2) lengths of 6.00" clear corrugated PVC hard suction hose, 10' in length, shall be provided. The hose shall be equipped with a long handle female coupling on one (1) end and a rocker lug male coupling on the other end. Couplings shall be hard coated aluminum. **HOSE TROUGHS** Hard suction hose shall be carried above the left compartment in V-shaped troughs and held in place by chrome plated, quarter turn, spring loaded clamps. Troughs shall be constructed of steel and painted job color. The size and length of the hard suction hose that shall be carried is 6" X 10'. **HANDRAILS** The handrails shall be 1.25" diameter anodized aluminum extrusion, with a ribbed design, to provide a positive gripping surface. Chrome plated end stanchions shall support the handrail. Plastic gaskets shall be used between end stanchions and any painted surfaces. Drain holes shall be provided in the bottom of all vertically mounted handrails. Handrails shall be provided to meet NFPA 1901 section 15.8 requirements. The handrails shall be installed as noted on the sales drawing. **HANDRAILS** One (1) vertical handrail, not less than 29.00" long, shall be located on each rear beavertail. One (1) horizontal black rubber-covered handrail shall be provided above the hose bed at the rear of the apparatus. The hose bed dividers shall be tied to the upper handrail or cross bar in order to provide sufficient reinforcement.		

	Bidder Complies	
	Yes	No
OIL DRY HOPPER A slide-out compartment for storage of oil absorbent material shall be provided in the fender panel. The oil hopper bin shall slide in and out on a track located inside this fender panel compartment. A chute for dispensing the material shall be provided on the bottom of the bin. The absorbent material shall discharge at the bottom of the bin, only when the compartment is extended outside of the vehicle. A chrome grab handle shall be provided on the bin to slide the bin out of the fender compartment. An aluminum treadplate fill cover shall be provided on top of the hopper bin. This hopper shall have an approximate capacity of 50 lbs of absorbent material. A polished stainless steel door with flush lift and turn latch shall be provided on the exterior of the compartment. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal. A quantity of one (1) oil dry hopper(s) shall be provided. The hopper(s) shall be located in the on the right side behind the rear wheel fender panel. **EXTINGUISHER/AIR BOTTLE/ STORAGE (Triangular)** A total of one (1) extinguisher/air bottle/storage compartments shall be provided officer side front. The triangular shaped compartment shall be sized to fit a 8.00" diameter extinguisher in the lower area and a 8.00" diameter extinguisher in the upper area. The compartment shall be approximately 25.50" deep. A partition shall be provided to separate the compartment. Also inside the compartment, black rubber matting shall be provided. The compartment shall be furnished with a drain hole. A polished stainless steel, triangular shaped door with a chrome plated flush lift & turn latch shall be provided to contain the air bottles. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal. **AIR BOTTLE COMPARTMENT STRAP** A strap shall be provided in the air bottle compartment(s) to help contain the bottles when the vehicle is parked on an incline. The strap shall wrap around the neck and attach to the wall of the compartment. **AIR BOTTLE STORAGE (Triple)** A quantity of two (2) air bottle compartments designed to hold (3) air bottles up to 7.25" in diameter x 26.00" deep shall be provided on the right side forward of the rear wheels and on the right side rearward of the rear wheels. A polished stainless steel door with a chrome plated flush lift & turn latch shall be provided to contain the air bottle. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal. Inside the compartment, black rubber matting shall be provided. **AIR BOTTLE COMPARTMENT STRAP**		

	Bidder Complies	
	Yes	No
A strap shall be provided in the air bottle compartment(s) to help contain the air bottles when the vehicle is parked on an incline. The strap shall wrap around the neck and attach to the wall of the compartment. **EXTENSION LADDER** There shall be a 24' two-section aluminum Duo-Safety Series 900-A extension ladder provided. **ROOF LADDER** There shall be a 14' aluminum Duo-Safety Series 775-A roof ladder provided. **LADDER STORAGE** The ladders shall be stored between the water tank and the right side compartments. The ladders shall extend into the pump compartment just to the rear of the water pump discharges. The ladder storage area shall be enclosed as practical by means of sheet metal to protect the ladders from road dirt. The ladders that extend into the pump house shall also be enclosed. A black rubber boot shall be provided to enclose the ladders in the gap between the pump house and the body. Each ladder shall be stored vertically in a separate stainless steel storage trough. Each stainless steel trough shall be lined with Dura-Surf nylon slides. An aluminum enclosure shall be provided at the rear of the body to properly contain the ladders. This enclosure shall extend to the rear of the side body compartments. The enclosure shall also include a vertically hinged smooth aluminum door with a D-handle latch to access the ladders. **FOLDING LADDER** One (1) 10.00' aluminum, Series 585-A, Duo-Safety folding ladder shall be installed in a U-shaped trough inside the ladder storage compartment. **PIKE POLE PROVIDED BY FIRE DEPARTMENT** NFPA 1901, 2016 edition, Section 5.9.4 requires one (1) 8 ft or longer pike pole mounted in a bracket fastened to the apparatus. The pike pole is not on the apparatus as manufactured. The fire department shall provide and mount the pike pole. The pike pole(s) shall be a Duo-Safety 10' pike pole.		

	Bidder Complies	
	Yes	No
6' PIKE POLE PROVIDED BY FIRE DEPARTMENT NFPA 1901, 2016 edition, Section 5.9.4 requires one (1) 6' pike pole or plaster hook mounted in a bracket fastened to the apparatus. The pike pole is not on the apparatus as manufactured. The fire department shall provide and mount the pike pole. The pike pole(s) shall be a Duo-Safety 6' pike pole. **PIKE POLE STORAGE** Aluminum tubing shall be used for the storage of two (2) pike poles and shall be located in ladder storage compartment. If the head of a pike pole can come in contact with a painted surface, a stainless steel scuffplate shall be provided. **REAR FOLDING STEPS** Bright finished, non-skid folding steps with a black coating shall be provided at the rear. Each step shall incorporate an LED light to illuminate the stepping surface. The steps can be used as a hand hold with two openings wide enough for a gloved hand. **PUMP** Pump shall be a Waterous CSU, 1500 gpm single (1) stage midship mounted centrifugal type. Pump shall be the class "A" type. Pump shall deliver the percentage of rated discharge at pressures indicated below: - 100% of rated capacity at 150 psi net pump pressure. -70% of rated capacity at 200 psi net pump pressure. -50% of rated capacity at 250 psi net pump pressure. Pump body shall be close-grained gray iron, bronze fitted, and horizontally split in two (2) sections for easy removal of the entire impeller shaft assembly (including wear rings). Pump shall be designed for complete servicing from the bottom of the truck, without disturbing the pump setting or apparatus piping. Pump case halves shall be bolted together on a single horizontal face to minimize chance of leakage and facilitate ease of reassembly. No end flanges shall be used. Discharge manifold of the pump shall be cast as an integral part of the pump body assembly and shall provide a minimum of three (3) 3.50" openings for flexibility in providing various discharge outlets for maximum efficiency. The three (3) 3.50" openings shall be located as follows: one (1) outlet to the right of the pump, one (1) outlet to the left of the pump, and one (1) outlet directly on top of the		

	Bidder Complies	
	Yes	No
discharge manifold. Impeller shaft shall be stainless steel, accurately ground to size. It shall be supported at each end by sealed, anti-friction ball bearings for rigid precise support. Impeller shall have flame plated hubs assuring maximum pump life and efficiency despite any presence of abrasive matter in the water supply. Bearings shall be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. No special or sleeve type bearings shall be used. **PUMP PACKING** Stuffing boxes shall be of the conventional two (2) piece, split-gland type, to permit adjustment or replacement of Grafoil packing without disturbing the pump. Water shall be fed into stuffing box lantern rings for proper lubrication and cooling when the pump is operating. Lantern rings shall be located at the inner ends of the stuffing boxes, to avoid having to remove them when replacing pump packing. Wear rings shall be bronze and easily replaceable to restore original pump efficiency and eliminate the need to replace the entire pump casing due to wear. **PUMP TRANSMISSION** The pump transmission shall be made of a three (3) piece, aluminum, horizontally split casing. Power transfer to pump shall be through a high strength Morse HY-VO silent drive chain. By the use of a chain rather than gears, 50% of the sprocket shall be accepting or transmitting torque, compared to two (2) or three (3) teeth doing all the work. Drive shafts shall be 2.35" diameter hardened and ground alloy steel and supported by ball bearings. The case shall be designed to eliminate the need for water cooling. **PUMPING MODE** An interlock system shall be provided to ensure that the pump drive system components are properly engaged so that the apparatus can be safely operated. The interlock system shall be designed to allow stationary pumping only. **AIR PUMP SHIFT** Pump shift engagement shall be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab. A manual back-up shift control shall also be located on the left side pump panel. Two (2) indicator lights shall be provided adjacent to the pump shift inside the cab. One (1) green light shall indicate the pump shift has been completed and be labeled "pump engaged". The second green light shall indicate when the pump has been engaged, and that the chassis		

	Bidder Complies	
	Yes	No
transmission is in pump gear. This indicator light shall be labeled "OK to pump". Another green indicator light shall be installed adjacent to the hand throttle on the pump panel and indicate either the pump is engaged and the road transmission is in pump gear, or the road transmission is in neutral and the pump is not engaged. This indicator light shall be labeled "Warning: Do not open throttle unless light is on". The pump shift shall be interlocked to prevent the pump from being shifted out of gear when the chassis transmission is in gear to meet NFPA requirements. The pump shift control in the cab shall be illuminated to meet NFPA requirements. **TRANSMISSION LOCK-UP** The direct gear transmission lock-up for the fire pump operation shall engage automatically when the pump shift control in the cab is activated. **AUXILIARY COOLING SYSTEM** A supplementary heat exchange cooling system shall be provided to allow the use of water from the discharge side of the pump for cooling the engine water. Heat exchanger shall be cylindrical type and shall be a separate unit. It shall be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger shall be plumbed to the master drain valve. **INTAKE RELIEF VALVE - PUMP** An Elkhart Style 40 relief valve shall be installed on the suction side of the pump preset at 125 psig. The relief valve shall have a working range of 75 psig to 250 psig. The outlet shall terminate below the frame rails with a 2.50" National Standard hose thread adapter and shall have a "do not cap" warning tag. The relief valve pressure control shall be located behind an access door at the right side pump panel. **RELIEF VALVE** A Waterous adjustable relief valve, specially designed for fire service, shall be provided. Valve shall be positive, quick acting, and include an instantaneous on/off control. When in the off position, the relief valve shall functionally be removed from the system. When turned back to the on position, the relief valve shall again monitor and maintain the previous pressure setting. Control for adjusting pressure shall be elliptical shaped for positive grip.		

	Bidder Complies	
	Yes	No
An easily removable pilot valve strainer shall be provided and be accessible from the pump operator's panel. Two (2) indicator lights shall be furnished, showing the position of the relief valve (amber for open and green for closed). **PRIMING PUMP** The priming pump shall be a Trident Emergency Products compressed air powered, high efficiency, multistage venturi based AirPrime System, conforming to standards outlined in the current edition of NFPA 1901. All wetted metallic parts of the priming system are to be of brass and stainless steel construction. One (1) priming control shall open the priming valve and start the pump primer. **THERMAL RELIEF VALVE** A Waterous Overheat Protection Manager (OPM) shall be included on the pump that monitors pump water temperature and opens to relieve water to cool the pump when the temperature of the pump water exceeds 140 Degrees F (60 C) and a red warning light that is triggered when the water in the pump reaches 180 F (82 C). The warning light shall act as an additional protection device if the temperature in the pump keeps rising after the valve opens. The warning light and alarm with a test switch shall be mounted on the pump operator panel. The discharge line shall be plumbed to ground. **PUMP MANUALS** There shall be a total of two (2) pump manuals provided by the pump manufacturer and furnished with the apparatus. The manuals shall be provided by the pump manufacturer in the form of two (2) electronic copies. Each manual shall cover pump operation, maintenance, and parts. **PLUMBING, STAINLESS STEEL AND HOSE** All inlet and outlet lines shall be plumbed with either stainless steel pipe, flexible polypropylene tubing or synthetic rubber hose reinforced with hi-tensile polyester braid. All hose's shall be equipped with brass or stainless steel couplings. All stainless steel hard plumbing shall be a minimum of a schedule 10 wall thickness. Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping shall be equipped with victaulic or rubber couplings. Plumbing manifold bodies shall be ductile cast iron or stainless steel.		

	Bidder Complies	
	Yes	No
All piping lines are to be drained through a master drain valve or shall be equipped with individual drain valves. All drain lines shall be extended with a hose to drain below the chassis frame. All water carrying gauge lines shall be of flexible polypropylene tubing. All piping, hose and fittings shall have a minimum of a 500 PSI hydrodynamic pressure rating. **MAIN PUMP INLETS** A 6.00" pump manifold inlet shall be provided on each side of the vehicle. The suction inlets shall include removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump. **MAIN PUMP INLET CAP** The main pump inlets shall have National Standard Threads with a long handle chrome cap. The cap shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception). **VALVES** All ball valves shall be Akron® Brass in-line valves. The Akron valves shall be the 8000 series heavy-duty style with a stainless steel ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve. Valves shall have a **ten (10) year** warranty. **LEFT SIDE INLET** There shall be one (1) auxiliary inlet with a 2.50" valve at the left side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter. The auxiliary inlet shall be provided with a strainer, chrome swivel and plug. **RIGHT SIDE INLET** There shall be one (1) auxiliary inlet with a 2.50" valve at the right side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter. The auxiliary inlet shall be provided with a strainer, chrome swivel and plug. The location of the valve for the one (1) inlet shall be recessed behind the pump panel. **INLET CONTROL** The side auxiliary inlet(s) shall incorporate a quarter-turn ball valve with the control located at the inlet valve. The valve operating mechanism shall indicate the position of the valve. **INLET BLEEDER VALVE**		

	Bidder Complies	
	Yes	No
A 0.75" bleeder valve shall be provided for each side gated inlet. The valves shall be located behind the panel with a swing style handle control extended to the outside of the panel. The handles shall be chrome plated and provide a visual indication of valve position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. The water discharged by the bleeders shall be routed below the chassis frame rails. **TANK TO PUMP** The booster tank shall be connected to the intake side of the pump with stainless steel piping and a quarter turn 3.00" full flow line valve with the control remotely located at the operator's panel. Tank to pump line shall run straight (no elbows) from the pump into the front face of the water tank and angle down into the tank sump. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing. A check valve shall be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank. **TANK REFILL** A 1.50" combination tank refill and pump re-circulation line shall be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel. **LEFT SIDE DISCHARGE OUTLETS** There shall be two (2) discharge outlets with a 2.50" valve on the left side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter. **RIGHT SIDE DISCHARGE OUTLETS** There shall be one (1) discharge outlet with a 2.50" valve on the right side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter. **LARGE DIAMETER DISCHARGE OUTLET** There shall be a 4.00" discharge outlet with a 4.00" Akron valve installed on the right side of the apparatus, terminating with a 4.00" (M) National Standard hose thread adapter. This discharge outlet shall be actuated with a handwheel control at the pump operator's control panel. An indicator shall be provided to show when the valve is in the closed position. **FRONT DISCHARGE OUTLET** There shall be one (1) 2.50" discharge outlet piped to the front of the apparatus and located on the top of the left side of the front bumper. Plumbing shall consist of 2.50" piping and flexible hose with a 2.50" full flow valve with control at the pump operator's panel. A fabricated weldment made of stainless steel pipe shall be used in the plumbing where appropriate. The piping shall terminate with a 2.50" NST with 90 degree stainless steel swivel.		

	Bidder Complies	
	Yes	No
There shall be automatic drains provided at all low points of the piping. **REDUCER** There shall be one (1) adapter with 2.50" FNST x 1.50" MNST threads and a 1.50" chrome plated cap installed on front discharge. **REAR DISCHARGE OUTLET** There shall be one (1) discharge outlet piped to the rear of the hose bed, left side, installed so proper clearance is provided for spanner wrenches or adapters. Plumbing shall consist of 2.50" piping along with a 2.50" full flow ball valve with the control from the pump operator's panel. **DISCHARGECAPS/ INLET PLUGS** Chrome plated, rocker lug, caps with chain shall be furnished for all discharge outlets 1.00" thru 3.00" in size, besides the pre-connected hose outlets. Chrome plated, rocker lug, plugs with chain shall be furnished for all auxiliary inlets 1.00" thru 3.00" in size. The caps and plugs shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception). **OUTLET BLEEDER VALVE** A 0.75" bleeder valve shall be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application. The valves shall be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles shall be chrome plated and provide a visual indication of valve position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders shall be located at the bottom of the pump panel. They shall be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders shall be routed below the chassis frame rails. **LEFT SIDE OUTLET ELBOWS** The 2.50" discharge outlets located on the left side pump panel shall be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow. The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (**NO EXCEPTION**). **RIGHT SIDE OUTLET ELBOWS** The 2.50" discharge outlets located on the right side pump panel shall be furnished with a		

	Bidder Complies	
	Yes	No
2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow. The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (**NO EXCEPTION**). **REAR OUTLET ELBOWS** The 2.50" discharge outlets located at the rear of the apparatus shall be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow. The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected **(NO EXCEPTION**). **LARGE DIAMETER OUTLET ELBOWS** The 4.00" outlet(s) shall be furnished with one (1) 4.00" (F) National Standard hose thread x 5.00" Storz elbow adapter with Storz cap. **DISCHARGE OUTLET CONTROLS** The discharge outlets shall incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism shall indicate the position of the valve. If a handwheel control valve is used, the control shall be a minimum of a 3.9" diameter stainless steel handwheel with a dial position indicator built into the center of the handwheel. **DELUGE RISER** A 3.00" deluge riser shall be installed above the pump in such a manner that a monitor can be mounted and used effectively. Piping shall be installed securely so no movement develops when the line is charged. The riser shall be gated and controlled at the pump operator's panel. **MONITOR** An Akron Model 3431 Apollo Hi-Riser monitor shall be properly installed on the deluge riser. Included shall be a fixed mounting base. The monitor shall be painted to match the body. **NOZZLE, DELUGE** Akron model #2499 Quad Stacked pyrolite deluge tips shall be provided. The tip sizes shall be 1.375", 1.50", 1.75", and 2.00".		

	Bidder Complies	
	Yes	No
This shall include an Akron 3488 pyrolite stream shaper. The deluge riser shall have male National Pipe Threads for mounting the monitor. **CROSSLAY HOSE BEDS** Two (2) crosslays with 1.50" outlets shall be provided. Each bed to be capable of carrying 200' of 1.75" double jacketed hose and shall be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve. Outlets to be equipped with a 1.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus. The crosslay controls shall be at the pump operator's panel. The center crosslay dividers shall be fabricated of 0.25" aluminum and shall provide adjustment from side to side. The divider shall be unpainted with a brushed finish. Vertical scuffplates,constructed of stainless steel shall be provided at the front and rear ends of the bed on each side of vehicle. Crosslay bed flooring shall consist of removable perforated brushed aluminum. **CROSSLAY/DEADLAY HOSE RESTRAINT** Elastic netting shall be provided across the top and ends of two (2) crosslay/deadlay opening(s) to secure the hose during travel. The netting shall be permanently attached at the top center of the crosslay/deadlay bed and removable on each end. **CROSSLAY 8.00" LOWER THAN STANDARD** The crosslays shall be lowered 8.00" from standard. **FOAM SYSTEM** A foam system shall not be required on this apparatus. **PUMP COMPARTMENT** The pump compartment shall be separate from the hose body and compartments so that each may flex independently of the other. It shall be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards. The pump compartment shall be mounted on the chassis frame rails with rubber biscuits in a four-point pattern to allow for chassis frame twist. Pump compartment, pump, plumbing and gauge panels shall be removable from the chassis in a single assembly. **PUMP MOUNTING**		

	Bidder Complies	
	Yes	No
Pump shall be mounted to a substructure which shall be mounted to the chassis frame rail using rubber isolators. The mounting shall allow chassis frame rails to flex independently without damage to the fire pump. **LEFT SIDE PUMP CONTROL PANELS** All pump controls and gauges shall be located at the left side of the apparatus and properly identified. Layout of the pump control panel shall be ergonomically efficient and systematically organized. The pump operator's control panel shall be removable in two (2) main sections for ease of maintenance: The upper section shall contain sub panels for the mounting of the pump pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable). Sub panels shall be removable from the face of the pump panel for ease of maintenance. Below the sub panels shall be located all valve controls and line pressure gauges. The lower section of the panel shall contain all inlets, outlets, and drains. All push/pull valve controls shall have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods shall be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls shall be capable of locking in any position. The control rods shall pull straight out of the panel and shall be equipped with universal joints to eliminate binding. **IDENTIFICATION TAGS** The identification tag for each valve control shall be recessed in the face of the tee handle . All discharge outlets shall have color coded identification tags, with each discharge having its own unique color. Color coding shall include the labeling of the outlet and the drain for each corresponding discharge. All line pressure gauges shall be mounted directly above the corresponding discharge control tee handles and recessed within the same chrome plated casting as the rod guide for quick identification. The gauge and rod guide casting shall be removable from the face of the pump panel for ease of maintenance. The casting shall be color coded to correspond with the discharge identification tag. All remaining identification tags shall be mounted on the pump panel in chrome plated bezels. The pump panel on the right side shall be removable with lift and turn type fasteners. Trim rings shall be installed around all inlets and outlets.		

	Bidder Complies	
	Yes	No
PUMP PANEL CONFIGURATION The pump panel configuration shall be arranged and installed in an organized manner that shall provide user-friendly operation. **PUMP AND GAUGE PANEL** The pump and gauge panels shall be constructed of aluminum with a painted FormCoat black finish. A polished aluminum trim molding shall be provided around each panel. The right side pump panel shall be removable and fastened with swell type fasteners. **PUMP COMPARTMENT LIGHT** There shall be one (1) Whelen®, Model 3SC0CDCR, 3.00" white 12 volt DC LED light(s) with Whelen, Model 3FLANGEC, flange(s) installed in the pump compartment. There shall be a switch accessible through a door on the pump panel included with this installation. **PUMP PANEL GAUGES AND CONTROLS** The following shall be provided on the pump and gauge panels in a neat and orderly fashion: - Engine Oil Pressure Gauge: With visual and audible warning - Engine Water Temperature Gauge: With visual and audible warning - Tachometer: Electric - Master Pump Drain Control - Voltmeter - Engine Throttle **VACUUM AND PRESSURE GAUGES** The pump vacuum and pressure gauges shall be liquid filled and manufactured by Class 1 Incorporated ©. The gauges shall be a minimum of 4.00" in diameter and shall have white faces with black lettering, with a pressure range of 30.00"-0-600#. Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut. The pump pressure and vacuum gauges shall be installed adjacent to each other at the pump operator's control panel. Test port connections shall be provided at the pump operator's panel. One (1) shall be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They shall have 0.25 in. standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They shall be marked with a label.		

	Bidder Complies	
	Yes	No
This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube. **PRESSURE GAUGES** The individual "line" pressure gauges for the discharges shall be interlube filled and manufactured by Class 1©. They shall be a minimum of 2.00" in diameter and shall have white faces with black lettering. Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut. Gauges shall have a pressure range of 30"-0-400#. The individual pressure gauge shall be installed as close to the outlet control as practical. This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube. **WATER LEVEL GAUGE** There shall be an electronic water level gauge provided on the operator's panel that registers water level by means of five (5) colored LED lights. The lights shall be durable, ultra-bright five (5) LED design viewable through 180 degrees. The water level indicators shall be as follows: • 100 percent = Green • 75 percent = Yellow • 50 percent = Yellow • 25 percent = Yellow • Refill = Red The light shall flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights shall flash sequentially when the water tank is empty. The level measurement shall be based on the sensing of head pressure of the fluid in the tank. The display shall be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components. The encapsulated design shall provide complete protection from water and environmental elements. An industrial pressure transducer shall be mounted to the outside of the tank. The field calibratable display measures head pressure to accurately show the tank level.		

	Bidder Complies	
	Yes	No
LIGHT SHIELD There shall be a polished, 16 gauge stainless steel light shield installed over the pump operator's panel. • There shall be 12 volt DC white LED lights installed under the stainless steel light shield to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights shall be activated by the pump panel light switch. Additional lights shall be included every 18.00" depending on the size of the pump house. • One (1) pump panel light shall come on when the pump is in ok to pump mode. There shall be a light activated above the pump panel light switch when the parking brake is set. This is to afford the operator some illumination when first approaching the control panel. There shall be a green pump engaged indicator light activated on at the operator's panel when the pump is shifted into gear from inside the cab. **AIR HORN SYSTEM** There shall be two (2) Grover air horns recessed in the front bumper. The horn system shall be piped to the air brake system wet tank utilizing 0.38" tubing. A pressure protection valve shall be installed in-line to prevent loss of air in the air brake system. **Air Horn Location** The air horns shall be located on each side of the bumper, just outside of the frame rails. **AIR HORN CONTROL** Two (2) lanyard rope pull controls shall be provided, one (1) within reach of the driver and one (1) within reach of the officer. **ELECTRONIC SIREN** A Whelen®, Model 295SLSA1, electronic siren with noise canceling microphone shall be provided. This siren to be active when the battery switch is on and that emergency master switch is on. The electronic siren head shall be located in switch panel # 7 area of the center dash switch panel. **SIREN CONTROL** The electronic siren shall be controllable on the siren head and horn ring only. No foot switches shall be required.		

	Bidder Complies	
	Yes	No
The driver shall have the option to control the siren or the chassis horns from the horn button by means of a selector switch located on the instrument panel. **SPEAKER** There shall be one (1) Whelen®, Model SA315P, black nylon composite, 100-watt, speaker with through bumper mounting brackets and polished stainless steel grille provided. The speaker shall be connected to the siren amplifier. The speaker(s) shall be recessed in the center of the front bumper. **AUXILIARY MECHANICAL SIREN** A Federal Q2B® siren shall be furnished. A siren brake button shall be installed on the switch panel. The control solenoid shall be powered up after the emergency master switch is activated. The mechanical siren shall be mounted on the bumper deck plate. It shall be mounted on the left side. The siren mounting shall include a reinforcement plate. The mechanical siren shall be actuated by a rocker switch on the officer's side and by the horn button in the steering wheel. The driver shall have the option to control the mechanical siren or the chassis horns from the horn button by means of a selector switch located on the instrument panel. The officer shall have the option to control the mechanical siren or the chassis horns from the rocker switch by means of a selector switch located on the instrument panel. **FRONT ZONE UPPER WARNING LIGHTS** There shall be one (1) 72.00" Whelen Freedom IV LED lightbar mounted on the cab roof. The lightbar shall include the following: • One (1) red flashing LED module in the driver's side end position. • One (1) red flashing LED module in the driver's side front corner position. • One (1) red flashing LED module in the driver's side first front position. • One (1) red flashing LED module in the driver's side second front position. • One (1) red flashing LED module in the driver's side third front position. • One (1) red flashing LED module in the driver's side fourth front position. • One (1) white flashing LED module in the driver's side fifth front position.		

	Bidder Complies	
	Yes	No
• Open in the driver's side sixth front position. • Open in the passenger's side sixth front position. • One (1) white flashing LED module in the passenger's side fifth front position. • One (1) red flashing LED module in the passenger's side fourth front position. • One (1) red flashing LED module in the passenger's side third front position. • One (1) red flashing LED module in the passenger's side second front position. • One (1) red flashing LED module in the passenger's side first front position. • One (1) red flashing LED module in the passenger's side front corner position. • One (1) red flashing LED module in the passenger's side end position. There shall be clear lenses included on the lightbar. There shall be a switch in the cab on the switch panel to control this lightbar. The white LEDs shall be disabled when the parking brake is applied. Any of the eight (8) red flashing LED modules in the front positions may be load managed when the parking brake is applied. **FRONT ZONE LOWER LIGHTS** There shall be one (1) pair of Whelen, Model C6L**, flashing LED lights installed on the cab face above the headlights, in a common bezel with the directional lights. • The driver's side front warning light to include red LEDs. • The passenger's side front warning light to include red LEDs. • The warning light lens colors to be the same as the LEDs. There shall be a switch located in the cab on the switch panel to control the lights. **HEADLIGHT FLASHER** The high beam headlights shall flash alternately between the left and right side. There shall be a switch installed in the cab on the switch panel to control the high beam flash. This switch shall be live when the battery switch and the emergency master switches are on. The flashing shall automatically cancel when the hi-beam headlight switch is activated or		

	Bidder Complies	
	Yes	No
when the parking brake is set. **SIDE ZONE LOWER LIGHTING** There shall be four (4) Whelen®, Model C6L**, flashing LED warning lights installed per the following: • Two (2) lights, one (1) each side on the bumper extension. The side front lights to include red LEDs with red lenses. • Two (2) lights, one (1) each side above rear wheels. The rear lights to include red LEDs with red lenses. These lights shall be installed with a flange. There shall be a switch in the cab on the switch panel to control the lights. **REAR ZONE LOWER LIGHTING** There shall be two (2) Whelen®, Model C6L**, 5.12" high x 7.56" wide x 1.56" deep flashing LED warning lights located at the rear of the apparatus in the rear tail light housing per the following: • the driver's side rear warning light to include red LEDs • the passenger's side rear warning light to include red LEDs • the the same color as the LED's There shall be a switch in the cab on the switch panel to control the lights. **REAR/SIDE ZONE UPPER WARNING LIGHTS** There shall be two (2) Whelen®, Model L31H*FN, LED warning beacons provided at the rear of the truck, located one (1) each side. There shall be a switch located in the cab on the switch panel to control the beacons. The color of the lights shall be red LEDs with both domes clear. The rear warning lights shall be mounted on top of the compartmentation with all wiring totally enclosed. The rear deck lights shall be mounted on the beavertails as high as possible. **TRAFFIC DIRECTING LIGHT** There shall be one (1) Whelen®, Model TAL65, 36.00" long x 2.87" high x 2.25" deep, amber LED traffic directing light installed at the rear of the apparatus. The Whelen, Model TACTL5, control head shall be included with this installation. The controller shall be energized when the battery switch is on.		

	Bidder Complies	
	Yes	No
The auxiliary flash to be activated when the emergency master switch is on. This traffic directing light shall be recessed with a stainless steel trim plate at the rear of the apparatus as high as practical. The traffic directing light control head shall be located in the driver side overhead switch panel in the right panel position. **ELECTRICAL SYSTEM GENERAL DESIGN for ALTERNATING CURRENT** The following guidelines shall apply to the 120/240 VAC system installation: **General** Any fixed line voltage power source producing alternating current (ac) line voltage shall produce electric power at 60 cycles plus or minus 3 cycles. Except where superseded by the requirements of NFPA 1901, all components, equipment and installation procedures shall conform to NFPA 70, National Electrical Code (herein referred to as the NEC). Line voltage electrical system equipment and materials included on the apparatus shall be listed and installed in accordance with the manufacturer's instructions. All products shall be used only in the manner for which they have been listed. **Grounding** Grounding shall be in accordance with Section 250-6 "Portable and Vehicle Mounted Generators" of the NEC. Ungrounded systems shall not be used. Only stranded or braided copper conductors shall be used for grounding and bonding. An equipment grounding means shall be provided in accordance with Section 250-91 (Grounding Conductor Material) of the NEC. The grounded current carrying conductor (neutral) shall be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor shall be colored white or gray in accordance with Section 200-6 (Means of Identifying Grounding Conductors) of the NEC. In addition to the bonding required for the low voltage return current, each body and driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor. This conductor shall have a minimum amperage rating of 115 percent of the nameplate current rating of the power source specification label as defined in Section 310-15 (amp capacities) of the NEC. A single conductor properly sized to meet the low voltage and line voltage requirements shall be permitted to be used. All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source.		

	Bidder Complies	
	Yes	No
Operation Instructions that provide the operator with the essential power source operating instructions, including the power-up and power-down sequence, shall be permanently attached to the apparatus at any point where such operations can take place. Provisions shall be made for quickly and easily placing the power source into operation. The control shall be marked to indicate when it is correctly positioned for power source operation. Any control device used in the drive train shall be equipped with a means to prevent the unintentional movement of the control device from its set position. A power source specification label shall be permanently attached to the apparatus near the operator's control station. The label shall provide the operator with the following information: • Rated voltage(s) and type (ac or dc) • Phase • Rated frequency • Rated amperage • Continuous rated watts • Power source engine speed Direct drive (PTO) and portable generator installations shall comply with Article 445 (Generators) of the NEC. **Overcurrent protection** The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 144.00" (3658 mm) in length. For fixed power supplies, all conductors in the power supply assembly shall be type THHW, THW, or use stranded conductors enclosed in nonmetallic liquid tight flexible conduit rated for a minimum of 194 degree Fahrenheit (90 degrees Celsius). For portable power supplies, conductors located between the power source and the line side of the main overcurrent protection device shall be type SO or type SEO with suffix WA flexible cord rated for 600-volts at 194 degrees Fahrenheit (90 degrees Celsius). **Wiring Methods** Fixed wiring systems shall be limited to the following: • Metallic or nonmetallic liquid tight flexible conduit rated at not less than 194 degrees		

	Bidder Complies	
	Yes	No
Fahrenheit (90 degrees Celsius) • or • Type SO or Type SEO cord with a WA suffix, rated at 600 volts at not less than 194 degrees Fahrenheit (90 degrees Celsius) Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring. In addition the wiring shall be run as follows. • Separated by a minimum of 12.00" (305 mm), or properly shielded, from exhaust piping • Separated from fuel lines by a minimum of 6.00" (152 mm) distance Electrical cord or conduit shall be supported within 6.00" (152 mm) of any junction box and at a minimum of every 24.00" (610 mm) of continuous run. Supports shall be made of nonmetallic materials or corrosion protected metal. All supports shall be of a design that does not cut or abrade the conduit or cable and shall be mechanically fastened to the vehicle. **Wiring Identification** All line voltage conductors located in the main panel board shall be individually and permanently identified. The identification shall reference the wiring schematic or indicate the final termination point. When prewiring for future power sources or devices, the unterminated ends shall be labeled showing function and wire size. **Wet Locations** All wet location receptacle outlets and inlet devices, including those on hardwired remote power distribution boxes, shall be of the grounding type provided with a wet location cover and installed in accordance with Section 210-7 "Receptacles and Cord Connections" of the NEC. All receptacles located in a wet location shall be not less than 24.00" (610 mm) from the ground. Receptacles on off-road vehicles shall be a minimum of 30.00" (762 mm) from the ground. The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees off vertical. No receptacle shall be installed in a face up position. **Dry Locations** All receptacles located in a dry location shall be of the grounding type. Receptacles shall be not less than 30.00" (762 mm) above the interior floor height. All receptacles shall be marked with the type of line voltage (120-volts or 240-volts) and the		

	Bidder Complies	
	Yes	No
current rating in amps. If the receptacles are direct current, or other than single phase, they shall be so marked. **Listing** All receptacles and electrical inlet devices shall be listed to UL 498, Standard for Safety Attachment Plugs and Receptacles, or other appropriate performance standards. Receptacles used for direct current voltages shall be rated for the appropriate service. **Electrical System Testing** The wiring and associated equipment shall be tested by the apparatus manufacturer or the installer of the line voltage system. The wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900-volts for one (1) minute. The test shall be conducted between live parts and the neutral conductor, and between live parts and the vehicle frame with any switches in the circuit(s) closed. This test shall be conducted after all body work has been completed. Electrical polarity verification shall be made of all permanently wired equipment and receptacles to determine that connections have been properly made. **Operational Test per Current NFPA 1901 Standard** The apparatus manufacturer shall perform the following operation test and ensure that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order. The test shall be witnessed and the results certified by an independent third-party certification organization. The prime mover shall be started from a cold start condition and the line voltage electrical system loaded to 100 percent of the nameplate rating. The power source shall be operated at 100 percent of its nameplate voltage for a minimum of two (2) hours unless the system meets category certification as defined in the current NFPA 1901 standard. Where the line voltage power is derived from the vehicle's low voltage system, the minimum continuous electrical load as defined in the current NFPA 1901 standard shall be applied to the low voltage electrical system during the operational test. **GENERATOR** The apparatus shall be equipped with a complete alternating current electrical power system. The generator shall be a Harrison 6.0kW "C-Gen" hydraulic unit. The hydraulic generator shall include the following features: - "Flow Thru" ventilation system to cool the alternator		

	Bidder Complies	
	Yes	No
- Dual fan technology featuring a vertical exhaust - Automotive type hydraulic oil cooling system - 25% oversized "Plus Powered" alternator - Harrison "Delta-Q" variable displacement hydraulic pump utilizing dual counterbalanced controls - Remote mount reservoir - Steel frame with a treadplate plate cover - Cover able to support a 300 pound load - Gear driven hydraulic motor coupled with an alternator using a Morse taper design The wiring and generator installation shall conform to the present National Electrical Codes Standards of the NFPA. The installation shall be designed for continuous operation without overheating and undue stress on components. <u>Generator Performance</u> - Continuous Duty Rating: 6,000 watts - Nominal Volts: 120/240 - Amperage: 50 amps @ 120 volts, 25 amps @ 240 volts - Phase: Single - Cycles: 60 hertz - Engine Speed at Engagement: Idle The output of the generator shall be controlled by a pressure compensated hydraulic system. Electronic controls shall not be used. The generator shall be driven by a transmission power take off unit, through a hydraulic pump and motor. The generator shall include an electrical control inside the cab. The hydraulic engagement supply shall be operational at any time (no interlocks). A hot shift PTO shall be used to drive the hydraulic pump. <u>Generator Instruments and Controls</u> To properly monitor the generator performance, the following instrumentation shall be furnished: - Voltage meter - High hydraulic oil temperature warning light - Generator run hourmeter (mounted on the generator) - "Power On" indicator (in the cab) The voltage meter and hydraulic oil temperature indicator shall be installed near eye level in		

	Bidder Complies	
	Yes	No
the compartment and flush-mounted in an appropriately sized, weatherproof, electrical enclosure. All instruments used shall be accurate within +/- 2%. Generator Wiring: The system shall be installed by highly qualified electrical technicians to assure the required level of safety and protection to the fire apparatus operators. The wiring, electrical fixtures, and components shall be to the highest industry quality standards available on the domestic market. The equipment shall be the type as designed for mobile type installations subject to vibration, moisture, and severe continuous usage. The following electrical components shall be the minimum acceptable quality standards for this apparatus: Wiring: All electrical wiring shall be fine stranded copper type. The wire shall be sized to the load and circuit breaker rating; 10 gauge on 30 amp circuits, 12 gauge on 20 amp circuits and 14 gauge on 15 amp circuits. The cable shall be run in corner areas and extruded aluminum pathways built into the body for easy access. Load Center: The main load center shall be Cutler Hammer with circuit breakers rated to load demand. Circuit Breakers: Individual breakers shall be provided for all on-line equipment. **GENERATOR LOCATION** The generator shall be mounted in the cargo area above the pump on the driver's side. The flooring in this area shall be either reinforced or constructed, in such a manner, that it shall handle the additional weight of the generator. **GENERATOR START** There shall be a switch provided in the cab to engage the generator. **CIRCUIT BREAKER PANEL** The circuit breaker panel shall be located high left on the back wall of compartment LS3. **ELECTRIC CORD REEL** Furnished with the 120-volt AC electrical system shall be an Akron cord reel. The reel shall be provided with a 12-volt electric rewind switch that is guarded to prevent accidental operation and labeled for its intended use. The switch shall be protected with a fuse and installed at a height not to exceed 72.00" above the operators standing position. The reel shall be capable holding 12/3, 600-volt cable or 10/3, 600-volt cable. The exterior finish of the reel(s) shall be painted job color matching the body exterior. A captive roller assembly to be provided to aid in the payout and loading of the reel. A ball stop shall be provided to prevent the cord from being wound on the reel.		

	Bidder Complies	
	Yes	No
A label shall be provided in a readily visible location adjacent to the reel. The label shall indicate current rating, current type, phase, voltage and total cable length. A total of one (1) cord reel shall be provided one (1) above the pump area on the right side. The cord reel should be configured with three (3) conductors. **Reel Warranty** The electric reel shall come with a **five (5)-year** warranty provided by the reel manufacturer. **CORD** Provided for electric distribution shall be one (1) length installed on the reel of 150 feet of yellow 10/3 electrical cord, weather resistant 105 degree Celsius to -50 degree Celsius, 600 volt jacketed SOOW cord. No connector shall be installed on the end of the cord. **PORTABLE JUNCTION BOX** There shall be one (1) Akron EJBX electric junction box(es) provided. There shall be a cable strain relief and direct connection, no plug provided for each box. Each box shall be provided with the following: • four (4) 15/20 amp 120 volt AC duplex straight blade receptacles with flip up covers • a 120 volt AC light inside the box **JUNCTION BOX HOLDER** There shall be an aluminum junction box holder installed adjacent to the cord reel. A total of one (1) shall be mounted at pick-up. **LOOSE EQUIPMENT** The following equipment shall be furnished with the completed unit: - One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit **NFPA REQUIRED LOOSE EQUIPMENT PROVIDED BY FIRE DEPARTMENT** The following loose equipment as outlined in NFPA 1901, 2016 edition, section 5.9.3 and 5.9.4 shall be provided by the fire department. • 800 ft (60 m) of 2.50" (65 mm) or larger fire hose. • 400 ft (120 m) of 1.50" (38 mm), 1.75" (45 mm), or 2.00" (52 mm) fire hose. • One (1) handline nozzle, 200 gpm (750 L/min) minimum. • Two (2) handline nozzles, 95 gpm (360 L/min) minimum.		

	Bidder Complies	
	Yes	No
• One (1) smoothbore of combination nozzle with 2.50" shutoff that flows a minimum of 250 gpm. • One (1) SCBA complying with NFPA 1981 for each assigned seating position, but not fewer than four (4), mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer. • One (1) spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s). • One (1) first aid kit. • Four (4) combination spanner wrenches. • Two (2) hydrant wrenches. • One (1) double female 2.50" (65 mm) adapter with National Hose threads. • One (1) double male 2.50" (65 mm) adapter with National Hose threads. • One (1) rubber mallet, for use on suction hose connections. • Two (2) salvage covers each a minimum size of 12 ft x 14 ft (3.7 m x 4.3 m). • One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two (2) at the shoulders, two (2) at the sides, and one (1) at the front. • Five (5) fluorescent orange traffic cones not less than 28.00" (711 mm) in height, each equipped with a 6.00" (152 mm) retro-reflective white band no more than 4.00" (152 mm) from the top of the cone, and an additional 4.00" (102 mm) retro-reflective white band 2.00" (51 mm) below the 6.00" (152 mm) band. • Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities. • One (1) automatic external defibrillator (AED). • Four (4) ladder belts meeting the requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components* (if equipped with an aerial device). • If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, shall be carried		

	Bidder Complies	
	Yes	No
mounted in brackets fastened to the apparatus. • If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3.00" (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6. • If the apparatus does not have a 2.50" National Hose (NH) intake, an adapter from 2.50" NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake. • If the supply hose carried has other than 2.50" National Hose (NH) threads, adapters shall be carried to allow feeding the supply hose from a 2.50" NH thread male discharge and to allow the hose to connect to a 2.50" NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake. **SOFT SUCTION HOSE PROVIDED BY FIRE DEPARTMENT** NFPA 1901, 2016 edition, section 5.8.2.1 requires a minimum of 20' of suction hose or 15' of supply hose shall be carried. Hose is not on the apparatus as manufactured. The fire department shall provide suction or supply hose. - One (1)-6.00" National Standard hose thread barrel strainer, chrome plated **DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT** NFPA 1901, 2016 edition, section 5.9.4 requires one (1) approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus. The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher. **WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT** NFPA 1901, 2016 edition, section 5.9.4 requires one (1) 2.5 gallon or larger water extinguisher mounted in a bracket fastened to the apparatus. The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher. **FLATHEAD AXE PROVIDED BY FIRE DEPARTMENT** NFPA 1901, 2016 edition, Section 5.9.4 requires one (1) flathead axe mounted in a bracket fastened to the apparatus.		

	Bidder Complies	
	Yes	No
The axe is not on the apparatus as manufactured. The fire department shall provide and mount the axe. **PICKHEAD AXE PROVIDED BY FIRE DEPARTMENT** NFPA 1901, 2016 edition, Section 5.9.4 requires one (1) pickhead axe mounted in a bracket fastened to the apparatus. The axe is not on the apparatus as manufactured. The fire department shall provide and mount the axe. **PAINT PROCESS** The exterior custom cab and/or body painting procedure shall consist of a seven (7) step finishing process. A commercial chassis paint process shall follow similar processes as determined by the chassis manufacturer. The following procedure shall be used by the apparatus manufacturer: 1. Manual Surface Preparation - All exposed metal surfaces on the custom cab and body shall be thoroughly cleaned and prepared for painting. Imperfections on the exterior surfaces shall be removed and sanded to a smooth finish. Exterior seams shall be sealed before painting. Exterior surfaces that shall not be painted include; chrome plating, polished stainless steel, anodized aluminum and bright aluminum treadplate. 2. Chemical Cleaning and Pretreatment - All surfaces shall be chemically cleaned to remove dirt, oil, grease, and metal oxides to ensure the subsequent coatings bond well. The aluminum surfaces shall be properly cleaned and treated using a high pressure, high temperature 4 step Acid Etch process. The steel and stainless surfaces shall be properly cleaned and treated using a high temperature 3 step process specifically designed for steel or stainless. The chemical treatment converts the metal surface to a passive condition to help prevent corrosion. A final pure water rinse shall be applied to all metal surfaces. 3. Surfacer Primer - The Surfacer Primer shall be applied to a chemically treated metal surface to provide a strong corrosion protective base coat. A minimum thickness of 2 mils of Surfacer Primer is applied to surfaces that require a critical aesthetic finish. The surfacer primer shall be a two-component high solids urethane that has excellent sanding properties and an extra smooth finish when sanded. 4. Finish Sanding - The surfacer primer shall be sanded with a fine grit abrasive to achieve an ultra-smooth finish. This sanding process is critical to produce the smooth mirror like finish in the topcoat. 5. Sealer Primer - The sealer primer is applied prior to the base coat in all areas that		

	Bidder Complies	
	Yes	No
have not been previously primed with the surfacer primer. The sealer primer is a two-component high solids urethane that goes on smooth and provides excellent gloss hold out when top coated. 6. Base coat Paint - Two coats of a high performance, two component high solids polyurethane base coat shall be applied. The Base coat shall be applied to a thickness that shall achieve the proper color match. The Base coat shall be used in conjunction with a urethane clear coat to provide protection from the environment. 7. Clear Coat - Two (2) coats of clear coat shall be applied over the base coat color. The clear coat is a two-component high solids urethane that provides superior gloss and durability to the exterior surfaces. Lap style doors shall be clear coated to match the body. Paint warranty for the roll-up doors shall be provided by the roll-up door manufacturer. Specifications are written to define cyclic corrosion testing, physical strengths, durability and minimum appearance requirements must be met in order for an exterior paint finish to be considered acceptable as a quality finish. Each batch of base coat color shall be checked for a proper match before painting of the cab and the body. After the cab and body are painted, the color is verified again to make sure that it matches the color standard. Electronic color measuring equipment shall be used to compare the color sample to the color standard entered into the computer. Color specifications are used to determine the color match. A Delta E reading shall be used to determine a good color match within each family color. All removable items such as brackets, compartment doors, door hinges, and trim shall be removed and separately if required, to ensure paint behind all mounted items. Body assemblies that cannot be finish painted after assembly shall be finish painted before assembly. **PAINT - ENVIRONMENTAL IMPACT** Contractor shall meet or exceed all current State regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water and soil. Controls shall include the following conditions: • Topcoats and primers shall be chrome and lead free. • Metal treatment chemicals shall be chrome free. The wastewater generated in the metal treatment process shall be treated on-site to remove any other heavy metals. • Particulate emission collection from sanding operations shall have a 99.99% efficiency factor.		

	Bidder Complies	
	Yes	No

- Particulate emissions from painting operations shall be collected by a dry filter or water wash process. If the dry filter is used, it shall have an efficiency rating of 98.00%. Water wash systems shall be 99.97% efficient
- Water from water wash booths shall be reused. Solids shall be removed on a continual basis to keep the water clean.
- Paint wastes shall be disposed of in an environmentally safe manner.
- Empty metal paint containers shall be recycled to recover the metal.
- Solvents used in clean-up operations shall be recycled on-site or sent off-site for distillation and returned for reuse.

Additionally, the finished apparatus shall not be manufactured with or contain products that have ozone depleting substances. Contractor shall, upon demand, present evidence that the manufacturing facility meets the above conditions and that it is in compliance with the state EPA rules and regulations.

PAINT

The cab and the body shall be painted #10 white

PAINT/SEAL CHASSIS FRAME ASSEMBLY

The following components shall be treated with epoxy E-coat protection prior to finish paint:

- Two (2) C-channel frame rails
- Two (2) frame liners

The E-coat process shall meet the technical properties shown.

FILM TECHNICAL PROPERTIES

PROPERTY	TEST METHOD	PERFORMANCE
Color	–	Black
Film Thickness	–	0.5 - 1.5 Mils
Gloss - 60 Degree	ASTM D523	65 - 85
Pencil Hardness	ASTM D3363	2H Minimum
Direct Impact	ASTM D2794	100 in. - lbs. Minimum
Reverse Impact	ASTM D2794	60 in. - lbs. Minimum
Crosshatch Adhesion	ASTM D3359	4B - 5B
Humidity	ASTM D1735	1000 Hours Minimum
Water Immersion	ASTM D870	250 Hours Minimum
Gravelometer	GM9508P	6 Minimum
Throwpower	GM9535P	12 - 15 in.

Cold rolled steel lab panels, Zinc Phosphate pretreatment, 0.6 mils average film thickness, cured 20 minutes @ 350°F.

PROPERTY	SUBSTRATE PRETREATMENT	SALT SPRAY* 1000 HOURS
Corrosion Resistance	CRS / Zinc Phos / Non-Chrome	1 - 2 mm

*Salt Spray - ASTM B117, cold rolled steel lab panels cured 20 minutes @ 350°F. (Average Total Scribe Creep)

Before the frame rails are finish painted, all areas shall be sealed with a 3M 2084 metal sealant after the components are torqued to the frame rails:

- The joint between the main frame and the liner
- The joint between all crossmembers and the frame
- The joint between all spring hangers and the frame.

The chassis frame assembly shall be finished with a single system black top coat before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc.

Components that are included with the chassis frame assembly that shall be finish painted

	Bidder Complies	
	Yes	No
are: • Frame rails • Frame liners • Cross members • Axles • Suspensions • Steering gear • Battery boxes • Bumper extension weldment • Frame extensions • Body mounting angles • Rear Body support substructure (front and rear) • Pump house substructure • Air tanks • Steel fuel tank • Castings • Individual piece parts used in chassis and body assembly After the chassis frame assembly is finish painted, the following non-torqued joints shall be sealed with a SG-510A rust-proofing compound: -All bolted on chassis components that could be vulnerable to rust, i.e. body mounting angles, air tanks, etc. To summarize, all metal to metal contact components that are prone to rust, shall be protected. **COMPARTMENT INTERIOR PAINT** The interior of all compartments shall be painted with a gray spatter type paint. **REFLECTIVE BAND** A 6.00" red (tomato red) reflective band shall be provided across the front of the vehicle and		

	Bidder Complies	
	Yes	No
along the sides of the body. The reflective band provided on the cab face shall be at the headlight level. **REAR CHEVRON STRIPING** There shall be alternating chevron striping located on the rear-facing vertical surface of the apparatus. The rear surface, excluding the rear compartment door, shall be covered. The colors shall be red and fluorescent yellow green diamond grade. Each stripe shall be 6.00" in width. This shall meet the requirements of the current edition of NFPA 1901, which states that 50% of the rear surface shall be covered with chevron striping. **STRIPE, REFLECTIVE, "S" RIBBON** "S" type ribbon(s) shall be added to the reflective stripe LS3-RS3. Areas adjacent to the "S" portion of the stripe shall be shaded and highlighted with an air brush to give it a ribbon affect. There shall be one (1) pair on the vehicle. **CAB DOOR REFLECTIVE STRIPE** A 6.00" x 16.00" red (tomato red) reflective stripe shall be provided across the interior of each cab door. The stripe shall be located approximately 1.00" up from the bottom, on the door panel. This stripe shall meet the NFPA 1901 requirement. **LETTERING** The lettering shall be totally encapsulated between two (2) layers of clear vinyl. **LETTERING** Eighty-one (81) to one hundred (100) genuine gold leaf lettering, 3.00" high, with outline and shade shall be provided. **CAB GRILLE DESIGN** An American flag design shall be painted on the cab grille. **FIRE APPARATUS PARTS MANUAL** There shall be one (1) custom parts manual(s) in USB flash drive format for the complete fire apparatus provided. The manual(s) shall contain the following: • Job number • Part numbers with full descriptions		

	Bidder Complies	
	Yes	No
• Table of contents • Parts section sorted in functional groups reflecting a major system, component, or assembly • Parts section sorted in alphabetical order • Instructions on how to locate parts Each manual shall be specifically written for the chassis and body model being purchased. It shall not be a generic manual for a multitude of different chassis and bodies. **SERVICE PARTS INTERNET SITE** The service parts information included in these manuals are also available on the factory website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly. **CHASSIS SERVICE MANUALS** There shall be one (1) chassis service manuals on USB flash drives containing parts and service information on major components provided with the completed unit. The manual shall contain the following sections: • Job number • Table of contents • Troubleshooting • Front Axle/Suspension • Brakes • EngineTires • Wheels • Cab • Electrical, DC • Air Systems • Plumbing		

	Bidder Complies	
	Yes	No
• Appendix The manual shall be specifically written for the chassis model being purchased. It shall not be a generic manual for a multitude of different chassis and bodies. **CHASSIS OPERATION MANUAL** The chassis operation manual shall be provided on one (1) USB flash drive. **ONE (1) YEAR MATERIAL AND WORKMANSHIP** Each new piece of apparatus shall be provided with a minimum **one (1) year** basic apparatus material and workmanship limited warranty. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (**NO EXCEPTION**). **ENGINE WARRANTY** A Cummins **five (5) year** limited engine warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package. **STEERING GEAR WARRANTY** A TRW **one (1) year** limited steering gear warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package. **FIFTY (50) YEAR STRUCTURAL INTEGRITY** The chassis frame shall be provided with a **fifty (50) year** material and workmanship limited warranty. The warranty shall cover the chassis frame as being free from defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (**NO EXCEPTION**). **FRONT AXLE WARRANTY** A Eaton **five (5)-year/100,000 mile** parts and labor warranty shall be provided. **REAR AXLE WARRANTY** A Eaton **five (5)-year/100,000 mile** parts and labor warranty shall be provided. **ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY** A Meritor Wabco™ ABS brake system **three (3) year** limited warranty shall be provided. **TEN (10) YEAR STRUCTURAL INTEGRITY**		

	Bidder Complies	
	Yes	No
The new cab shall be provided with a **ten (10) year** material and workmanship limited warranty. The warranty shall cover such portions of the cab built by the manufacturer as being free from structural failures caused by defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (**NO EXCEPTION**). **TEN (10) YEAR PRO-RATED PAINT AND CORROSION** Each new piece of apparatus shall be provided with a **ten (10) year** pro-rated paint and corrosion limited warranty on the apparatus cab. The warranty shall cover painted exterior surfaces of the body to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (**NO EXCEPTION**). **CAMERA SYSTEM WARRANTY** A fifty-four (54) month warranty shall be provided for the camera system**.** **COMPARTMENT LIGHT WARRANTY** A ten (10) year material and workmanship limited warranty shall be provided for the 12 volt DC LED strip lights**.** The warranty shall cover the LED strip lights to be free from defects in material and workmanship that would arise under normal use. A copy of the warranty certificate shall be submitted with the bid package (**NO EXCEPTION).** **TRANSMISSION WARRANTY** The transmission shall have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty is to be provided by Allison Transmission and not the apparatus builder. **TRANSMISSION COOLER WARRANTY** The transmission cooler shall carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a collateral damage warranty shall also be in effect for the first three (3) years of the warranty coverage and shall not exceed $10,000 per occurrence. A copy of the warranty certificate shall be submitted with the bid package. **WATER TANK WARRANTY** The UPF poly water tank shall be provided with a lifetime material and workmanship limited warranty. A copy of the warranty certificate shall be submitted with the bid package (**NO EXCEPTION**).		

	Bidder Complies	
	Yes	No
TEN (10) YEAR STRUCTURAL INTEGRITY Each new piece of apparatus shall be provided with a **ten (10) year** material and workmanship limited warranty on the apparatus body. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (**NO EXCEPTION**). **ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY** A Gortite roll-up door limited warranty shall be provided. The mechanical components of the roll-up door shall be warranted against defects in material and workmanship for the lifetime of the vehicle. A **six (6) year** limited warranty shall be provided on painted and satin roll up doors. A copy of the warranty certificate shall be submitted with the bid package. **PUMP WARRANTY** The Waterous pump shall be provided with a **five (5) year** material and workmanship limited warranty. A copy of the warranty certificate shall be submitted with the bid package (**NO EXCEPTION**). **TEN (10) YEAR PUMP PLUMBING WARRANTY** The stainless steel plumbing components and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of **ten (10) years or 100,000 miles**. This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten years from the date of delivery. A copy of the warranty certificate shall be submitted with the bid package (**NO EXCEPTION**). **SIX (6) YEAR GENERATOR MATERIAL AND WORKMANSHIP WARRANTY** A Harrison Hydra-Gen generator **six (6) year** limited warranty shall be provided. **TEN (10) YEAR PRO-RATED PAINT AND CORROSION** Each new piece of apparatus shall be provided with a **ten (10) year** pro-rated paint and corrosion limited warranty on the apparatus body. The warranty shall cover painted exterior surfaces of the body to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would		

	Bidder Complies	
	Yes	No
arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package **(NO EXCEPTION**). **THREE (3) YEAR MATERIAL AND WORKMANSHIP** The gold leaf lamination shall be provided with a **three (3) year** material and workmanship limited warranty. The warranty shall cover the gold leaf lamination as being free from defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (**NO EXCEPTION**). **VEHICLE STABILITY CERTIFICATION** The fire apparatus manufacturer shall provide a certification stating the apparatus complies with NFPA 1901, current edition, section 4.13, Vehicle Stability. The certification shall be provided at the time of bid. **ENGINE INSTALLATION CERTIFICATION** The fire apparatus manufacturer shall provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification shall be provided at the time of bid. **POWER STEERING CERTIFICATION** The fire apparatus manufacturer shall provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification shall be provided at the time of bid. **CAB INTEGRITY CERTIFICATION** The fire apparatus manufacturer shall provide a cab crash test certification with this proposal. The certification shall state that a specimen representing the substantial structural configuration of the cab has been tested and certified by an independent third party test facility. Testing events shall be documented with photographs, real-time and high-speed video, vehicle accelerometers, cart accelerometers, and a laser speed trap. The fire apparatus manufacturer shall provide a state licensed professional engineer to witness and certify all testing events. Testing shall meet or exceed the requirements below: - European Occupant Protection Standard ECE Regulation No.29. - SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks. - SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks. - Roof Crush The cab shall be subjected to a roof crush force of 22,500 lb. This value meets the ECE 29 criteria, and is equivalent to the front axle rating up to a maximum of ten (10) metric tons. - Side Impact		

	Bidder Complies	
	Yes	No
The same cab shall be subjected to dynamic preload where a 13,275-lb moving barrier is slammed into the side of the cab at 5.50 mph, striking with an impact of 13,000 ft-lb of force. This test is part of the SAE J2422 test procedure and more closely represents the forces a cab shall see in a rollover incident. - Frontal Impact The same cab shall withstand a frontal impact of 32,600 ft-lb of force using a moving barrier in accordance with SAE J2420. - Additional Frontal Impact The same cab shall withstand a frontal impact of 65,200 ft-lb of force using a moving barrier. (Twice the force required by SAE J2420) The same cab shall withstand all tests without any measurable intrusion into the survival space of the occupant area. There shall be no exception to any portion of the cab integrity certification. Nonconformance shall lead to immediate rejection of bid. **CAB DOOR DURABILITY CERTIFICATION** Robust cab doors help protect occupants. Cab doors shall survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder shall certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear. **WINDSHIELD WIPER DURABILITY CERTIFICATION** Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers shall survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles.* The bidder shall certify that the wiper system design has been tested and that the wiper system has met these criteria. **SEAT BELT ANCHOR STRENGTH** Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design shall withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder shall certify that each anchor design was pull tested to the required force and met the appropriate criteria. **SEAT MOUNTING STRENGTH** Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design shall be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder shall certify, at		

	Bidder Complies	
	Yes	No
time of delivery, that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria. **CAB DEFROSTER CERTIFICATION** Visibility during inclement weather is essential to safe apparatus performance. The defroster system shall clear the required windshield zones in accordance with SAE J381 Windshield Defrosting Systems Test Procedure and Performance Requirements - Trucks, Buses, And Multipurpose Vehicles. The bidder shall certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria. **CAB HEATER CERTIFICATION** Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. The cab heaters shall warm the cab 77 degrees Fahrenheit from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder shall certify, at time of delivery, that a substantially similar cab has been tested and has met these criteria. **CAB AIR CONDITIONING PERFORMANCE CERTIFICATION** Good cab air conditioning temperature and air flow performance keeps occupants comfortable, reduces humidity, and provides a climate for recuperation while at the scene. The cab air conditioning system shall cool the cab from a heat-soaked condition at 100 degrees Fahrenheit to an average of 78 degrees Fahrenheit in 30 minutes. The bidder shall certify that a substantially similar cab has been tested and has met these criteria. **AMP DRAW REPORT** The bidder shall provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system. The manufacturer of the apparatus shall provide the following: • Documentation of the electrical system performance tests. • A written load analysis, which shall include the following: o The nameplate rating of the alternator. o The alternator rating under the conditions specified per: ▪ Applicable NFPA 1901 or 1906 (Current Edition). o The minimum continuous load of each component that is specified per: ▪ Applicable NFPA 1901 or 1906 (Current Edition). o Additional loads that, when added to the minimum continuous load, determine		

	Bidder Complies	
	Yes	No
the total connected load. o Each individual intermittent load. All of the above listed items shall be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).		

EXHIBIT "A"

EXCEPTIONS TO RFP

EXHIBIT “B”

MANUFACTURER HISTORY

EXHIBIT “C”

REFERENCES

EXHIBIT “D”

DEALER AUTHORIZATION

EXHIBIT “E”

BUSINESS LICENSES

EXHIBIT “F”

WARRANTIES

EXHIBIT “G”

GENERAL LIABILITY INSURANCE

EXHIBIT “H”

EXCESS LIABILITY INSURANCE

EXHIBIT “I”

BANKRUPTCY

EXHIBIT “J”

SURETY (BID) BOND

EXHIBIT "K"
IRAN DIVESTMENT ACT AFFIDAVIT

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As per Tennessee Code Annotated, Title 12, and effective July 1, 2016:

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 thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to §12-12-106.

_____

Signature

_____

Date