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Bidder Complies	
Yes	No

SPECIFICATIONS FOR A 107' HEAVY DUTY AERIAL LADDER

Sealed bids will be received by Darch for the furnishing of all necessary labor, equipment and material for the Fire Apparatus and other equipment as outlined in the following specifications.

INTENT OF SPECIFICATIONS

It shall be the intent of these specifications to cover the furnishing and 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.

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 shall 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.**

	Bidder Complies	
	Yes	No
<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p><u>EXCEPTIONS</u></p> <p>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.</p> <p>Bidders shall indicate in the "yes/no" column if their bid complies on each item (paragraph) specified.</p> <p>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.</p> <p>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, 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 buyer reserves the right to require a bidder to provide proof in each case that a substituted item is equal to that specified. The buyer shall be the sole judge in determination of acceptable substitutes.</p> <p>Proposals that are found to have deviations without listing them or bids taking total exceptions to these advertised specifications will be rejected (no exception).</p>		

	Bidder Complies	
	Yes	No
<p>Bids not including all exceptions is a material breach and shall result in the bid being immediately rejected (no exception).</p> <p><u>GENERAL DESIGN AND CONSTRUCTION</u></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>The bidder shall make accurate statements as to the apparatus weight and dimensions.</p> <p><u>QUALITY AND WORKMANSHIP</u></p> <p>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.</p> <p>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.</p> <p>To demonstrate the quality of the product and service, each bidder shall provide a list of at least two (2) fire departments/municipalities in the region that have bought a second time from the representing dealer. An exception to this requirement shall not be acceptable.</p>		

	Bidder Complies	
	Yes	No
<p><u>DELIVERY</u></p> <p>Apparatus, to insure 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.</p> <p><u>MANUALS AND SERVICE INFORMATION</u></p> <p>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 driver's compartment which specifies the quantity and type of fluid required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.</p> <p><u>SAFETY VIDEO</u></p> <p>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.</p> <p><u>PERFORMANCE TESTS AND REQUIREMENTS</u></p> <p>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:</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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).</p>		

	Bidder Complies	
	Yes	No
<p><u>FAILURE TO MEET TEST</u></p> <p>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.</p> <p><u>SERVICE AND WARRANTY SUPPORT (DEALERSHIP)</u></p> <p>TO INSURE FULL SERVICE AFTER DELIVERY, THE SELLING BIDDER/DEALERSHIP MUST BE CAPABLE OF PROVIDING SERVICE WHEN REQUIRED.</p> <p>The bidder/dealership shall show that the company is in position to render prompt service and to furnish replacement parts.</p> <p>Each bidder/dealership must be able to display that they are actively in the fire apparatus service business by operating a factory authorized service center and parts repository capable of satisfying the warranty service requirements and parts requirements of the vehicle(s) being purchased.</p> <p>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.</p> <p><u>SERVICE AND WARRANTY SUPPORT (MANUFACTURER)</u></p> <p>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.</p> <p>The manufacturer shall stock 1 million parts equating to \$5,000,000 of inventory 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.</p> <p>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.</p>		

	Bidder Complies	
	Yes	No
<p>The manufacturer must also maintain a 24 hour/ 7 day a week, toll free emergency hot line.</p> <p>The manufacturer shall employ a staff of adequate size (a minimum of 30 personnel) specifically dedicated to providing customer support and parts for the fielded fleet of vehicles it has produced.</p> <p>The manufacturer must be capable of providing both in-house and on-site service for the apparatus.</p> <p>The manufacturer shall offer regional factory hands-on repair and maintenance training classes.</p> <p>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.</p> <p><u>LIABILITY</u></p> <p>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. To ensure this will occur, the bidder shall carry the following minimum insurance.</p> <p><u>COMMERCIAL GENERAL LIABILITY INSURANCE</u></p> <p>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:</p> <p style="padding-left: 40px;">Each Occurrence\$1,000,000</p> <p style="padding-left: 40px;">Products/Completed Operations Aggregate\$1,000,000</p> <p style="padding-left: 40px;">Personal and Advertising Injury\$1,000,000</p> <p style="padding-left: 40px;">General Aggregate\$5,000,000</p> <p>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 Owner as an additional insured when required by written contract.</p> <p><u>COMMERCIAL AUTOMOBILE LIABILITY INSURANCE</u></p> <p>The successful bidder shall, during the performance of the contract keep in force at least the following minimum limits of commercial automobile liability insurance:</p> <p style="padding-left: 40px;">Each Accident Combined Single Limit: \$1,000,000</p>		

	Bidder Complies	
	Yes	No
<p>Coverage shall be written on a Commercial Automobile liability form.</p> <p><u>UMBRELLA/EXCESS LIABILITY INSURANCE</u></p> <p>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:</p> <p style="padding-left: 40px;">Aggregate: \$25,000,000</p> <p style="padding-left: 40px;">Each Occurrence: \$25,000,000</p> <p>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.</p> <p>The required limits can be provided by one (1) or more policies provided all other insurance requirements are met.</p> <p>Coverage shall be provided by a carrier(s) rated A- or better by A.M. Bests.</p> <p>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 policies 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.</p> <p><u>SINGLE SOURCE MANUFACTURER</u></p> <p>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, pump house (including the sheet metal enclosure, valve controls, piping and operators panel) body and aerial device 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 engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body, pump house, cab weldment, chassis and aerial). The bidder shall provide evidence that they comply with this requirement.</p> <p>The bidder shall state the location of the factory where the apparatus is to be built.</p>		

	Bidder Complies	
	Yes	No
<p><u>NFPA 2016 STANDARDS</u></p> <p>This unit shall comply with the NFPA standards effective January 1, 2016, except for fire department directed exceptions. These exceptions shall be set forth in the Statement of Exceptions.</p> <p>Certification of slip resistance of all stepping, standing and walking surfaces shall be supplied with delivery of the apparatus.</p> <p>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.</p> <p>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.</p> <p>The manufacturer shall have programs in place for training, proficiency testing and performance for any staff involved with certifications.</p> <p>An official of the company shall designate, in writing, who is qualified to witness and certify test results.</p> <p><u>ULC COMPLIANCY</u></p> <p>Apparatus proposed by the bidder shall meet the applicable requirements of the CAN/ULC-S515 standard as stated in the current edition at the time of contract execution. Fire department's specifications that differ from ULC specifications shall be indicated in the proposal as "non-ULC" compliant. The apparatus shall be in service at an elevation of ULC.</p> <p><u>VEHICLE INSPECTION PROGRAM CERTIFICATION</u></p> <p>To assure the vehicle is built to current CAN/ULC-S515 standards, the apparatus, in its entirety, shall be third-party, independent, audit-certified through Underwriters Laboratory (UL) that it is built and complies to all applicable standards in the current edition of CAN/ULC-S515. The certification includes: all design, production, operational, and performance testing of not only the apparatus, but those components that are installed on the apparatus (no exception).</p> <p>A placard shall be affixed in the driver's side area stating the third party agency, the date, the standard and the certificate number of the whole vehicle audit.</p>		

Bidder Complies	
Yes	No

INSPECTION CERTIFICATE

A third party inspection certificate for the aerial device shall be furnished upon delivery of the aerial device. The certificate shall be Underwriters Laboratories Inc. Type 1 and shall indicate that the aerial device has been inspected on the production line and after final assembly.

Visual structural inspections shall be performed on all welds on both aluminum and steel ladders.

On critical weld areas, or on any suspected defective area, the following tests shall be conducted:

- Magnetic particle inspection shall be conducted on steel aerials to assure the integrity of the weldments and to detect any flaws or weaknesses. Magnets shall be placed on each side of the weld while iron powder is placed on the weld itself. The powder shall detect any crack that may exist. This test shall conform to ASTM E709 and be performed prior to assembly of the aerial device.
- A liquid penetrant test shall be conducted on aluminum aerials to assure the integrity of the weldments and to detect any flaws or weaknesses. This test shall conform to ASTM E165 and be performed prior to assembly of the aerial device.
- Ultrasonic inspection shall be conducted on all aerials to detect any flaws in pins, bolts and other critical mounting components.

In addition to the tests above, functional tests, load tests, and stability tests shall be performed on all aerials. These tests shall determine any unusual deflection, noise, vibration, or instability characteristics of the unit.

PUMP TEST

The pump shall be tested, approved and certified by Underwriter's Laboratory. The test results and 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 forwarded to the Fire Department.

GENERATOR TEST

If the unit has a generator, the generator shall be tested, approved, and certified by Underwriters Laboratories. The test results shall be provided to the Fire Department at the time of delivery.

BREATHING AIR TEST

If the unit has breathing air, the apparatus manufacturer shall draw an air sample from the air system and certify that the air quality meets the requirements of CSA Z180.1-13, *Compressed Breathing Air and Systems*.

	Bidder Complies	
	Yes	No
<p><u>UNITS OF MEASURE</u></p> <p>This apparatus shall be built for a destination in Canada and required ULC certifications shall be in the proper metric format such as liters, liters per minute, kpa, etc.</p> <p>The following specification contains standard US units of measure for volume, pressure, length/width/height, weight, etc. and are not converted to metric equivalents. However, specific individual options such as pressure gauges and speedometers may be described in metric terminology.</p> <p><u>BID BOND</u></p> <p>All bidders shall provide a bid bond as security for the bid in the form of a 10% bid bond to accompany their bid. This bid bond shall be issued by a Surety Company who is listed on the U.S. Treasury Departments 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.</p> <p>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.</p> <p>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.</p> <p>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) 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.</p>		

	Bidder Complies	
	Yes	No
<p><u>PERFORMANCE BOND NOT REQUESTED</u></p> <p>A performance bond shall not be included. If requested at a later date, one shall be provided to you for an additional cost and the following shall apply:</p> <p>The successful bidder shall furnish a Performance and Payment bond (Bond) equal to 100 percent 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 of XV. In the event of a bond issued by a surety of a lesser Size Category, a minimum Financial Strength rating of A+ is required.</p> <p>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.</p> <p><u>APPROVAL DRAWING</u></p> <p>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.</p> <p>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.</p> <p><u>ELECTRICAL WIRING DIAGRAMS</u></p> <p>Two (2) electrical wiring diagrams, prepared for the model of chassis and body, shall be provided.</p> <p><u>CHASSIS</u></p> <p>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.</p> <p><u>WHEELBASE</u></p> <p>The wheelbase of the vehicle shall be no greater than 255.00.</p>		

	Bidder Complies	
	Yes	No
<p><u>GVW RATING</u> The gross vehicle weight rating shall be a minimum of 63,500.</p> <p><u>FRAME</u> 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".</p> <p>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.</p> <p><u>FRAME REINFORCEMENT</u> A full-length mainframe "C" liner shall be provided.</p> <p>The liner shall be an internal "C" design, heat-treated steel measuring 9.38" x 3.13" x 0.25". Each reinforcement member shall have a section modulus of 3.90 cubic inches, yield strength of 120,000 psi and resisting bending moment (rbm) of 938,762 in-lb.</p> <p><u>FRONT NON DRIVE AXLE</u> The front axle shall be of the independent suspension design with a ground rating of 19,500 lb.</p> <p>The turning angle shall be 45 degrees.</p> <p><u>FRONT SUSPENSION</u> A front independent suspension shall be provided with a minimum ground rating of 19,500 lb.</p> <p><u>FRONT SHOCK ABSORBERS</u> Heavy-duty telescoping shock absorbers shall be provided on the front suspension.</p> <p><u>FRONT OIL SEALS</u> Oil seals with viewing window shall be provided on the front axle.</p> <p><u>FRONT TIRES</u> Front tires shall be 315/80R22.50 radials, 20 ply "ribbed" tread, rated for 20,400 lb maximum axle load and 68 mph maximum speed.</p> <p>The tires shall be mounted on 22.50" x 9.00" polished aluminum disc wheels with a ten (10) stud, 11.25" bolt circle.</p> <p><u>REAR AXLE</u> The rear axle shall be a tandem axle assembly with a capacity of 44,000 lb.</p> <p>An inter-axle differential lock, which divides torque evenly between axles, shall be provided with an indicator light mounted on the cab instrument panel.</p>		

	Bidder Complies	
	Yes	No
<p><u>TOP SPEED OF VEHICLE</u> A rear axle ratio shall be furnished to allow the vehicle to reach a top speed of 60 mph.</p> <p><u>REAR SUSPENSION</u> The rear suspension shall be a rubber bolster system with an equalizing beam design that distributes the load equally between the two (2) axles. The ground rating of the suspension shall be 48,000 lb.</p> <p><u>REAR OIL SEALS</u> Oil seals shall be provided on the rear axle(s).</p> <p><u>REAR TIRES</u> Rear tires shall be eight (8) 12R22.50 radials, 16 ply all season tread, rated for 54,240 lb maximum axle load and 75 mph maximum speed.</p> <p>The tires shall be mounted on 22.50" x 8.25" polished aluminum disc wheels with a ten (10) stud 11.25" bolt circle.</p> <p><u>TIRE BALANCE</u> All tires shall be balanced with balancing beads. The beads shall be inserted into the tire and eliminate the need for wheel weights.</p> <p><u>TIRE PRESSURE MANAGEMENT</u> There shall be a LED tire alert pressure management system provided, that shall monitor each tire's pressure. A sensor shall be provided on the valve stem of each tire for a total of 10 tires.</p> <p>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.</p> <p>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.</p> <p><u>FRONT HUB COVERS</u> Stainless steel hub covers shall be provided on the front axle. An oil level viewing window shall be provided.</p> <p><u>REAR HUB COVERS</u> Stainless steel, high hat, hub covers shall be provided on the rear axle hubs.</p> <p><u>CHROME LUG NUT COVERS</u> Chrome lug nut covers shall be supplied on front and rear wheels.</p>		

	Bidder Complies	
	Yes	No
<p><u>MUD FLAPS</u> Mud flaps shall be installed behind the front and rear wheels of the apparatus.</p> <p><u>WHEEL CHOCKS</u> There shall be one (1) pair of folding aluminum alloy wheel blocks, with easy-grip handle provided.</p> <p><u>WHEEL CHOCK BRACKETS</u> There shall be one (1) pair of horizontal mounting wheel chock brackets provided for the folding wheel chocks. The brackets shall be made of aluminum and consist of a quick release spring loaded rod to hold the wheel chocks in place. The brackets shall be mounted forward of the left side rear tire.</p> <p><u>ANTI-LOCK BRAKE SYSTEM</u> The vehicle shall be equipped with an anti-lock braking system. The ABS shall provide a four (4) channel anti-lock braking control on both the front and rear wheels (rear tandem wheels). A digitally controlled system that utilizes microprocessor technology shall control the anti-lock braking system. Each wheel shall be monitored by the system. When any particular wheel begins to lockup, a signal shall be sent to the control unit. This control unit then shall reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system shall eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.</p> <p><u>BRAKES</u> The service brake system shall be full air type. The front brakes shall be 17.00" disc type. The rear brakes shall be 16.50" x 7.00" cam operated with automatic slack adjusters. Dust shields shall be provided.</p> <p><u>AIR COMPRESSOR, BRAKE SYSTEM</u> The air compressor shall have 15.80 cubic feet per minute output at 1,250 rpm.</p> <p><u>BRAKE SYSTEM</u> The brake system shall include:</p> <ul style="list-style-type: none"> • Dual brake treadle valve • Heated automatic moisture ejector on air dryer • Total air system capacity of 6,408 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 		

Bidder Complies	
Yes	No

- 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, shall be provided 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 properly sized for the brake system with 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 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.

ALL WHEEL LOCK-UP

An additional all wheel lock-up system shall be installed which applies air to the front brakes only. The standard spring brake control valve system shall be used for the rear.

ENGINE

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

Power:	505 hp at 1625 rpm
Torque:	1750 lb-ft at 1075 rpm
Governed Speed:	Full Load - 1900 rpm Road/2080 rpm Parked PTO
Emissions Certification:	EPA 2016 (GHG17)
Fuel:	Diesel
Cylinders:	Six (6)

		Bidder Complies	
		Yes	No
Displacement:	781 cubic inches (12.8L)		
Starter:	Heavy duty		
Fuel Filters:	Dual cartridge style with check valve, water separator, and water in fuel sensor		
<p>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.</p> <p><u>REPTO DRIVE</u></p> <p>A rear engine power take off shall be provided to drive the water pump. A vibration dampener shall be provided between the REPTO and water pump. Transmission PTO's used to drive the water pump shall not be allowed due to their lower torque ratings. The rear engine power take off shall be the same as used extensively throughout the construction industry. Rear engine PTO's allow for continuous 240 hp and 480 lb-ft torque ratings needed for large pump applications. The rear engine power take off shall have the same warranty as the engine provided by the engine manufacturer.</p> <p><u>HIGH IDLE</u></p> <p>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.</p> <p>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."</p> <p><u>ENGINE BRAKE</u></p> <p>An engine brake is to be installed with the controls located on the instrument panel within easy reach of the driver.</p> <p>The driver shall be able to turn the engine brake system on/off and have a high, medium and low setting.</p> <p>The engine brake shall be installed in such a manner that when the engine brake is slowing the vehicle the brake lights are activated.</p> <p>The ABS system shall automatically disengage the auxiliary braking device when required.</p>			

	Bidder Complies	
	Yes	No
<p><u>CLUTCH FAN</u></p> <p>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.</p> <p><u>ENGINE AIR INTAKE</u></p> <p>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.</p> <p>A stainless steel metal screen shall be installed at the inlet of the air intake system that shall meet NFPA 1901 requirements.</p> <p>The air cleaner and stainless steel screen shall be easily accessible by tilting the cab.</p> <p><u>EXHAUST SYSTEM</u></p> <p>The exhaust system shall include a diesel particulate filter (DPF) and a selective catalytic reduction (SCR) device to meet current EPA standards. The exhaust system shall be stainless steel from the turbo to the inlet of the SCR device and shall be 5.00" in diameter. An insulation wrap shall be provided on all exhaust pipes between the turbo and SCR to minimize the transfer of heat to the cab. 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.</p> <p><u>RADIATOR</u></p> <p>The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system standards.</p> <p>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 any kind shall be acceptable in the core assembly.</p> <p>The radiator core shall have a minimum front area of 1060 square inches.</p> <p>Supply tank shall be made of heavy duty glass-reinforced nylon and the return tank shall be made 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.</p> <p>The radiator shall be compatible with commercial antifreeze solutions.</p>		

	Bidder Complies	
	Yes	No
<p>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.</p> <p>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.</p> <p>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.</p> <p>Shields or baffles shall be provided to prevent recirculation of hot air to the inlet side of the radiator.</p> <p><u>COOLANT LINES</u></p> <p>Rubber hose shall be used for all engine coolant lines to be installed by the chassis manufacturer.</p> <p>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.</p> <p><u>FUEL TANK</u></p> <p>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).</p> <p>A 0.75" drain plug shall be provided in a low point of the tank for drainage.</p> <p>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."</p> <p>A 0.50" diameter vent shall be provided running from top of tank to just below fuel fill inlet.</p> <p>The tank shall meet all FHWA 393.67 requirements including a fill capacity of 95 percent of tank volume.</p> <p>All fuel lines shall be provided as recommended by the engine manufacturer.</p> <p><u>DIESEL EXHAUST FLUID TANK</u></p> <p>A 4.5 gallon diesel exhaust fluid (DEF) tank shall be provided and mounted in the driver's side body forward of the rear axle.</p> <p>A 0.50" drain plug shall be provided in a low point of the tank for drainage.</p>		

Bidder Complies	
Yes	No

A fill inlet shall be located on the driver's side of the body and be covered with a hinged, spring loaded, polished stainless steel door that is marked "Diesel Exhaust Fluid Only".

The tank shall meet the engine manufacturer's 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.

FUEL COOLER

An air to fuel cooler shall be installed in the engine fuel return line.

TRANSMISSION

An 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 left side and top of converter housing (positions 8 o'clock and 1 o'clock).

A transmission temperature gauge with red light and buzzer shall be installed on the cab instrument panel.

TRANSMISSION SHIFTER

A six (6)-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:

1st	3.51 to 1.00
2nd	1.91 to 1.00
3rd	1.43 to 1.00
4th	1.00 to 1.00
5th	0.75 to 1.00
6th	0.64 to 1.00
R	4.80 to 1.00

TRANSMISSION PROGRAMMING

The transmission shall be programmed to automatically shift the transmission to neutral when the parking brake is set to simplify operation and increase operational safety (no exception).

	Bidder Complies	
	Yes	No
<p><u>TRANSMISSION COOLER</u> A plate and fin transmission oil cooler shall be provided using engine coolant to control the transmission oil temperature.</p> <p><u>DRIVELINE</u> Drivelines shall be a heavy-duty metal tube and be equipped with universal joints.</p> <p>The shafts shall be dynamically balanced before installation.</p> <p>A splined slip joint shall be provided in each driveshaft.</p> <p><u>STEERING</u> Dual steering gears, with integral heavy-duty power steering, shall be provided. For reduced system temperatures, the power steering shall incorporate an air to oil cooler and a hydraulic pump with integral pressure and flow control. All power steering lines shall have wire braded lines with crimped fittings.</p> <p>A tilt and telescopic steering column shall be provided to improve fit for a broader range of driver configurations.</p> <p><u>STEERING WHEEL</u> The steering wheel shall be 18.00" in diameter, have tilting and telescoping capabilities, and a 4-spoke design.</p> <p><u>LOGO AND CUSTOMER DESIGNATION ON DASH</u> The dash panel 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.</p> <p>The first row of text shall be: Darch</p> <p>The second row of text shall be: Fire</p> <p>The third row of text shall be: Inc.</p> <p><u>BUMPER</u> A one (1)-piece, stainless steel bumper shall be attached to the front of the frame.</p> <p>A 9.00" channel shall be mounted directly behind the bumper for additional strength.</p> <p>The bumper shall be extended 19.00" from front face of cab.</p>		

	Bidder Complies	
	Yes	No
<p><u>GRAVEL PAN</u> 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.</p> <p><u>CENTER HOSE TRAY</u> A hose tray, constructed of aluminum, shall be placed in the center of the bumper extension.</p> <p>The tray shall have a capacity of 125' of 1.75" double jacket cotton-polyester hose.</p> <p>Black rubber grating shall be provided at the bottom of the tray. Drain holes are also provided.</p> <p><u>CENTER HOSE TRAY RESTRAINT</u> There shall be one (1) pair of hose tray restraint straps located over the center mounted tray.</p> <p>The restraints shall be a pair of 2.00" wide black nylon straps with hook and loop fasteners provided. The strap(s) shall be used to secure the hose in the tray.</p> <p><u>TOW HOOKS</u> 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.</p> <p><u>CAB</u> The cab shall be designed specifically for the fire service and manufactured by the chassis builder.</p> <p>The cab shall be built by the apparatus manufacturer in a facility located on the manufacturer's premises (no exception).</p> <p>For reasons of structural integrity and enhanced occupant protection, the cab shall be a heavy duty design, constructed to the following minimal standards.</p> <p>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.</p>		

	Bidder Complies	
	Yes	No
<p>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.</p> <p>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 wire way of the cab to the engine tunnel side plates, creating the structure to support the forces created when lifting the cab.</p> <p>The cab shall be 96.00" wide (outside door skin to outside door skin) to maintain maximum maneuverability (no exception).</p> <p>The overall height (from the cab roof to the ground) of approximately 99.00". 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.</p> <p>The floor to ceiling height inside the crew cab shall be 53.50" in the forward facing outboard positions and 44.50" in the forward facing center position.</p> <p>The crew cab floor shall measure 46.00" from the rear wall to the back side of the rear facing seat risers.</p> <p>The medium block engine tunnel, at the rearward highest point (knee level), shall measure 61.50" to the rear wall. The big block engine tunnel shall measure 51.50" to the rear wall.</p> <p>The crew cab shall be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants.</p> <p>The cab shall be a full tilt cab style.</p> <p>A 3-point cab mount system with rubber isolators shall improve ride quality by isolating chassis vibrations from the cab.</p> <p><u>CAB ROOF DRIP RAIL</u></p> <p>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.</p>		

	Bidder Complies	
	Yes	No
<p><u>CAB PUMP ENCLOSURE</u> The rear of the cab shall be made to house the fire pump below the forward facing crew cab seats. The cab side panels shall be notched to accommodate the pump panel.</p> <p><u>INTERIOR CAB INSULATION</u> 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.</p> <p><u>FENDER LINERS</u> Full circular inner fender liners in the wheel wells shall be provided.</p> <p><u>PANORAMIC WINDSHIELD</u> A one (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.</p> <p><u>WINDSHIELD WIPERS</u> Three (3) electric windshield wipers with washer shall be provided that meet FMVSS and SAE requirements.</p> <p>The washer reservoir shall be able to be filled without raising the cab.</p> <p><u>ENGINE TUNNEL</u> 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.</p> <p>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.</p> <p>The engine tunnel shall be no higher than 17.00" off the crew cab floor (no exception).</p> <p><u>CAB REAR WALL EXTERIOR COVERING</u> The exterior surface of the rear wall of the cab shall be painted job color</p>		

	Bidder Complies	
	Yes	No
<p><u>CAB LIFT</u></p> <p>A hydraulic cab lift system shall be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves.</p> <p>Lift controls shall be located on the right side pump panel or front area of the body in a convenient location.</p> <p>The cab shall be capable of tilting 43 degrees to accommodate engine maintenance and removal.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p><u>Cab Lift Interlock</u></p> <p>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 parking brake is released, the cab tilt mechanism shall be disabled.</p> <p><u>GRILLE</u></p> <p>A bright finished aluminum mesh grille screen, inserted behind a bright finished grille surround, shall be provided on the front center of the cab.</p> <p><u>DOOR JAMB SCUFFPLATES</u></p> <p>All cab door jambs shall be furnished with a polished stainless steel scuffplate, mounted on the striker side of the jamb.</p> <p><u>SIDE OF CAB MOLDING</u></p> <p>Chrome molding shall be provided on both sides of cab.</p>		

	Bidder Complies	
	Yes	No
<p><u>MIRRORS</u></p> <p>A dual vision, motorized, west coast style mirror, with chrome finish, shall be mounted on each side of the front cab door with spring loaded retractable arms. The flat glass and convex glass shall be heated and adjustable with remote control within reach of the driver.</p> <p><u>DOORS</u></p> <p>To enhance entry and egress to the cab, the forward cab door openings shall be a minimum of 37.50" wide x 63.37" 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 63.37" high.</p> <p>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.</p> <p>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 with heavy gloved hands.</p> <p>The cab doors shall be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. 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.</p> <p>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.</p> <p>A chrome handle shall be provided on the inside of each front cab door for ease of entry.</p> <p>The bottom cab step at each cab door location shall be located below the cab doors and shall be exposed to the exterior of the cab.</p> <p><u>DOOR PANELS</u></p> <p>The inner cab door panels shall be constructed out of brushed stainless steel.</p> <p><u>MANUAL CAB DOOR WINDOWS</u></p> <p>All cab entry doors shall contain a conventional roll down window.</p>		

Bidder Complies	
Yes	No

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. A slip-resistant handrail shall be provided adjacent to each cab door opening to assist during cab ingress and egress.

The vertical surfaces of the step well shall be painted.

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.
- 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.

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.

	Bidder Complies	
	Yes	No
<p>The instrument cluster shall be surrounded with a high impact ABS plastic contoured to the same shape of the instrument cluster.</p> <p>The engine tunnel shall be painted aluminum to match the cab interior.</p> <p>The 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.</p> <p>Forward portion of cab headliner shall permit easy access for service of electrical wiring or other maintenance needs.</p> <p>All wiring shall be placed in metal raceways. Routing through holes in tubing shall not be accepted due to chaffing that installation shall cause.</p> <p><u>CAB INTERIOR UPHOLSTERY</u></p> <p>The cab interior upholstery shall be dark silver gray.</p> <p><u>CAB INTERIOR PAINT</u></p> <p>The cab interior metal surfaces shall be painted fire smoke gray, vinyl texture paint.</p> <p><u>CAB FLOOR</u></p> <p>The cab and crew cab floor areas shall be covered with floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler.</p> <p>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.</p> <p><u>CAB DEFROSTER</u></p> <p>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.</p>		

	Bidder Complies	
	Yes	No
<p><u>CAB/CREW CAB HEATER</u></p> <p>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 incorporated in the cab structure that shall transfer heat to the forward cab seating positions.</p> <p>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.</p> <p><u>AIR CONDITIONING</u></p> <p>A high performance, customized air conditioning system shall be furnished inside the cab and crew cab.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Adjustable air outlets shall be strategically located on the evaporator cover per the following:</p> <ul style="list-style-type: none"> • 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 <p>The air conditioner refrigerant shall be R-134A and shall be installed by a certified technician.</p> <p>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.</p>		

	Bidder Complies	
	Yes	No
<p><u>SUN VISORS</u></p> <p>Two (2) smoked polycarbonate sun visors provided. The sun visors shall be located above the windshield with one (1) mounted on each side of the cab.</p> <p>There shall be no retention bracket provided to help secure each sun visor in the stowed position.</p> <p><u>GRAB HANDLES</u></p> <p>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.</p> <p><u>ENGINE COMPARTMENT LIGHTS</u></p> <p>There shall be one (1) 12 volt DC, 3.00" white LED light(s) with chrome flange kit(s) installed under the cab to be used as engine compartment illumination.</p> <p>These light(s) shall be activated automatically when the cab is raised.</p> <p><u>ACCESS TO ENGINE DIPSTICKS</u></p> <p>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.</p> <p>The engine oil dipstick shall allow for checking only. The transmission dipstick shall allow for both checking and filling.</p> <p>The door shall have a rubber seal for thermal and acoustic insulation. One (1) flush latch shall be provided on the access door.</p> <p><u>CAB SAFETY SYSTEM</u></p> <p>The cab shall be provided with a safety system designed to protect occupants in the event of a side roll or frontal impact, and shall include the following:</p> <ul style="list-style-type: none"> • A supplemental restraint system (SRS) sensor shall be installed on a structural cab member behind the instrument panel. The SRS sensor shall perform real time diagnostics of all critical subsystems and shall record sensory inputs immediately before and during a side roll or frontal impact event. • A slave SRS sensor shall be installed in the cab to provide capacity for eight (8) crew cab seating positions. • A fault-indicating light shall be provided on the vehicle's instrument panel allowing the driver to monitor the operational status of the SRS system. 		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • A driver side front air bag shall be mounted in the steering wheel and shall be designed to protect the head and upper torso of the occupant, when used in combination with the 3-point seat belt. • A passenger side knee bolster air bag shall be mounted in the modesty panel below the dash panel and shall be designed to protect the legs of the occupant, when used in combination with the 3-point seat belt. • Air curtains shall be provided in the outboard bolster of outboard seat backs to provide a cushion between occupant and the cab wall. • Suspension seats shall be provided with devices to retract them to the lowest travel position during a side roll or frontal impact event. • Seat belts shall be provided with pre-tensioners to remove slack from the seat belt during a side roll or frontal impact event. <p><u>FRONTAL IMPACT PROTECTION</u></p> <p>The SRS system shall provide protection during a frontal or oblique impact event. The system shall activate when the vehicle decelerates at a predetermined G force known to cause injury to the occupants. The cab and chassis shall have been subjected, via third party test facility, to a crash impact during frontal and oblique impact testing. Testing included all major chassis and cab components such as mounting straps for fuel and air tanks, suspension mounts, front suspension components, rear suspensions components, frame rail cross members, engine and transmission and their mounts, pump house and mounts, frame extensions and body mounts. The testing provided configuration specific information used to optimize the timing for firing the safety restraint system. The sensor shall activate the pyrotechnic devices when the correct crash algorithm, wave form, is detected (no exception).</p> <p>The SRS system shall deploy the following components in the event of a frontal or oblique impact event:</p> <ul style="list-style-type: none"> • Driver side front air bag • Passenger side knee bolster air bag • Air curtains mounted in the outboard bolster of outboard seat backs • Suspension seats shall be retracted to the lowest travel position • Seat belts shall be pre-tensioned to firmly hold the occupant in place <p><u>SIDE ROLL PROTECTION</u></p> <p>The SRS system shall provide protection during a fast or slow 90 degree roll to the side, in which the vehicle comes to rest on its side. The system shall analyze the vehicle's angle and rate of roll to determine the optimal activation of the advanced occupant restraints.</p> <p>The SRS system shall deploy the following components in the event of a side roll:</p>		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • Air curtains mounted in the outboard bolster of outboard seat backs • Suspension seats shall be retracted to the lowest travel position • Seat belts shall be pre-tensioned to firmly hold the occupant in place <p><u>SEATING CAPACITY</u> The seating capacity in the cab shall be six (6).</p> <p><u>DRIVER SEAT</u> A seat shall be provided in the cab for the driver. The seat design shall be a cam action type, with air suspension. For increased convenience, the seat shall include a manual control to adjust the horizontal position (6.00" travel). The manual horizontal control shall be a towel-bar style located below the forward part of the seat cushion. To provide flexibility for multiple driver configurations, the seat shall have an adjustable reclining back. The seat back shall be a high back style with side bolster pads for maximum support. For optimal comfort, the seat shall be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).</p> <p>The seat shall include the following features incorporated into the side roll protection system:</p> <ul style="list-style-type: none"> • Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position. • A suspension seat safety system shall be included. When activated in the event of a side roll, this system shall pretension the seat belt and retract the seat to its lowest travel position. <p>The seat shall be furnished with a 3-point, shoulder type seat belt.</p> <p><u>OFFICER SEAT</u> A seat shall be provided in the cab for the passenger. The seat shall be a fixed type, with no suspension. For optimal comfort, the seat shall be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).</p> <p>The seat back shall be an SCBA back style with 5 degree fixed recline angle. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.</p> <p>The seat shall include the following features incorporated into the side roll protection system:</p> <ul style="list-style-type: none"> • Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position. • A seat safety system shall be included. When activated, this system shall pretension the seat belt. 		

	Bidder Complies	
	Yes	No
<p>The seat shall be furnished with a 3-point, shoulder type seat belt.</p> <p><u>RADIO COMPARTMENT</u></p> <p>A radio compartment shall be provided under the officer's seat.</p> <p>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.</p> <p>A drop-down door with a chrome plated lift and turn latch shall be provided for access.</p> <p>The compartment shall be constructed of smooth aluminum and painted to match the cab interior.</p> <p><u>REAR FACING DRIVER SIDE OUTBOARD SEAT</u></p> <p>There shall be one (1) rear facing seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat shall be provided with 15.00" deep foam cushions designed with EVC (elastomeric vibration control).</p> <p>The seat back shall be an SCBA back style with 5 degree fixed recline angle. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.</p> <p>The seat shall include the following features incorporated into the side roll protection system:</p> <ul style="list-style-type: none"> • Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position. • A seat safety system shall be included. When activated, this system shall pretension the seat belt. <p>The seat shall be furnished with a 3-point, shoulder type seat belt.</p> <p><u>REAR FACING PASSENGER SIDE OUTBOARD SEAT</u></p> <p>There shall be one (1) rear facing seat provided at the passenger side outboard position in the crew cab. For optimal comfort, the seat shall be provided with 15.00" deep foam cushions designed with EVC (elastomeric vibration control).</p> <p>The seat back shall be an SCBA back style with 5 degree fixed recline angle. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.</p> <p>The seat shall include the following features incorporated into the side roll protection system:</p>		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position. • A seat safety system shall be included. When activated, this system shall pretension the seat belt. <p>The seat shall be furnished with a 3-point, shoulder type seat belt.</p> <p><u>FORWARD FACING CENTER SEATS</u></p> <p>There shall be two (2) forward facing seats provided at the center position in the crew cab. For optimal comfort, the seats shall be provided with 15.00" deep foam cushions designed with EVC (elastomeric vibration control).</p> <p>The seat backs shall be an SCBA style with 90 degree back. The SCBA cavity shall be adjustable from front to rear in 1.00" increments to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.</p> <p>The seat shall include the following features incorporated into the side roll protection system:</p> <ul style="list-style-type: none"> • A seat safety system shall be included. When activated, this system shall pretension the seat belt. <p>The seats shall be furnished with a 3-point, shoulder type seat belt.</p> <p><u>SEAT UPHOLSTERY</u></p> <p>All seat upholstery shall be black material.</p> <p><u>AIR BOTTLE HOLDERS</u></p> <p>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.</p> <p>There shall be a quantity of five (5) SCBA brackets.</p> <p><u>SEAT BELTS</u></p> <p>All seating positions shall have red seat belts. 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.</p>		

	Bidder Complies	
	Yes	No
<p>The 3-point shoulder type seat belts shall include height adjustment. This adjustment shall optimize the belts effectiveness and comfort for the seated firefighter. The 3-point shoulder type seat belts shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.</p> <p>The 3-point shoulder type belts shall also include a D-loop assembly to the shoulder belt system. This feature adds an extender arm to the D-loop location placing the D-loop in a closer, easier to reach location.</p> <p>To ensure safe operation, the seats 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.</p> <p><u>HELMET STORAGE PROVIDED BY FIRE DEPARTMENT</u> NFPA 1901, 2016 edition, section 14.1.7.4.1 requires a location for helmet storage be provided.</p> <p>There is no helmet storage on the apparatus as manufactured. The fire department shall provide a location for storage of helmets.</p> <p><u>CAB DOME LIGHTS</u> 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.</p> <p>The color of the LED's shall be red and white.</p> <p>The white LED's shall be controlled by the door switches and the lens switch.</p> <p>The color LED's shall be controlled by the lens switch.</p> <p>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.</p> <p><u>PORTABLE HAND LIGHTS, PROVIDED BY FIRE DEPARTMENT</u> NFPA 1901, 2016 edition, section 9.9.4 requires two portable hand lights mounted in brackets fastened to the apparatus.</p> <p>The hand lights are not on the apparatus as manufactured. The fire department shall provide and mount these hand lights.</p>		

Bidder Complies	
Yes	No

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) ivory faced gauges with chrome bezels to monitor vehicle performance:

- Voltmeter gauge (volts):
 - Low volts (11.8 VDC)
 - Amber telltale light on indicator light display with steady tone alarm
 - High volts (15.5 VDC)
 - Amber telltale light on indicator light display with steady tone alarm
- Engine Tachometer (RPM)
- Speedometer KM/H (Major Scale), MPH (Minor Scale)
- Fuel level gauge (Empty - Full in fractions):
 - Low fuel (1/8 full)
 - Amber indicator light in gauge dial with steady tone alarm
- Engine Oil pressure Gauge (PSI/bar):
 - 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/bar):
 - Low air pressure to activate warning lights and alarm
 - Red indicator light in gauge dial with steady tone alarm
- Rear Air Pressure Gauges (PSI/bar):
 - Low air pressure to activate warning lights and alarm
 - Red indicator light in gauge dial with steady tone alarm
- Transmission Oil Temperature Gauge (Celsius/Fahrenheit):
 - High transmission oil temperature activates warning lights and alarm
 - Amber indicator light in gauge dial with steady tone alarm
- Engine Coolant Temperature Gauge (Celsius/Fahrenheit):
 - 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):

Bidder Complies	
Yes	No

- Low fluid (1/8 full)
 - Amber indicator light in gauge dial

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
 - 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.

	Bidder Complies	
	Yes	No
<p><u>INDICATOR LAMP AND ALARM PROVE-OUT</u></p> <p>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.</p> <p><u>CONTROL SWITCHES</u></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Hazard switch shall be provided on the instrument panel or on the steering column.</p> <p>Heater and defroster controls.</p> <p>Turn signal arm: A self-canceling turn signal with high beam headlight controls.</p> <p>Windshield wiper control shall have high, low, and intermittent modes.</p> <p>Parking brake control: An air actuated push/pull park brake control.</p>		

	Bidder Complies	
	Yes	No
<p>Chassis horn control: Activation of the chassis horn control shall be provided through the center of the steering wheel.</p> <p>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.</p> <p>"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.</p> <p>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.</p> <p>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.</p> <p><u>CUSTOM SWITCH PANELS</u></p> <p>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.</p> <p><u>DIAGNOSTIC PANEL</u></p> <p>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 allow ABS systems to provide blink codes should a problem exist.</p> <p>The diagnostic panel shall include the following:</p> <ul style="list-style-type: none"> • 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 		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • 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. <p><u>AIR RESTRICTION INDICATOR</u> A high air restriction warning indicator light (electronic) shall be provided.</p> <p><u>"DO NOT MOVE APPARATUS" INDICATOR</u> 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.</p> <p><u>SWITCH PANELS</u> 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.</p> <p><u>WIPER CONTROL</u> Wiper control shall consist of a two (2)-speed windshield wiper control with intermittent feature and windshield washer controls.</p> <p><u>HOURLY METER - AERIAL DEVICE</u> An hour meter for the aerial device shall be provided and located within the cab display or instrument panel.</p> <p><u>AERIAL MASTER</u> There shall be a master switch for the aerial operating electrical system provided.</p> <p><u>AERIAL PTO SWITCH</u> A PTO switch for the aerial with indicator light shall be provided.</p> <p><u>SPARE CIRCUIT</u> There shall be two (2) pair of wires, including a positive and a negative, installed on the apparatus. The above wires shall have the following features:</p>		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • 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 <p>The circuit(s) may be load managed when the parking brake is set.</p> <p><u>VEHICLE DATA RECORDER</u></p> <p>There shall be a vehicle data recorder (VDR) capable of reading and storing vehicle information provided.</p> <p>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.</p> <p>The vehicle data recorder shall be capable of recording the following data via hardwired and/or CAN inputs:</p> <ul style="list-style-type: none"> • 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 <p><u>Seat Belt Monitoring System</u></p> <p>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:</p> <ul style="list-style-type: none"> • Seat Occupied & Buckled = Green LED indicator illuminated • Seat Occupied & Unbuckled = Red LED indicator with audible alarm • No Occupant & Buckled = Red LED indicator with audible alarm 		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • No Occupant & Unbuckled = No indicator and no alarm <p>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.</p> <p><u>RADIO ANTENNA MOUNT</u></p> <p>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.</p> <p><u>ELECTRICAL POWER CONTROL SYSTEM</u></p> <p>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.</p> <p>Serviceable components shall be readily accessible.</p> <p>Circuit protection devices, which conform to SAE standard, shall be utilized to protect each 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.</p> <p>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.</p> <p>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.</p> <p><u>VOLTAGE MONITOR SYSTEM</u></p> <p>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.</p> <p><u>POWER AND GROUND STUDS</u></p> <p>Spare circuits shall be provided in the primary distribution center for two-way radio equipment.</p> <p>The spare circuits shall consist of the following:</p>		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • 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 <p><u>EMI/RFI PROTECTION</u></p> <p>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.</p> <p>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.</p> <p>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.</p> <p><u>ELECTRICAL</u></p> <p>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.</p> <p>Electrical wiring and equipment shall be installed utilizing the following guidelines:</p> <ol style="list-style-type: none"> 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 		

	Bidder Complies	
	Yes	No
<p>shall be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.</p> <p>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).</p> <p>5. All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.</p> <p>6. All electrical terminals in exposed areas shall have silicon (1890) applied completely over the metal portion of the terminal.</p> <p>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.</p> <p>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.</p> <p>The results of the tests shall be recorded and provided to the purchaser at time of delivery.</p> <p><u>BATTERY SYSTEM</u></p> <p>There shall be four (4) 12 volt batteries that include the following features shall be provided:</p> <ul style="list-style-type: none"> • 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 <p>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.</p> <p>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.</p> <p><u>BATTERY SYSTEM</u></p> <p>There shall be a single starting system with an ignition switch and starter button provided and located on the cab instrument panel.</p>		

	Bidder Complies	
	Yes	No
<p><u>MASTER BATTERY SWITCH</u></p> <p>There shall be a master battery switch provided within the cab within easy reach of the driver to activate the battery system.</p> <p>An indicator light shall be provided on the instrument panel to notify the driver of the status of the battery system.</p> <p><u>BATTERY COMPARTMENTS</u></p> <p>Batteries shall be placed on non-corrosive mats and be stored in well ventilated compartments located under the cab.</p> <p>Heavy-duty battery cables shall be used to provide maximum power to the electrical system. Cables shall be color coded.</p> <p>Battery terminal connections shall be coated with anti-corrosion compound. Battery solenoid terminal connections shall be encapsulated with semi-permanent rubberized compound.</p> <p><u>JUMPER STUDS</u></p> <p>One (1) set of battery jumper studs with plastic color-coded covers shall be included on the battery compartments.</p> <p><u>BATTERY CHARGER</u></p> <p>There shall be a battery charger with controller provided.</p> <p>The battery charger shall be wired to the AC shoreline inlet through an AC receptacle adjacent to this battery charger.</p> <p>There shall be a remote indicator included.</p> <p>The battery charger shall be located in the left body compartment mounted on the left wall as high as possible.</p> <p>The battery charger indicator shall be located on the driver's seat riser.</p> <p><u>AUTO EJECT FOR SHORELINE</u></p> <p>There shall be one (1) 20 amp 120 volt AC shoreline inlet(s) provided to operate the dedicated 120 volt AC circuits on the apparatus.</p> <p>The shoreline inlet(s) shall include red weatherproof flip up cover(s).</p> <p>There shall be a release solenoid wired to the vehicle's starter to eject the AC connector when the engine is starting.</p> <p>The shoreline(s) shall be connected to the battery charger.</p>		

	Bidder Complies	
	Yes	No
<p>There shall be a mating connector body supplied with the loose equipment.</p> <p>There shall be a label installed near the inlet(s) that state the following:</p> <ul style="list-style-type: none"> • Line Voltage • Current Rating (amps) • Phase • Frequency <p>The shoreline receptacle shall be located on the driver side of cab, above wheel.</p> <p><u>ALTERNATOR</u></p> <p>An alternator shall be provided that has 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.</p> <p><u>ELECTRONIC LOAD MANAGEMENT</u></p> <p>An electronic load management (ELM) system shall be provided 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.</p> <p>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.</p> <p><u>HEADLIGHTS</u></p> <p>There shall be four (4) rectangular LED lights mounted in the front quad style, chrome housing on each side of the cab grille:</p> <ul style="list-style-type: none"> • The outside light on each side shall contain an LED low beam module. • The inside light on each side shall contain an LED high beam module. <p><u>DIRECTIONAL LIGHTS</u></p> <p>There shall be two (2) 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.</p>		

	Bidder Complies	
	Yes	No
<p><u>INTERMEDIATE LIGHT</u></p> <p>There shall be two (2) 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.</p> <p><u>CAB CLEARANCE/MARKER/ID LIGHTS</u></p> <p>There shall be five (5) amber LED lights provided to indicate the presence and overall width of the vehicle in the following locations:</p> <ul style="list-style-type: none"> • 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. <p><u>FRONT CAB SIDE DIRECTIONAL/MARKER LIGHTS</u></p> <p>There shall be two (2) amber LED lights installed front of the cab door, one (1) on each side of the cab.</p> <p>The lights shall activate as marker lights with the headlight switch and directional lights with the corresponding directional circuit.</p> <p><u>REAR CLEARANCE/MARKER/ID LIGHTING</u></p> <p>There shall be three (3) LED identification lights located at the rear installed per the following:</p> <ul style="list-style-type: none"> • 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 <p>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:</p> <ul style="list-style-type: none"> • 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 <p>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:</p> <ul style="list-style-type: none"> • To indicate the overall length of the vehicle 		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • 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 <p>The lights shall be mounted with no guard.</p> <p>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.</p> <p>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.</p> <p>Per FMVSS 108 and CMVSS 108 requirements.</p> <p><u>MARKER LIGHTS</u></p> <p>There shall be one (1) pair of amber and red LED marker lights with rubber arm, located at the rear lower corner of the body. The amber lens shall face the front and the red lens shall face the rear of the truck.</p> <p>These lights shall be activated with the running lights of the vehicle.</p> <p><u>REAR FMVSS LIGHTING</u></p> <p>The rear stop/tail and directional LED lighting shall consist of the following:</p> <ul style="list-style-type: none"> • Two (2) red LED stop/tail lights • Two (2) amber LED arrow turn lights <p>The lights shall be provided with color lenses.</p> <p>The lights shall be mounted in a polished combination housing.</p> <p>There shall be two (2) LED backup lights provided in the tail light housing.</p> <p><u>LICENSE PLATE BRACKET</u></p> <p>There shall be one (1) license plate bracket mounted on the rear of the body.</p> <p>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.</p>		

	Bidder Complies	
	Yes	No
<p><u>LIGHTING BEZEL</u></p> <p>There shall be two (2) four (4) place chromed ABS housings provided for the rear stop/tail, directional, back up, scene lights or warning lights.</p> <p><u>BACK-UP ALARM</u></p> <p>A 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.</p> <p><u>CAB PERIMETER SCENE LIGHTS</u></p> <p>There shall be four (4) 20.00" white LED strip lights provided, one (1) for each cab door.</p> <p>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.</p> <p><u>PUMP HOUSE PERIMETER LIGHTS</u></p> <p>There shall be two (2) 20.00" LED weatherproof strip lights with brackets provided under the pump panel running boards, one (1) each side.</p> <p>The lights shall be controlled by the same means as the body perimeter lights.</p> <p><u>BODY PERIMETER SCENE LIGHTS</u></p> <p>There shall be two (2) 20.00" 12 volt DC LED strip lights provided.</p> <p>The lights shall be mounted in the following locations:</p> <ul style="list-style-type: none"> • One (1) light under the driver's side turntable access steps • One (1) light under the passenger's side turntable access steps <p>The perimeter scene lights shall be activated when the parking brake is applied.</p> <p><u>STEP LIGHTS</u></p> <p>Two (2) LED step lights shall be provided, one (1) on each side of the front body.</p> <p>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.</p> <p>The lights shall be actuated when the parking brake is set.</p> <p>All other steps on the apparatus shall be illuminated per the current edition of NFPA 1901.</p>		

	Bidder Complies	
	Yes	No
<p><u>12 VOLT LIGHTING</u></p> <p>There shall be one (1) 16,200 lumens 12 volt DC LED light(s) provided on the front visor, centered.</p> <p>The painted parts of this light assembly to be white.</p> <p>The light(s) shall be controlled by a switch at the driver's side switch panel.</p> <p>These light(s) may be load managed when the parking brake is applied.</p> <p><u>WORK LIGHTS</u></p> <p>Two (2)-6.00" deck lights shall be provided at the rear of the apparatus. The lights shall be furnished with a halogen flood bulb.</p> <p><u>WALKING SURFACE LIGHT</u></p> <p>There shall be 4" round black 12 volt DC LED floodlight with bolt mount provided to illuminate the entire designated walking surface on top of the body.</p> <p>The light shall be activated when the body step lights are on.</p> <p><u>WATER TANK</u></p> <p>It shall have a capacity of 500 gallons and shall be constructed of polypropylene plastic in an L-shape with a notch for hose storage.</p> <p>The joints and seams shall be nitrogen welded inside and out.</p> <p>The tank shall be baffled in accordance with NFPA Bulletin 1901 requirements.</p> <p>The baffles shall have vent openings at both the top and bottom of each baffle to permit movement of air and water between compartments.</p> <p>The longitudinal partitions shall be constructed of .38" polypropylene plastic and extend from the bottom of the tank through the top cover to allow positive welding.</p> <p>The transverse partitions extend from 4" off the bottom to the underside of the top cover.</p> <p>All partitions interlock and shall be welded to the tank bottom and sides.</p> <p>The tank top shall be constructed of .50" polypropylene.</p> <p>It shall be recessed .38" and shall be welded to the tank sides and the longitudinal partitions.</p> <p>It shall be supported to keep it rigid during fast filling conditions.</p> <p>Construction shall include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions.</p>		

	Bidder Complies	
	Yes	No
<p>Two of the dowels shall be drilled and tapped (.50" diameter, 13.00" deep) to accommodate lifting eyes.</p> <p>A sump shall be provided at the bottom of the water tank. The sump shall include a drain plug and the tank outlet.</p> <p>Tank shall be installed in a fabricated "cradle" assembly constructed of structural steel.</p> <p>Sufficient crossmembers are provided to properly support bottom of tank.</p> <p>Crossmembers are constructed of steel bar channel or rectangular tubing.</p> <p>Tank "floats" in cradle to avoid torsional stress caused by chassis frame flexing.</p> <p>Rubber cushions, .50" thick x 3.00" wide, shall be placed on all horizontal surfaces that the tank rests on.</p> <p>Stops are provided to prevent an empty tank from bouncing excessively while moving vehicle.</p> <p>Tank mounting system is approved by the manufacturer.</p> <p>Fill tower shall be constructed of .50" polypropylene and shall be a minimum of 8.00" wide x 14.00" long.</p> <p>Fill tower shall be furnished with a .25" thick polypropylene screen and a hinged cover.</p> <p>An overflow pipe, constructed of 4.00" schedule 40 polypropylene, shall be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle.</p> <p><u>HOSE BED</u></p> <p>The hose bed shall be fabricated of 0.125" thick 5052-H32 aluminum with a tensile strength range of 31,000 to 38,000 psi. The sides of the hose bed shall not form any portion of the fender compartments. The upper and rear edges of the hose bed side panels shall have a double break for rigidity. The hose bed shall be located ahead of the ladder turntable, between the tank and the side compartments.</p> <p>There shall be one (1) hose chute to the rear of the hose bed, on the passenger side, to allow for payout/removal of the hose. The hose chute shall be enclosed with a full-height smooth aluminum door and a spring-loaded hinge at the top of the door.</p> <p>The hose bed flooring shall consist of removable aluminum grating with a top surface that is corrugated to aid in hose aeration. The grating slats shall be 0.50" wide x 4.50" long with spacing between the slats for hose ventilation.</p>		

	Bidder Complies	
	Yes	No
<p>Hose capacity shall be a minimum of 1000' of 5.00" large diameter hose.</p> <p><u>AERIAL HOSE BED HOSE RESTRAINT</u></p> <p>The hose in the hose bed shall be restrained by one (1) black nylon hook and loop strap at the top of the hose bed. The strap shall be installed to the top of the hose bed side sheets.</p> <p><u>RUNNING BOARDS</u></p> <p>Design of the vehicle shall be such that running boards shall not be required to reach pre connects or other items on the side of the vehicle.</p> <p><u>TURNTABLE STEPS</u></p> <p>Steps to access the turntable from the driver side and passenger side shall be provided just behind the compartmentation.</p> <p>The steps shall be a swing-down design, with the stepping area made of non-slip material.</p> <p>The step height for the bottom step (the distance from the top surface of the step to the ground) shall not exceed 24.00" with the step in its extended position.</p> <p>No step height (the distance between the top surfaces of any two (2) adjacent steps) shall be greater than 14.00".</p> <p>The stepwell shall be lined with bright aluminum treadplate to act as scuffplates.</p> <p>The steps shall be connected to the "Do Not Move Truck" indicator.</p> <p>A handrail shall be provided on each side of the access steps.</p> <p><u>STEP LIGHTS</u></p> <p>There shall be three (3) LED step lights provided for each set of aerial turntable access steps.</p> <p>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.</p> <p>The step lights shall be actuated by the aerial master switch in the cab.</p> <p><u>SMOOTH ALUMINUM REAR WALL</u></p> <p>The rear wall shall be smooth aluminum.</p> <p><u>TOW EYES</u></p> <p>Two (2) rear painted tow eyes shall be located at the rear of the apparatus and shall be mounted directly to the torque box. The inner and outer edges of the tow eyes shall be radiused.</p>		

	Bidder Complies	
	Yes	No
<p><u>COMPARTMENTATION</u></p> <p>Compartmentation shall be fabricated of 0.125" 5052 aluminum. The side compartments are an integral assembly with the rear fenders. Fully enclosed rear wheel housings shall be provided to prevent rust pockets and for ease of maintenance. Due to the severe loading requirements of this aerial, a method of compartment body support suitable for the intended load shall be provided.</p> <p>The backbone of the support system shall be the chassis frame rail, which is the strongest component of the chassis and is designed for sustaining maximum loads.</p> <p>A support system shall be used which shall incorporate a floating substructure by using Neoprene Elastomer isolators to allow the body to remain rigid while the chassis goes through its natural flex. The isolators shall have a broad range of proven viability in vehicular applications, be of a fail-safe design, and allow for all necessary movement in three (3) transitional and rotational modes. This shall result in a 500 lb equipment rating for each lower compartment of the body.</p> <p>The compartmentation in front of the rear axle shall include a 3.00" steel support assemblies which are bolted to the chassis frame rails. A steel framework shall be mounted to the body above these support assemblies connected to the support assemblies with isolators. There shall be one (1) support assembly mounted to each chassis frame rail.</p> <p>The compartmentation behind the rear axle shall include 3.00" steel support assemblies which are bolted to the chassis frame rails and extend underneath to the outside edge of the body. The support assembly shall be coated to isolate the dissimilar metals before it is bolted to the body. There shall be one (1) support assembly mounted to each chassis frame rail.</p> <p>A design with body compartments hanging off of the chassis frame in an unsupported fashion shall not be acceptable.</p> <p>Compartment flooring shall be of the sweep out design with the floor higher than the compartment door lip. The compartment door openings are framed by flanging the edges in 1.75" and bending out again 0.75" to form an angle. Drip protection is provided over all door openings by means of bright aluminum extrusion or formed bright aluminum treadplate. Side compartment tops shall be covered with bright aluminum treadplate with a 1.00" rolled over edge on the front, rear and outward side. The covers are fabricated in one (1) piece and have the corners welded. A bright aluminum treadplate cover shall be provided on the front wall of each side compartment. All screws and bolts which protrude into a compartment shall have acorn nuts at the ends to prevent injury.</p> <p>The body design has been fully tested. Proven engineering and test techniques such as finite element analysis, model analysis, stress coating and strain gauging have been performed with</p>		

	Bidder Complies	
	Yes	No
<p>special attention given to fatigue life and structural integrity of the compartment body and substructure.</p> <p><u>AGGRESSIVE WALKING SURFACE</u> All exterior surfaces designated as stepping, standing, and walking areas shall comply with the required average slip resistance of the current NFPA standards.</p> <p><u>LOUVERS</u> All body compartments shall have a minimum of one (1) set of louvers stamped into a wall to provide the proper airflow inside the compartment and to prevent water from dripping into the compartment. These louvers shall be formed into the metal and not added to the compartment as a separate plate.</p> <p><u>DRIVER SIDE COMPARTMENTATION</u> A full height roll-up door compartment ahead of the rear wheels shall be 41.75" wide x 64.00" high x 24.25" deep inside with an clear door opening of 38.75" wide x 56.38" high.</p> <p>One (1) roll-up door compartment above the fender compartments and over the rear axles shall be provided. The compartment shall be 72.13" wide x 33.25" high x 24.25" deep inside with a clear door opening of 63.75" wide x 25.50" high.</p> <p>A compartment with a single pan stainless steel door shall be located above the front stabilizer. The compartment shall be 23.00" high x 18.00" wide x 24.25" deep with a door opening of 15.75" high x 12.00" wide.</p> <p>A full height roll-up door compartment behind the rear wheels shall be 43.75" wide x 49.25" high x 21.25" deep. The clear door opening shall be 40.75" wide x 41.62" high.</p> <p>One (1) lift-up door compartment below the turntable shall be provided. The compartment shall be 39.38" wide x 18.38" high x 21.25" deep inside with a door opening of 35.00" wide x 14.88" high.</p> <p><u>PASSENGER SIDE COMPARTMENTATION</u> A full height roll-up door compartment ahead of the rear wheels shall be 41.75" wide x 56.38" high x 24.25" deep inside the lower 29.75" and 12.00" deep inside the upper portion with a clear door opening of 38.75" wide x 56.38" high.</p> <p>One (1) roll-up door compartment shall be provided above the fender compartments and over the rear axles. The compartment shall be 72.13" wide x 33.25" high x 12.00" deep inside with a clear door opening of 63.75" wide x 25.50" high.</p>		

	Bidder Complies	
	Yes	No
<p>A compartment with a single pan stainless steel door shall be located above the front stabilizer. The compartment shall be 18.00" wide x 23.00" high x 12.00" deep with a door opening of 12.00" wide x 15.75" high.</p> <p>A full height roll-up door compartment behind the rear wheels shall be approximately 43.75" wide x 49.25" high x 21.25" deep inside the lower 29.75" and 12.00" deep in the upper portion. The clear door opening shall be approximately 40.75" wide x 41.62" high.</p> <p>One (1) compartment below the turntable with a lift-up door shall be approximately 39.38" wide x 18.38" high x 12.00" deep inside with a door opening of approximately 35.00" wide x 14.88" high.</p> <p><u>SIDE COMPARTMENT ROLLUP DOORS</u></p> <p>There shall be six (6) compartment doors installed on the side compartments. The doors shall be double faced aluminum construction and painted one (1) color to match the lower portion of the body.</p> <p>Lath sections shall be an interlocking rib design and shall be individually replaceable without complete disassembly of door.</p> <p>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 plus 180 to minus 40 degrees Fahrenheit. Side, top and bottom seals shall be provided to resist ingress of dirt and weather and be made of Santoprene.</p> <p>All hinges, barrel clips and end pieces shall be nylon 66. All nylon components shall withstand temperatures from plus 300 to minus 40 degrees Fahrenheit. Hardened plastic shall not be acceptable.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>The header for the rollup door assembly shall not exceed 4.00".</p>		

	Bidder Complies	
	Yes	No
<p>A heavy-duty magnetic switch shall be used for control of open compartment door warning lights.</p> <p><u>SIDE COMPARTMENT LAP DOORS</u></p> <p>All hinged compartment doors shall be lap style with double panel construction and fabricated of 0.09" 5052H32 aluminum. Doors shall be a minimum of 1.50" thick. To provide additional door strength, a "C" section reinforcement shall be installed between the outer and interior panels.</p> <p>Doors shall be provided with a closed cell rubber gasket around the surface that laps onto the body. A second heavy-duty automotive rubber molding with a hollow core shall be installed on the door framing that seals onto the interior panel, to ensure a weather resisting compartment.</p> <p>All compartment doors shall have polished stainless steel continuous hinge with a pin diameter of 0.25" that is bolted or screwed on with stainless steel fasteners. (Hinges which are welded on shall not be acceptable.) A dielectric substance shall be applied to each hinge fastener.</p> <p>All door lock mechanisms shall be fully enclosed within the door panels to prevent fouling of the lock in the event equipment inside shifts into the lock area.</p> <p>Doors shall be latched with recessed, polished stainless steel D-ring handles and Eberhard 106 locks.</p> <p>To prevent corrosion caused by dissimilar metals, compartment door handles shall not be attached to outer door panel with screws. A rubber gasket shall be provided between the D-ring handle and the door.</p> <p><u>BODY MODIFICATION FROM STANDARD</u></p> <p>The compartment above the stabilizers (if applicable) shall be decreased due to deeper stabilizer depth. The height of the compartment shall decrease 4.00" and the compartment door shall move up 4.00" higher. The stabilizer frame opening as well as the stabilizer pan shall be increased in height by 6.00".</p> <p><u>REAR BUMPER</u></p> <p>A 5.00" rear bumper shall be furnished. Bumper shall be constructed of steel framework and shall be covered with polished aluminum treadplate. The bumper shall be 4.00" deep x 5.00" high and shall be spaced away from the body approximately 1.00". It shall extend the full width of the body.</p> <p><u>DOOR GUARD</u></p> <p>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 on the driver side rearward</p>		

	Bidder Complies	
	Yes	No
<p>compartment, rear compartment, passenger side rearward compartment, driver side forward over the wheel compartment, driver side forward compartment, passenger side forward over the wheel compartment and passenger side forward compartment.</p> <p><u>COMPARTMENT LIGHTING</u></p> <p>There shall be nine (9) 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).</p> <p>Any remaining compartments without light strips shall have a 6.00" diameter light. Each light shall have a number 1076 one filament, two wire bulb.</p> <p>Opening the compartment door shall automatically turn the compartment lighting on.</p> <p><u>MOUNTING TRACKS</u></p> <p>There shall be six (6) sets of tracks for mounting shelf(s) in D3, D1, P1, P3, D4 and P4. 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.</p> <p><u>ADJUSTABLE SHELVES</u></p> <p>There shall be one (1) shelf with a capacity of 500 lb provided.</p> <p>The shelf construction shall consist of .188" aluminum painted spatter gray with 2.00" sides.</p> <p>Each shelf shall be infinitely adjustable by means of a threaded fastener, which slides in a track.</p> <p>The shelves shall be held in place by .12" thick stamped plated brackets and bolts.</p> <p>The location(s) shall be determined at a later date.</p> <p><u>SLIDE-OUT FLOOR MOUNTED TRAY</u></p> <p>There shall be four (4) floor mounted slide-out tray(s) provided.</p> <p>Each tray shall have 2.00" high sides and a minimum capacity rating of 500 lb in the extended position.</p> <p>Each tray shall be constructed of aluminum painted spatter gray</p> <p>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.</p> <p>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.</p>		

	Bidder Complies	
	Yes	No
<p>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.</p> <p>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.</p> <p>The location(s) shall be D1, P1, P4 and D4.</p> <p><u>RUB RAIL</u> Bottom edge of the side compartments shall be trimmed with a bright aluminum extruded rub rail.</p> <p>Trim shall be 2.12" high with 1.38" flanges turned outward for rigidity.</p> <p>The rub rails shall not be an integral part of the body construction, which allows replacement in the event of damage.</p> <p><u>BODY FENDER CROWNS</u> Stainless steel fender crowns shall be provided around the rear wheel openings.</p> <p>A rubber welting shall be provided between the body and the crown to seal the seam and restrict moisture from entering.</p> <p><u>HARD SUCTION HOSE</u> Hard suction hose shall not be required.</p> <p><u>SINGLE AIR BOTTLE STORAGE COMPARTMENT</u> A quantity of seven (7) air bottle compartments, 7.75" in diameter x 26.00" deep, shall be provided on the driver side rearward of the rear wheels, on the passenger side forward of the rear wheels, on the passenger side rearward of the rear wheels, on the passenger side, two single compartments between the tandem rear wheels and on the driver side, two single compartments between the tandem 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.</p> <p>Inside the compartment, black rubber matting shall be provided.</p> <p><u>EXTENSION LADDER</u> There shall be one (1) 35' two (2) section aluminum extension ladder(s) provided.</p>		

	Bidder Complies	
	Yes	No
<p><u>AERIAL EXTENSION LADDER</u> There shall be one (1) 24' two (2) section aluminum extension ladder(s) provided and located in the aerial torque box.</p> <p><u>ROOF LADDERS</u> There shall be two (2) 16' aluminum roof ladders provided.</p> <p><u>AERIAL ATTIC EXTENSION LADDER</u> There shall be one (1) 14' aluminum attic extension ladder(s) provided.</p> <p><u>AERIAL FOLDING LADDER</u> There shall be one (1) 10' aluminum folding ladder(s) provided and located in the aerial torque box.</p> <p><u>GROUND LADDER STORAGE</u> The ground ladders are stored within the torque box and are removable from the rear. Ladders shall be enclosed to prevent road dirt and debris from fouling or damaging the ladders. The ladders rest in full length stainless steel slides and are arranged in such a manner that any one ladder can be removed without having to move or remove any other ladder. A rollup door shall be provided at the rear, double faced, aluminum construction, and an anodized satin finish. The latching mechanism shall consist of a full length lift bar lock with latches on the outer extrusion of the door frame. A stainless plate with a 2-bend flange and a stainless steel hinge shall be provided to secure the aerial ladder complement. The plate assembly shall be mounted to the bottom of the entrance of the torque box ladder storage area. When the plate is vertical, it shall secure the ladders and prevent them from migrating to the rear of the apparatus. When the plate is down and not securing the ladders, the rollup door cannot close, which shall activate the "Open Door Indicator Light" within the cab. The rollup door together with hinge friction shall secure the plate in place during driving operations. A door guard shall be provided to prevent tools inside the torque box from damaging the rollup door.</p> <p><u>LADDER STORAGE LIGHTING</u> There shall be one (1) 4.00" white incandescent light with grommet used to illuminate the torque box ladder storage compartment. One (1) light shall be provided in the ceiling of the torque box near the ladder storage entry area. The light shall be activated when the ladder storage compartment door is opened.</p>		

	Bidder Complies	
	Yes	No
<p><u>PIKE POLES</u> There shall be two (2) 12' pike pole(s) with fiberglass I-beam handles provided. The pike pole(s) shall be stored in tubular holders located in the ground ladder storage compartment.</p> <p><u>8' PIKE POLE</u> There shall be two (2) 8' pike pole(s) with fiberglass handle provided. The pike pole(s) shall be stored in tubular holders located in the ground ladder storage compartment.</p> <p><u>6' PIKE POLE</u> There shall be two (2) 6' pike pole(s) with fiberglass handle provided. The pike pole(s) shall be stored in tubular holders located in the ground ladder storage compartment.</p> <p><u>3' PIKE POLE</u> There shall be two (2) 3' pike pole(s) with fiberglass shaft and "D" handles shipped loose.</p> <p><u>PUMP</u> Pump shall be a low profile, 1500 gpm single stage midship mounted centrifugal type, mounted below the cab. The pump shall have a 15 percent reserve capacity to allow for extended time between pump rebuild. To ensure efficient pump/vehicle design the capacity to weight ratio shall not be less than 1.5:1.</p> <p>The pump casing shall consist of three (3) discharge outlets, one (1) to each side in line with the impeller and one (1) to the rear. The pump casing shall incorporate two (2) water strippers to maintain radial balance.</p> <p>Pump shall be the Cass A type.</p> <p>Pump shall be certified to deliver the percentage of rated discharge from draft at pressure indicated below:</p> <ul style="list-style-type: none"> - 100 percent of rated capacity at 150 psi net pump pressure -70 percent of rated capacity at 200 psi net pump pressure -50 percent of rated capacity at 250 psi net pump pressure <p>The pump shall have the capacity to deliver the percentage of rated discharge from a pressurized source as indicated below:</p> <ul style="list-style-type: none"> - 135 percent of rated capacity at 100 psi net pump pressure from a 5 psi source <p>Pump body shall be fine-grained gray iron. Pump shall incorporate a heater/cooling jacket integral to the pump housing.</p>		

	Bidder Complies	
	Yes	No
<p>The impeller shall be high strength vacuum cast bronze alloy accurately machine balanced and splined to a ten (10) spline stainless steel pump shaft for precision fit, exceptional durability, and efficiency. Double replaceable reverse flow labyrinth type bronze wear ring design shall help to minimize end thrust. The impeller shall be a twisted vane design to create higher lift. No keyed shafts shall be acceptable.</p> <p>The pump shall include o-ring gaskets throughout the pump.</p> <p>Deep groove radial type oversize ball bearings shall be provided. The bearings shall be protected at the openings from road dirt and water with an oil seal and water slinger.</p> <p>The pump shall have a flat, patterned area on the top of the pump intake wye to allow standing for plumbing maintenance. The main inlet manifold shall be 6.00" in diameter and shall have a low profile design to facilitate low crosslays and high flows.</p> <p>For ease of service, the pump housing, intake wye, impeller, mechanical seal, and gear case shall be accessible from above the chassis frame by tilting the cab. The intake wyes shall be removable without having to remove the main intake casting. Removal of the main inlet wyes shall provide access to the impeller, mechanical seal, and wear ring. (No exception).</p> <p>The tank to pump line and the primary discharge line shall be the only piping required to be removed for overhaul.</p> <p>For ease of service and overhaul there shall be no piping or manifolding located directly over the pump. (No exception).</p> <p><u>PUMP MOUNTING</u></p> <p>Pump shall be mounted to the chassis frame rails directly below the crew cab, to minimize wheelbase and facilitate service, using rubber isolators in a modified V pattern that include two (2) central mounted isolators located between the frame rails, and one (1) on each side outside the frame rails. The mounting shall allow chassis frame rails to flex independently without damage to the fire pump. Each isolator shall be 2.55" in total outside diameter and shall be rated at 490 lb. The pump shall be completely accessible by tilting the cab with no piping located directly above the pump.</p> <p><u>MECHANICAL SEALS</u></p> <p>Silicon carbide mechanical seals shall be provided. The seals shall be spring loaded and self-adjusting. The seals shall have a minimum thermal conductivity of 126 W/m*K to run cooler. Seals shall have a minimum hardness of 2800 kg/mm² to be more resistant to wear, and have thermal expansion characteristics of no more than 4.0 X10⁻⁶mm/mm*K to be more resistant to thermal shock.</p>		

	Bidder Complies	
	Yes	No
<p><u>PUMP GEAR CASE</u></p> <p>The pump gear case shall be a pressure-lubricated to cool, lubricate, and filter the oil. The gear case shall include an auxiliary PTO opening. The gear case shall be constructed of lightweight aluminum, and impregnated with resin in accordance to MIL Spec MIL-I-17563. A dipstick, accessible by tilting the cab, shall be provided for easy fluid level checks. A filter screen shall be provided for long life.</p> <p>The gear case shall consist of two (2) gears to drive the pump impeller and one (1) for the auxiliary PTO.</p> <p>The auxiliary PTO opening shall provide for the addition of PTO driven accessories.</p> <p>The pump shall be driven through the rear engine power take-off and clutch. The rear engine power take-off drive shall be live at all times to allow for pump and roll applications. Rear engine power take-off allow for high horsepower and torque ratings needed for large pump applications, and is a proven drive system throughout the rugged construction industry (no exception).</p> <p><u>CLUTCH</u></p> <p>There shall be a heavy-duty electric clutch mounted directly to the front of the pump to engage and disengage the pump without gear clash. The clutch shall be a multiple disc design for maximum torque. The clutch shall be fully self-adjusting to provide automatic wear compensation, and consistent torque throughout the life of the clutch. Positive engagement and disengagement shall be provided through a high efficient and dependable magnetic system to assure superior performance. The clutch shall have a 500 lb-ft rating. Clutch shall be of a time-tested design used in critical military applications (no exception).</p> <p><u>PUMPING MODE</u></p> <p>Pump shall provide for both pump and roll mode and stationary pumping mode.</p> <p>Stationary pumping mode shall be accomplished by stopping the vehicle, setting the parking brake and engaging the water pump switch on the cab switch panel. The transmission shall shift to "Neutral" range automatically when the parking brake is set. The "OK to Stationary Pump" indicator shall also illuminate when the parking brake is set. If the vehicle is equipped with a foam system or CAFS system, these systems shall be engaged from the cab switch panel as well.</p> <p>Pump and roll mode shall be accomplished by the use of the main pump and shall not require the use of a secondary pump. Pump and roll mode shall use the same operation sequence as stationary pumping mode with a few additional steps. After the vehicle is setup for stationary pumping, the operator shall leave the cab and set-up the pump panel to discharge at the desired outlet(s). Upon returning to the cab, the operator shall disengage the parking brake. An "OK to Pump & Roll" indicator shall illuminate on the cab switch panel. First gear on the transmission</p>		

	Bidder Complies	
	Yes	No
<p>gear selector shall be selected by the operator for pump and roll operations. The operator as needed shall apply the foot throttle. Pump and roll mode shall be maintained unless the transmission shifts out of first gear.</p> <p>Stopping either stationary pumping mode or pump and roll mode shall be accomplished by pressing the "Water Pump" switch down to disengage the pump.</p> <p><u>PUMP SHIFT</u></p> <p>Pump shall be engaged in not more than two steps, by simply setting the parking brake, which shall automatically put the transmission into neutral, and activating a rocker switch in the cab. Switches in the cab shall also allow for water, foam, or CAFS if equipped, and activate the appropriate system to preset parameters. The engagement shall provide simple two-step operation, enhance reliability, and completely eliminate gear clash. The shift shall include the indicator lights as mandated by NFPA. A direct override switch shall be located behind a door in the lower pump operator's panel. The switch shall automatically disengage when the door is closed.</p> <p>As the parking brake is applied, the pump panel throttle shall be activated and deactivate the chassis foot throttle for stationary operation.</p> <p>Pump and roll operation shall be available by releasing the parking brake with the pump in the pumping mode. Releasing the parking brake shall activate the chassis foot throttle, and deactivate the pump panel throttle. To protect from accidental pump overheating, the pump shall automatically disengage when the truck transmission shifts into second gear.</p> <p><u>TRANSMISSION LOCK UP</u></p> <p>Transmission lock up is not required as transmission shall automatically shift to neutral as soon as the parking brake is set.</p> <p><u>AUXILIARY COOLING SYSTEM</u></p> <p>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. A water-to-coolant heat exchanger shall be used.</p> <p><u>INTAKE RELIEF VALVE</u></p> <p>A relief valve shall be installed on the suction side of the pump preset at 125 psig.</p> <p>Relief valve shall have a working range of 75 psig to 200 psig.</p> <p>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.</p> <p>Control shall be located behind an access door at the right (passenger's) side pump panel.</p>		

	Bidder Complies	
	Yes	No
<p><u>PRESSURE CONTROLLER</u></p> <p>A Pressure Governor shall be provided. An electric pressure governor shall be provided which is capable of automatically maintaining a desired preset discharge pressure in the water pump. When operating in the pressure control mode, the system shall automatically maintain the discharge pressure set by the operator (within the discharge capabilities of the pump and water supply) regardless of flow, within the discharge capacities of the water pump and water supply.</p> <p>A pressure transducer shall be installed in the water discharge of the pump. The transducer continuously monitors pump pressure sending a signal to the Electronic Control Module (ECM).</p> <p>The governor can be used in two (2) modes of operation, RPM mode and pressure modes.</p> <p>In the RPM mode, the governor can be activated after vehicle parking brake has been set. When in this mode, the governor shall maintain the set engine speed, regardless of engine load (within engine operation capabilities).</p> <p>In the pressure mode, the governor system can only operate after the fire pump has been engaged and the vehicle parking brake has been set. When in the pressure mode, the pressure controller monitors the pump pressure and varies engine speed to maintain a precise pump pressure. The pressure controller shall use a quicker reacting J1939 database for engine control.</p> <p>A preset feature allows a predetermined pressure or rpm to be set.</p> <p>A pump cavitation protection feature is also provided which shall return the engine to idle should the pump cavitate. Cavitation is sensed by the combination of pump pressure below 30 psi and engine speed above 2000 rpm for more than five (5) seconds.</p> <p>The throttle shall be a vernier style control, with a large control knob for use with a gloved hand. A throttle ready light shall be provided adjacent to the throttle control. A large 0.75" RPM display shall be provided to be visible at a glance.</p> <p>Check engine, and stop engine indicator lights shall be provided for easy viewing.</p> <p>Large 0.75" push buttons shall be provided for menu, mode, preset, and silence selections.</p> <p>The water tank level indicator shall be incorporated in the pressure governor.</p> <p>A fuel level indicator shall be incorporated in the pressure controller.</p> <p>A pump hour meter shall be incorporated in the pressure controller.</p> <p>The pressure controller shall incorporate monitoring for engine temperature, oil pressure, fuel level alarm, and voltage. Pump monitoring shall include, pump gear case temperature, error codes, diagnostic data, pump service reminders, and time stamped data logging, to allow for fast</p>		

	Bidder Complies	
	Yes	No
<p>accurate trouble shooting. It shall also notify the driver/engineer of any problems with the engine and the apparatus. Complete understandable messages shall be provided in a 20-character display, providing for fewer abbreviations in the messages. An automatic dim feature shall be included for night operations.</p> <p>The pressure controller shall include a USB port for easy software upgrades, which can be downloaded through a USB memory stick, eliminating the need for a laptop for software installations.</p> <p>A complete interactive manual shall be provided with the pressure controller.</p> <p><u>PRIMING PUMP</u></p> <p>The priming pump shall be a compressed air powered, high efficiency, multistage venturi based priming system, conforming to standards outlined in the current edition of NFPA 1901.</p> <p>All wetted metallic parts of the priming system are to be of brass and stainless steel construction.</p> <p>One (1) priming control shall open the priming valve and start the pump primer.</p> <p><u>PUMP MANUALS</u></p> <p>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) CDs. Each manual shall cover pump operation, maintenance, and parts.</p> <p><u>PLUMBING, STAINLESS STEEL AND HOSE</u></p> <p>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.</p> <p>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.</p> <p>Plumbing manifold bodies shall be ductile cast iron or stainless steel.</p> <p>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.</p> <p>All water carrying gauge lines shall be of flexible polypropylene tubing.</p> <p>All piping, hose and fittings shall have a minimum of a 500 PSI hydrodynamic pressure rating.</p>		

	Bidder Complies	
	Yes	No
<p><u>MAIN PUMP INLETS</u></p> <p>A 6.00" pump manifold inlet shall be provided on each side of the vehicle. The suction inlets shall include screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.</p> <p>Main pump inlets shall not be located on the main operator's panel and shall maintain a low connection height by terminating below the top of the chassis frame rail.</p> <p><u>MAIN PUMP INLET CAP</u></p> <p>The main pump inlets shall have National Standard Threads with a long handle chrome cap.</p> <p>The cap shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).</p> <p><u>VALVES</u></p> <p>All discharges shall use in-line ball valves.</p> <p><u>LEFT SIDE INLET</u></p> <p>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.</p> <p>The auxiliary inlet shall be provided with a strainer, chrome swivel and plug.</p> <p>The location of the valve for the one (1) inlet shall be recessed behind the pump panel.</p> <p><u>ANODE, INLET</u></p> <p>A pair of sacrificial zinc anodes shall be provided in the water pump inlets to protect the pump from corrosion.</p> <p><u>INLET CONTROL</u></p> <p>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.</p> <p><u>INLET BLEEDER VALVE</u></p> <p>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.</p>		

	Bidder Complies	
	Yes	No
<p><u>TANK TO PUMP</u></p> <p>The booster tank shall be connected to the intake side of the pump with heavy duty 4.00" piping and a quarter turn 3.00" full flow line valve with the control located at the operator's panel. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing.</p> <p>A check valve shall be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.</p> <p><u>TANK REFILL</u></p> <p>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.</p> <p><u>LEFT SIDE DISCHARGE OUTLETS</u></p> <p>There shall be two (2) discharges with a 2.50" valves on the left side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter. Discharges shall be located below the cab, and shall be no higher than the top of the chassis frame rail. Discharges shall not be located on the pump operator's panel. Lever controls shall be provided at the valve.</p> <p><u>RIGHT SIDE DISCHARGE OUTLETS</u></p> <p>There shall be one (1) discharge outlet with a 2.50" valve on the right side of the apparatus, terminating with a male 2.50" National Standard hose thread adapter. The discharge shall be located below the crew cab, and shall be no higher than the top of the chassis frame rail.</p> <p>There shall be an electric valve controller provided at the pump panel. The controller unit shall be of true position feedback design, requiring no clutches in the motor or current limiting. The controller shall be completely sealed with two (2) button open and close valve position capability and a full color LCD display with backlight. In addition to valve position, each controller shall include a pressure display.</p> <p><u>LARGE DIAMETER DISCHARGE OUTLET</u></p> <p>There shall be a 4.00" discharge outlet with a 4.00" valve body installed on the right side of the apparatus, terminating with a 4.00" (M) National Standard hose thread. The discharge shall be located below the crew cab, and shall be no higher than the top of the chassis frame rail.</p> <p>There shall be an electric valve controller provided at the pump panel. The controller unit shall be of true position feedback design, requiring no clutches in the motor or current limiting. The controller shall be completely sealed with two (2) button open and close valve position capability and a full color LCD display with backlight. In addition to valve position, each controller shall include a pressure display.</p>		

	Bidder Complies	
	Yes	No
<p><u>FRONT DISCHARGE OUTLET</u></p> <p>There shall be one (1) 1.50" discharge outlet piped to the front of the apparatus and located in the center bumper tray.</p> <p>Plumbing shall consist of 2.00" piping and flexible hose with a 2.00" ball 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 1.50" NST with 90 degree stainless steel swivel.</p> <p>There shall be Class 1 automatic drains provided at all low points of the piping.</p> <p><u>DISCHARGE CAPS</u></p> <p>Chrome plated, rocker lug, caps with chains shall be furnished for all side discharge outlets.</p> <p>The cap shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).</p> <p><u>OUTLET BLEEDER VALVE</u></p> <p>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.</p> <p>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.</p> <p><u>LEFT SIDE OUTLET EBLAWS</u></p> <p>The two (2) 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) CSA, chrome plated, 30 degree elbow.</p> <p>The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).</p> <p><u>RIGHT SIDE OUTLET ELBOWS</u></p> <p>The one (1) discharge outlet, located on the right side pump panel, shall be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) CSA, chrome plated, 30 degree elbow.</p> <p>The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).</p>		

	Bidder Complies	
	Yes	No
<p><u>LARGE DIAMETER OUTLET CAP</u></p> <p>The large diameter outlet shall have a National Standard hose thread adapter with a 4.00" rocker lug chrome plated cap and chain.</p> <p>The cap shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected.</p> <p><u>DISCHARGE OUTLET CONTROLS</u></p> <p>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 or an indicator shall be provided to show when the valve is closed.</p> <p>The passenger side discharges shall be controlled by an electric valve controllers with the manual override located on the passenger side pump panel. The controller unit shall be of true position feedback design, requiring no clutches in the motor or current limiting. The controller shall be completely sealed with two (2) button open and close valve position capability and a full color LCD display with backlight. In addition to valve position, each controller shall include a pressure display.</p> <p>All other outlets shall have manual swing handles that operate in a vertical up and down motion. These handles shall be able to lock in place to prevent valve creep under pressure.</p> <p><u>AERIAL OUTLET</u></p> <p>The aerial waterway shall be plumbed from the pump to the water tower line with 4.00" pipe and a 4.00" valve. The control for the waterway valve shall be located at the pump operator's panel.</p> <p>An indicator shall be provided to show when the valve is in the open or closed position.</p> <p><u>CROSSLAY HOSE BEDS</u></p> <p>Two (2) crosslays with 1.50" outlets shall be provided. Each bed to be capable of carrying 200 feet of 1.75" double jacketed hose and shall be plumbed with 2.00" i.d. schedule 10 304L welded or formed stainless steel pipe and gated with a 2.00" quarter turn ball valve. Threaded pipe shall not be acceptable. Crosslays shall be low mounted with the bottom of both crosslay trays no more than 11.00" above the frame rails for simple, safe reloading and deployment (no exception). The hose beds shall be full width of the body compartments.</p> <p>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.</p> <p>The crosslay controls shall be at the pump operator's panel.</p> <p>A removable tray shall be provided for the crosslay hose bed. The crosslay tray shall be constructed of black poly to provide a lightweight sturdy tray. Two (2) hand holes shall be in the</p>		

	Bidder Complies	
	Yes	No
<p>floor and additional hand holes shall be provided in the sides for easy removal and installation from the compartment. The floor of the trays shall be perforated to allow for drainage and hose drying. Trays shall be held in place by a mechanical spring loaded stainless steel latch that automatically deploys upon loading the trays to hold the trays in place during transit.</p> <p><u>CROSSLAY HOSE BED, 2.50"</u></p> <p>One (1) crosslay with a 2.50" outlet shall be provided. The bed to be capable of carrying 200' of 2.5" hose and shall be plumbed with 2.50" i.d. schedule 10 304L welded or formed stainless steel pipe and gated with a 2.50" quarter turn ball valve. Threaded pipe shall not be acceptable.</p> <p>The outlet to be equipped with a 2.50" National Standard hose thread 90 degree swivel located above the hose bed so that hose may be removed from either side of apparatus.</p> <p>The crosslay shall be mounted above the lower 1.5" crosslays. The crosslay controls shall be at the pump operator's panel.</p> <p>A removable tray shall be provided for the crosslay hosebed. The crosslay tray shall be as wide as the crosslay opening will allow and constructed of black poly to provide a lightweight sturdy tray. Two (2) hand holes shall be in the floor and additional hand holes shall be provided in the sides for easy removal and installation from the compartment. The floor of the trays shall be perforated to allow for drainage and hose drying. Tray shall be held in place by a mechanical spring loaded stainless steel latch that automatically deploys upon loading the tray to hold the trays in place during transit.</p> <p><u>CROSSLAY/EQUIPMENT MODULE WITH BOOM SUPPORT COMPARTMENT</u></p> <p>The forward body module containing the crosslays, the boom support and transverse storage area shall be enclosed. The enclosure shall be provided on both sides of the body, full width of the body compartmentation.</p> <p>The enclosure shall be fabricated from aluminum and painted to match the front of the body. The enclosure shall be bolted on construction.</p> <p>Rollup doors shall be provided on both sides for access.</p> <p><u>ROLLUP DOOR</u></p> <p>Each rollup door shall be double faced aluminum construction and painted one (1) color to match the lower portion of the body.</p> <p>Lath sections shall be an interlocking rib design and shall be individually replaceable without complete disassembly of door.</p> <p>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</p>		

	Bidder Complies	
	Yes	No
<p>operate in extreme temperatures ranging from plus 180 to minus 40 degrees Fahrenheit. Side, top and bottom seals shall be provided to resist ingress of dirt and weather and be made of Santoprene.</p> <p>All hinges, barrel clips and end pieces shall be nylon 66. All nylon components shall withstand temperatures from plus 300 to minus 40 degrees Fahrenheit. Hardened plastic shall not be acceptable.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>The header for the rollup door assembly shall not exceed 4.00".</p> <p>A heavy-duty magnetic switch shall be used for control of open compartment door warning lights.</p> <p><u>FOAM SYSTEM</u></p> <p>A foam system shall not be required on this apparatus.</p> <p><u>PUC MODULE</u></p> <p>The pump module 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 aluminum tubing, angles and channels which supports both the plumbing and the side running boards.</p> <p>The pump module shall be mounted on the chassis frame rails with standard body angles in four places to allow for chassis frame twist.</p> <p>Pump module, plumbing and gauge panels shall be removable from the chassis in a single assembly.</p> <p><u>PUMP CONTROL PANELS (LEFT SIDE CONTROL)</u></p> <p>Pump controls and gauges shall be located midship at the left (driver's) side of the apparatus and properly identified.</p> <p>The main pump operator's control panel shall be completely enclosed and located immediately forward of the front stabilizer. There shall be a roll up door to protect against road debris and</p>		

	Bidder Complies	
	Yes	No
<p>weather elements. The pump operator's panels shall be no more than 31.00" wide, and made in four (4) sections with the center section easily removable with simple hand tools. For the safety of the pump operator, there shall be no discharge outlets or pump inlets located on the main pump operators panel.</p> <p>Layout of the pump control panel shall be ergonomically efficient and systematically organized. The upper section shall contain the master gauges. This section shall be angled down for easy visibility. The center section shall contain the pump controls aligned in two horizontal rows. The pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable) shall be located on or adjacent to the center panel, on the side walls for easy operation and visibility. The lower section shall contain the outlet drains.</p> <p>Manual controls shall be easy moving 8" long lever style controls that operate in a vertical, up and down swing motion. These handles shall have a 2.25" diameter knob and be able to lock in place to prevent valve creep under any pressure. Bright finish bezels shall encompass the opening, be securely mounted to the pump operator's panel, and shall incorporate the discharge gauge bezel. Bezels shall be bolted to the panel for easy removal and gauge service. The driver's side discharges shall be controlled directly at the valve. There shall be no push-pull style control handles (no exception).</p> <p>Identification tags for the discharge controls shall be recessed within the same bezel. The discharge identification tags shall be color coded, with each discharge having its own unique color.</p> <p>All remaining identification tags shall be mounted on the pump panel in chrome-plated bezels.</p> <p>All discharge outlets shall be color coded and labeled to correspond with the discharge identification tag.</p> <p>The pump panels for the discharge and intake ports shall be located ahead of the pump module with no side discharge or intake higher than the frame rail. The pump panels shall be easily removable with simple hand tools.</p> <p>A recessed cargo area shall be provided at the front of the body, ahead of the water tank above the plumbing.</p> <p><u>PASSENGER SIDE PUC MODULE COMPARTMENT</u></p> <p>A full height compartment with a roll-up door ahead of the front stabilizer shall be provided, as convenient large storage compartment for often used items for the crew. The interior dimensions of this compartment shall be 30.25" wide x 52.00" high x 25.13" deep. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that</p>		

	Bidder Complies	
	Yes	No
<p>no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 28.00" wide x 52.00 high.</p> <p>Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.</p> <p><u>PUMP PANEL CONFIGURATION</u></p> <p>The pump panel configuration shall be arranged and installed in an organized manner that shall provide user-friendly operation.</p> <p><u>PUMP OPERATOR'S PLATFORM</u></p> <p>A pull out, flip down platform shall be provided at the pump operator's control panel.</p> <p>The front edge and the top surface of the platform shall be made of DA finished aluminum with a Morton Cass insert.</p> <p>The platform shall be approximately 13.75" deep when in the stowed position and approximately 22.00" deep when extended. The platform shall be as wide as possible. The platform shall lock in the retracted and the extended position.</p> <p>The platform shall be wired to the "step not stowed" indicator in the cab.</p> <p><u>PUMP OPERATOR'S PLATFORM PERIMETER LIGHT</u></p> <p>There shall be a 20.00" white 12 volt DC LED strip light provided to illuminate the ground area.</p> <p><u>PUMP AND GAUGE PANEL</u></p> <p>The pump operator's panel and gauge panels shall be constructed of stainless steel with a brushed finish.</p> <p>The side control panels shall be constructed of stainless steel with a brushed finish for durability and ease of maintenance.</p> <p><u>PUMP AND PLUMBING ACCESS</u></p> <p>Simple access to the plumbing shall be provided through the front of the body area by raising the cab for complete plumbing service and valve maintenance. Access to valves shall not require removal of operator panels or pump panels. Access for rebuilding of the pump shall not require removal of more than the tank to pump line and a single discharge line. This access shall allow for fast, easy valve or pump rebuilding, making for reduced out of service times. Steps shall be provided for access to the top of the pump.</p> <p>Access to the pump shall be provided by raising the cab. The pump shall be positioned such that all maintenance and overhaul work can be performed above the frame and under the tilted cab. The service and overhaul work on the pump shall not require the removal of operator panels or</p>		

	Bidder Complies	
	Yes	No
<p>pump panels. Complete pump casing and gear case removal shall require no more than removal of the intake and discharge manifolds, driveline, coolers and a single discharge line. The pump case and gear case shall be able to be removed by lifting upward without interference from piping and be removable in less than 3 hours.</p> <p><u>PUMP COMPARTMENT LIGHT</u></p> <p>There shall be one (1) 3.00" white 12 volt DC LED light(s) with flange(s) installed in the plumbing area.</p> <p>The light(s) shall be activated by a toggle switch located in the pump compartment area.</p> <p>Engine monitoring graduated LED indicators shall be incorporated with the pressure controller.</p> <p><u>VACUUM AND PRESSURE GAUGES</u></p> <p>The pump vacuum and pressure gauges shall be liquid filled.</p> <p>The gauges shall be a minimum of 4.00" in diameter and shall have white faces with black markings, with a pressure range of 30.00" 0-400 psi/kpa.</p> <p>Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.</p> <p>The pump pressure and vacuum gauges shall be installed adjacent to each other at the pump operator's control panel.</p> <p>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.</p> <p>This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.</p> <p><u>PRESSURE GAUGES</u></p> <p>The individual "line" pressure gauges for the discharges shall be fluid filled.</p> <p>They shall be a minimum of 2.00" in diameter and the dial shall have white faces with black markings.</p> <p>Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.</p> <p>Gauges shall have a pressure rating of 0-400 psi/kpa.</p>		

	Bidder Complies	
	Yes	No
<p>The individual pressure gauge shall be installed as close to the outlet control as practical.</p> <p>This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.</p> <p><u>WATER LEVEL GAUGE</u></p> <p>An electric water level gauge shall be incorporated in the pressure controller that registers water level by means of nine (9) LEDs. They shall be at 1/8 level increments with a tank empty LED. The LEDs shall be a bright type that is readable in sunlight, and have a full 180-degree of clear viewing.</p> <p>To further alert the pump operator, the gauge shall have a warning flash when the tank volume is less than 25 percent. The gauge shall have down chasing LEDs when the tank is almost empty.</p> <p>The level measurement shall be ascertained by sensing the head pressure of the fluid in the tank or cell.</p> <p><u>MINI SLAVE UNIT</u></p> <p>An electric water level gauge shall be provided in the cab that registers water level by means of five (5) LEDs. They shall be at 1/4 level increments with a tank empty LED. The LEDs shall be a bright type that are readable in sunlight and have a full 180-degree of clear viewing.</p> <p>The water level gauge in the cab shall be activated when the pump is in gear.</p> <p><u>SIDE CONTROL PUMP OPERATOR'S/PUMP PANEL LIGHTING</u></p> <p>Illumination shall be provided for controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus and the equipment provided on it. External illumination shall be a minimum of five (5) foot-candles on the face of the device. Internal illumination shall be a minimum of four (4) foot-lambert's.</p> <p>The pump panels shall be illuminated by two (2) 6.00" x 2.00" oval white LED lights with grommets and chrome covers installed on the back of the cab, one (1) on the driver's side and one (1) on the passenger's side.</p> <p>The pump operator's panel shall utilize the same LED strip lighting at the forward doorframe as all other compartment lighting.</p> <p>There shall be a small white LED pump engaged indicator light installed overhead.</p> <p><u>AIR HORN SYSTEM</u></p> <p>There shall be two (2) 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.</p>		

	Bidder Complies	
	Yes	No
<p><u>Air Horn Location</u> The air horns shall be located on each side of the bumper, towards the outside.</p> <p><u>AIR HORN CONTROL</u> The air horns shall be actuated by a chrome push button located on the officer's side of the engine tunnel and by the horn button in the steering wheel. The driver shall have the option to control the air horns or the chassis horns from the horn button by means of a selector switch located on the instrument panel.</p> <p><u>ELECTRONIC SIREN</u> An 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. Electronic siren head shall be recessed in the driver side inside switch panel. The electronic siren shall be controlled on the siren head only. No horn button or foot switches shall be required.</p> <p><u>SPEAKER</u> There shall be one (1) 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.</p> <p><u>AUXILIARY MECHANICAL SIREN</u> A mechanical 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. A reinforcement plate shall be furnished to support the siren. The mechanical siren shall be actuated by two (2) foot switches, one (1) located on the officer's side and one (1) on the driver's side.</p> <p><u>FRONT ZONE UPPER WARNING LIGHTS</u> There shall be two (2) 21.50" LED lightbars mounted on the cab roof, one (1) on each side, above the driver's and passenger's door, facing forward. The driver's side lightbar shall include the following:</p>		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • One (1) red flashing LED module in the outside end position. • One (1) red flashing LED module in the outside front corner position. • One (1) red flashing LED module in the outside front position. • One (1) red flashing LED module in the inside front position. • One (1) red flashing LED module in the inside front corner position. <p>The passenger's side lightbar shall include the following:</p> <ul style="list-style-type: none"> • One (1) red flashing LED module in the inside front corner position. • One (1) red flashing LED module in the inside front position. • One (1) red flashing LED module in the outside front position. • One (1) red flashing LED module in the outside front corner position. • One (1) red flashing LED module in the outside end position. <p>There shall be clear lenses included on the lightbar.</p> <p>There shall be a switch in the cab on the switch panel to control the lightbars.</p> <p><u>LIGHTS, FRONT ZONE LOWER</u></p> <p>Two (2) LED flashing warning lights shall be installed on the cab face above the headlights, in a common bezel with the directional lights.</p> <p>The driver's side front warning light to be red.</p> <p>The passenger's side front warning light to be red.</p> <p>Both lights shall include a clear lens.</p> <p>There shall be a switch located in the cab on the switch panel to control the lights.</p> <p><u>HEADLIGHT FLASHER</u></p> <p>The high beam headlights shall flash alternately between the left and right side.</p> <p>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.</p> <p>The flashing shall automatically cancel when the hi-beam headlight switch is activated or when the parking brake is set.</p> <p><u>SIDE ZONE LOWER LIGHTING</u></p> <p>There shall be four (4) flashing LED warning lights with chrome trim installed per the following:</p> <ul style="list-style-type: none"> • Two (2) lights, one (1) each side on the bumper extension. The side front lights to be red. • Two (2) lights, one (1) each side above rear wheels. The side rear lights to be red. 		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> The lights shall include a clear lenses. <p>There shall be a switch in the cab on the switch panel to control the lights.</p> <p><u>REAR ZONE LOWER LIGHTING</u></p> <p>There shall be two (2) LED flashing warning lights located at the rear of the apparatus.</p> <ul style="list-style-type: none"> The driver's side rear light to be red The passenger's side rear light to be red <p>Both lights shall include a lens that is clear.</p> <p>There shall be a switch located in the cab on the switch panel to control the lights.</p> <p><u>REAR/SIDE ZONE UPPER WARNING LIGHTS</u></p> <p>There shall be two (2) 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.</p> <p>The color of the lights shall be red LEDs with both domes clear.</p> <p><u>TRAFFIC DIRECTING LIGHT</u></p> <p>There shall be one (1) 36.00" long x 2.87" high x 2.25" deep, amber LED traffic directing light installed at the rear of the apparatus.</p> <p>The Whelen, Model TACTL5, control head shall be included with this installation.</p> <p>The auxiliary warning mode shall be activated with the control head only.</p> <p>This traffic directing light shall be mounted on top of the body below the turntable with a treadplate box at the rear of the apparatus.</p> <p>The traffic directing light control head shall be located in the driver side overhead switch panel in the right panel position.</p> <p><u>FOUR (4)-SECTION 107 FOOT AERIAL LADDER</u></p> <p><u>CONSTRUCTION STANDARDS</u></p> <p>The ladder shall be constructed to meet all of the requirements as described in the current NFPA 1901 standards.</p> <p>The aerial device shall be a true ladder type device; therefore ladders attached to booms shall not be considered.</p> <p>These capabilities shall be established in an unsupported configuration.</p>		

	Bidder Complies	
	Yes	No
<p>All structural load supporting elements of the aerial device that are made of a ductile material shall have a design stress of not more than 50% of the minimum yield strength of the material based on the combination of the live load and the dead load. This 2:1 structural safety factor meets the current NFPA 1901 standard.</p> <p>All structural load supporting elements of the aerial device that are made of non-ductile material shall have a design stress of not more than 20% of the minimum ultimate strength of the material, based on the combination of the rated capacity and the dead load. This 5:1 safety factor meets the current NFPA 1901 standard.</p> <p>Wire ropes and attaching systems used to extend and retract the fly sections shall have a 5:1 safety factor based on the ultimate strength under all operating conditions. The factor of safety for the wire rope shall remain above 2:1 during any extension or retraction stall. The minimum ratio of the diameter of wire rope used to the diameter of the sheave used shall be 1:12. Wire ropes shall be constructed of seven (7) strands over an inner wire core for increased flexibility. The wire rope shall be galvanized to reduce corrosion.</p> <p>The aerial base pivot bearings shall be maintenance free type bearings and require no external lubrication.</p> <p>The aerial device shall be capable of sustaining a static load one and one-half times its rated tip load capacity (live load) in every position in which the aerial device can be placed when the vehicle is on a firm level surface.</p> <p>The aerial device shall be capable of sustaining a static load one and one-third times its rated tip load capacity (live load) in every position the aerial device can be placed when the vehicle is on a slope of five degrees downward in the direction most likely to cause overturning.</p> <p>With the aerial device out of the cradle and in the fully extended position at zero degrees elevation, a test load shall be applied in a horizontal direction normal to the centerline of the ladder. The turntable shall not rotate and the ladder shall not deflect beyond what the product specification allows.</p> <p>All welding of aerial components, including the aerial ladder sections, turntable, pedestal, and outriggers, shall be in compliance with the American Welding Society standards. All welding personnel shall be certified, as qualified under AWS welding codes.</p> <p>The aerial device shall be capable of operating in conditions of wind up to 50 mph and icing conditions of up to a .25" coating over the aerial structure.</p> <p>All of the design criteria must be supported by the following test data (no exception):</p> <ul style="list-style-type: none"> - Strain gage testing of the complete aerial device 		

	Bidder Complies	
	Yes	No
<p>- Analysis of deflection data taken while the aerial device was under test load</p> <p>The following standards for materials are to be used in the design of the aerial device:</p> <ul style="list-style-type: none"> - Materials are to be certified by the mill that manufactured the material - Materials that are certified or recertified by vendors other than the mill shall not be acceptable - Material testing that is performed after the mill test shall be for verification only and not with the intent of changing the classification - All welded structural components for the ladder shall be traceable to their mill lots. <p><u>LADDER CONSTRUCTION</u></p> <p>The ladder is comprised of four (4) sections.</p> <p>The ladder shall have the capability to support a minimum of 750 pounds at the tip in the unsupported configuration, based upon 360 degree rotation, up to full extension and from -10 degrees to +77 degrees.</p> <p>The ladder (handrails, baserails, trusses, K-braces and rungs) shall be constructed of high strength low alloy steel, minimum 100,000 pounds per square inch yield, with full traceability on all structural members (no exception).</p> <p>Each section shall be trussed diagonally, vertically and horizontally using welded steel tubing.</p> <p>All ladder rungs are round and welded to each section utilizing "K" bracing for lateral and torsional rigidity.</p> <p>The inside width dimensions of the ladder shall be:</p> <ul style="list-style-type: none"> - Base Section 41.87" - Lower Mid Section 34.88" - Upper Mid Section 27.87" - Fly Section 21.63" <p>The height of the handrails above the centerline of the rungs shall be:</p> <ul style="list-style-type: none"> - Base Section 26.28" - Lower Mid Section 22.68" - Upper Mid Section 20.06" 		

	Bidder Complies	
	Yes	No
<p>- Fly Section 17.32"</p> <p>The ladder shall be designed to provide continuous egress for firefighters and civilians from an elevated position to the ground.</p> <p>The egress section shall be designed to maintain the rated load of the aerial device. It shall be bolted on for easy replacement. There shall be a tow eye welded on to each side of the egress.</p> <p><u>VERTICAL HEIGHT</u></p> <p>The ladder shall extend to a minimum height of 107' above the ground at full extension and elevation. The measurement of height shall be consistent with NFPA standards.</p> <p><u>HORIZONTAL REACH</u></p> <p>The rated horizontal reach shall be 100' (no exception). The measurement of horizontal reach shall be consistent with NFPA standards.</p> <p><u>TURNTABLE</u></p> <p>The upper turntable assembly shall connect the aerial ladder to the turntable bearing. The steel structure shall have a mounting position for the aerial elevation cylinders, ladder connecting pins, and upper turntable operator's position.</p> <p>The turntable shall be a 0.375" thick steel deck, coated with a non-skid, chemical resistant material in the walking areas. The stepping surfaces shall meet the skid-resistance requirements of the current NFPA 1901 standard.</p> <p>The turntable handrails shall be a minimum 42.00" high and shall not increase the overall travel height of the vehicle. The handrails shall be constructed from aluminum and have a slip resistant knurled surface. The turntable vertical handrail spacing shall be designed with a 44.00" wide x 27.00" high opening to allow for equipment to pass through from the ground to the aerial ladder. The opening shall be located at the center, rear of the turntable.</p> <p><u>ELEVATION SYSTEM</u></p> <p>Dual 5.50" diameter elevating cylinders shall be mounted on the underside of the base section of the ladder, one (1) on each side. One (1) 2.25" diameter stainless steel pin shall fasten each cylinder to the ladder and one (1) 2.50" diameter stainless steel pin shall fasten each cylinder to the turntable. The pins shall have 125,000 psi minimum yield strength and shall be secured with 0.50" Grade 8 bolts with castle nut and cotter pin. The bolts are to ensure that the pins do not walk out of the mounting brackets on the turntable and base section.</p> <p>The elevating cylinders shall be mounted utilizing maintenance-free spherical bearings on both ends of the cylinders (no exception). The aerial base pivot bearings shall be maintenance-free type bearings with no external lubrication required (no exception). The cylinders shall function only to elevate the ladder and not as a structural member to stabilize the ladder side movement.</p>		

	Bidder Complies	
	Yes	No
<p>The elevating cylinders shall be provided with pilot-operated check valves on the barrel and rod side of the piston to prevent movement of the ladder in case of a loss of hydraulic pressure.</p> <p>The operation envelope shall be 10 degrees below horizontal to 77 degrees above horizontal.</p> <p>The elevation system shall be designed following NFPA standards. The elevation hydraulic cylinders shall incorporate cushions on the upper limit of travel.</p> <p>The lift cylinders shall be equipped with integral holding valves located in the cylinder to prevent the unit from descending should the charged lines be severed, at any point within the hydraulic system and to maintain the ladder in the bedded position during road travel. The integral holding valves shall NOT be located in the transfer tubes.</p> <p>The elevation system shall be controlled by the microprocessor. Linear transducers shall measure the extension of the elevation cylinder. The microprocessor shall provide the following features:</p> <ul style="list-style-type: none"> - Collision avoidance of the elevation system to prevent accidental body damage - Automatic deceleration when the aerial device is lowered into the cradle - Automatic deceleration at the end of stroke, in maximum raise and lower positions - Deceleration of the aerial device at the limits of travel. <p><u>EXTENSION/RETRACTION SYSTEM</u></p> <p>A hydraulically powered, extension and retraction system shall be provided through dual hydraulic cylinders and wire ropes. Each set shall be capable of operating the ladder in the event of a failure, of the other. For safety, systems that use only a single extension/retraction system shall not be acceptable. The extension cylinder rod shall be chrome plated to provide smooth operation of the aerial device and reduce seal wear. The extension/retraction cylinders shall be equipped, with integral holding valves, to prevent the unit from retracting should the charged line be severed, at any point within the hydraulic system. The integral holding valves shall NOT be located in the transfer tubes.</p> <p>Wire ropes and attaching systems used to extend and retract the fly sections shall have a 5:1 safety factor based on the ultimate strength under all operating conditions. The factor of safety for the wire rope shall remain above 2:1 during any extension or retraction stall. The minimum ratio of the diameter of wire rope used to the diameter of the sheave used shall be 1:12. Wire ropes shall be constructed of seven (7) strands over an inner wire for increased flexibility. The wire rope shall be galvanized to reduce corrosion.</p>		

	Bidder Complies	
	Yes	No
<p>The extension/retraction system shall be controlled by the microprocessor. Linear transducers shall measure the ladder extension. The microprocessor shall provide the following features:</p> <ul style="list-style-type: none"> - Automatic deceleration at the end of stroke, in maximum extend and retract positions <p>All sheaves shall require lubrication. They shall have bronze bushings and grease zerks.</p> <p><u>MANUAL OVERRIDE CONTROLS</u></p> <p>Manual override controls shall be provided for all aerial and stabilizer functions.</p> <p><u>LADDER SLIDE MECHANISM</u></p> <p>UHMW polyethylene wear pads shall be used between the telescoping ladder sections, to provide greater bearing surface area for load transfer. Adjustable slide pads shall be used to control side play between the ladder sections.</p> <p><u>ROTATION SYSTEM</u></p> <p>The aerial shall be supplied with a powered rotation system as outlined in NFPA standards. The hydraulic rotation motor shall provide continuous rotation under all rated conditions and be supplied with a brake to prevent unintentional rotation. One (1) hydraulically driven, planetary gear box with drive speed reducers shall be used to provide infinite and minute rotation control throughout the entire rotational travel. One (1) spring applied, hydraulically released disc type swing brake shall be furnished to provide positive braking of the turntable assembly. Provisions shall be made for emergency operation of the rotation system should complete loss of normal hydraulic power occur. The hydraulic system shall be equipped with pressure relief valves which shall limit the rotational torque to a nondestructive power. The gearbox shall have a minimum continuous torque rating of 80,000 in. lbs. and a minimum intermittent rating of 160,000 in. lbs. The turntable bearing, ring gear teeth, pinion gear, planetary gearbox, and output shaft shall be certified by the manufacturer of the components for the application.</p> <p>The rotation system shall be controlled by the microprocessor. The microprocessor shall provide the following features:</p> <ul style="list-style-type: none"> - Collision avoidance to prevent accidental body damage - Prevent the aerial from being rotated into an unstable condition. <p><u>ROTATION INTERLOCK</u></p> <p>The microprocessor shall be used to prevent the rotation of the aerial device to the side in which the stabilizers have not been fully deployed (short-jacked). The microprocessor shall allow full and unrestricted use of the aerial, in the 180 degree area, on the side(s) where the stabilizers have been fully deployed. The system shall also have a manual override, to comply with NFPA 1901.</p> <p>SYSTEMS THAT PERMIT THE AERIAL TO ROTATE TO THE "SHORT JACK" SIDE, WITHOUT AUTOMATICALLY STOPPING THE ROTATION AND/OR WITHOUT</p>		

Bidder Complies	
Yes	No

ACTUATION OF THE "MANUAL OVERRIDE", SHALL NOT BE ACCEPTED. SYSTEMS THAT ONLY INCLUDE AN ALARM ARE NOT CONSIDERED AN INTERLOCK AND SHALL NOT BE ACCEPTED.

LADDER CRADLE INTERLOCK SYSTEM

A ladder cradle interlock system shall be provided through the microprocessor to prevent the lifting of the aerial device from the nested position until the operator places all the stabilizers in a load supporting configuration. A switch shall be installed at the boom support to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

AERIAL TORQUE BOX/PEDESTAL

The pedestal assembly shall be a welded assembly made of high strength 0.25" plate. The vertical member shall be a 0.375" reinforced wall cylinder with a 28.00" outside diameter and shall connect the rotation bearing mounting plate to the lower substructure.

The pedestal assembly shall be bolted to the chassis frame with 0.88" diameter Grade 8 bolts, and shall be utilized to mount the outrigger jacks and reservoir for the aerial hydraulic system.

There shall be a 5/8" gap between the torque box and the frame rails to promote drying of the surfaces and reduce the effect of corrosion.

LOAD CAPACITIES

The following load capacities shall be established with the stabilizers at full horizontal extension and placed in the down position to level the truck and to relieve the weight from the tires and axles. Capacities shall be based upon full extension and 360 degree rotation.

A load chart, visible at the operator's station, shall be provided. The load chart shall show the recommended safe load at any condition of the aerial device's elevation and extension (no exception).

50 MPH WIND CONDITIONS/WATERWAY DRY

Degrees of Elevation	-10 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 77
Egress	750	750	750	750	750	750	750	750
Fly	-	-	-	-	-	250	500	750
Upper Mid	-	-	-	-	250	500	1000	1000
Lower Mid	-	-	-	-	500	750	1000	1000
Base	-	-	-	500	500	1000	1000	1000

Bidder Complies	
Yes	No

50 MPH WIND CONDITIONS/WATERWAY CHARGED

Degrees of Elevation	-10 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 77
Egress	500	500	500	500	500	500	500	500
Fly	-	-	-	-	-	250	500	500
Upper Mid	-	-	-	-	250	500	750	1000
Lower Mid	-	-	-	250	500	750	1000	1000
Base	-	-	250	500	750	1000	1000	1000

Reduced loads at the tip can be redistributed in 250 lb. increments to the fly, mid, or base sections as needed.

The tip capacity shall be reduced to zero when flowing water with the nozzle above the waterway centerline.

Side to side monitor travel shall be reduced with a 50MPH wind rating on the device.

BOOM SUPPORT

A heavy-duty boom support shall be provided for support of the ladder in the travel position. On the base section of the ladder, a stainless steel scuffplate shall be provided where the ladder comes into contact with the boom support.

The boom support shall be located just to the rear of the chassis cab.

AERIAL BOOM SUPPORT LIGHT

There shall be one (1) white incandescent light mounted on the boom support cradle. This light shall be activated by the aerial master switch.

AERIAL BOOM PANEL

There shall be one boom panel provided on each side of the aerial ladder base section. The boom panel shall be painted #10 white.

The boom panels shall be designed so no mounting bolts are in the face of the panel. This shall keep the lettering surface free of holes.

FOLDING STEPS

One (1) set of folding steps shall be provided at the tip of the ladder. An additional set of folding steps shall be provided at the base of the fly section. The steps shall be bright finished, non-skid with a black coating.

	Bidder Complies	
	Yes	No
<p><u>AERIAL DEVICE RUNG COVERS</u></p> <p>Each rung shall be covered with a secure, heavy-duty, fiberglass pultrusion that incorporates an aggressive, no-slip coating.</p> <p>The rung covers shall be glued to each rung, and shall be easily replaceable should the rung cover become damaged.</p> <p>The center portion of each rung cover shall be black and the outside 2.00" edge at each side shall be safety yellow.</p> <p>Under no circumstances shall the rung covers be fastened to the rungs using screws or rivets (no exception).</p> <p>The rung covers shall have a 10-year, limited warranty.</p> <p><u>LIGHTS FOR TURNTABLE WALKWAY</u></p> <p>There shall be white LED lights provided at the aerial turntable. The lights shall be located to illuminate the entire walking surface of the turntable including the area around the turntable console. These lights shall be activated by the aerial master switch.</p> <p><u>TURNTABLE CONSOLE LIGHTING</u></p> <p>There shall be one (1), white LED light strip mounted in the turntable console cover to illuminate the controls located on both the upper and lower portion of the turntable control station. These lights shall be activated by the aerial master switch.</p> <p><u>ROTATION BEARING COVER</u></p> <p>An aluminum treadplate cover shall be fitted over the aerial rotation bearing and drive pinion gear(s). The cover shall be attached to the underside of the turntable deck.</p> <p><u>INFORMATION CENTER</u></p> <p>There shall be an information center provided. The information center shall operate in temperatures from -40 to 185 degrees Fahrenheit. The information center shall employ a Linux operating system and a 7.00" (diagonal measurement) LCD display. The LCD shall have a minimum 400nits rated, color display. The LCD shall be sunlight readable. The LCD display shall be encased in an ABS, black plastic housing with a gray decal. There shall be five (5), weather-resistant user interface switches provided. The LCD display can be changed to an available foreign language.</p> <p><u>OPERATION</u></p> <p>The information center shall be designed for easy operation in everyday use. There shall be a page button to cycle from one screen to the next screen in a rotating fashion. A video button shall allow an NTSC signal into the information center to be displayed on the LCD. If any</p>		

	Bidder Complies	
	Yes	No
<p>button is pressed while viewing a video feed, the information center shall return to the vehicle information screens. There shall be a menu button to provide access to maintenance, setup, and diagnostic screens. All other button labels shall be specific to the information being viewed.</p> <p><u>GENERAL SCREEN DESIGN</u></p> <p>Where possible, background colors shall be used to provide vehicle information <i>At A Glance</i>. If the information provided on a screen is within acceptable limits, a green background color shall be used. If the information provided on a screen is not within acceptable limits, an amber background color shall indicate a caution condition and a red background color shall indicate a warning condition.</p> <p>Every screen in the information center shall include the aerial tip temperature, the time (12- or 24-hour mode) and a text Alert Center. The time shall be synchronized between all Command Zone colors displays located on the vehicle. The Alert Center shall display text messages for audible alarms. The text messages shall identify any items causing the audible alarm to sound. If more than one (1) audible alarm is activated, the text message for each alarm shall cycle every second until the problems have been resolved. The background for the Alert Center shall change to indicate the severity of the warning message. Amber shall indicate a caution condition and red shall indicate a warning condition. If a warning and a caution condition occur simultaneously, the red background color shall be shown for all Alert Center messages.</p> <p>A label shall be provided for each button. The label shall indicate the function for each active button for each screen. If the button is not utilized on specific screens, it shall have a button label with no text.</p> <p>Symbols shall accurately depict the aerial device type the information pertains to such as rear mount ladder, rear mount platform, mid-mount ladder or mid-mount platform.</p> <p><u>PAGE SCREENS</u></p> <p>The Information center shall include the following pages:</p> <p>The Aerial Main and Load Chart page shall indicate the following information:</p> <ul style="list-style-type: none"> - Rungs Aligned and Rungs Not Aligned shall be indicated with text and respective green or red colored ladder symbols. - Ladder Elevation shall be indicated via a fire apparatus vehicle with ladder symbol with the degree of elevation indicated between the vehicle and ladder. - Water Flow (if applicable) shall be indicated via a water nozzle symbol and text indicating flow / time. 		

	Bidder Complies	
	Yes	No
<p>- Breathing Air Levels shall be indicated via an air bottle symbol and text indicating the percent (%) of air remaining. A green bar graphs shown inside the bottle shall indicate oxygen levels above 20%. A red bar graph shall indicate oxygen levels at or below 20%. When oxygen levels are at or below 10% the red bar graph shall flash.</p> <p>- The Aerial Load Chart shall indicate the load limit on each section of the ladder based on actual ladder position and water flow (if applicable).</p> <p>- <i>At a Glance</i> color features shall be utilized on this screen. Caution type conditions shall be indicated via a yellow background. Warning type conditions shall be indicated via a red background. Conditions operating within acceptable limits shall be indicated via a green background.</p> <p>The Aerial Reach and Hydraulic Systems page shall indicate the following information:</p> <p>- Aerial Hydraulic Oil Temperature shall be indicated with symbol and text. At a glance features shall be utilized.</p> <p>- Aerial Hydraulic Oil Pressure shall be indicated with a symbol and text. At a glance features shall be utilized.</p> <p>- The following calculations shall be indicated on a representative vehicle symbol:</p> <ul style="list-style-type: none"> - Aerial Device Extension length. - Aerial Device Height indicating the height of the aerial device tip from the ground. - Aerial Device Reach indicating the horizontal distance the aerial reaches from the turntable. - Aerial Device Angle indicating the angle from the vehicle which the device is at. <p>- <i>At A Glance</i> color features shall be utilized on this screen. Caution type conditions shall be indicated via a yellow background. Warning type conditions shall be indicated via a red background. Conditions operating within acceptable limits shall be indicated via a green background.</p> <p>The Level Vehicle page shall indicate the following information:</p> <ul style="list-style-type: none"> - The grade of the vehicle shall be indicated via a fire apparatus vehicle symbol with the degree of grade shown in text format. The symbol shall tilt dependent on the vehicle grade. - The slope of the vehicle shall be indicated via a fire apparatus vehicle symbol with the degree of slope shown in text format. The symbol shall tilt dependent on the vehicle slope. 		

	Bidder Complies	
	Yes	No
<p>- Outriggers status shall be indicated via a colored symbol for each outrigger present. Each outrigger status shall be defined as one of the following:</p> <ul style="list-style-type: none"> - Outrigger stowed indicated with a silver pan located close to the vehicle - Outrigger fully extended indicated with a fully deployed green outrigger - Outrigger short-jacked indicated by a yellow outrigger partially deployed - Outrigger not set indicated by a red outrigger that is not set on the ground <p>- A text box located on the vehicle symbol shall be utilized to identify the overall status of the outrigger leveling system. The following status shall be indicated in the text box:</p> <ul style="list-style-type: none"> - Deployed status shall indicate all outriggers are properly set on the ground at full extension - Short jacked status shall indicate one or more outriggers are set on the ground but not fully extended. - Not Set status shall indicate one or more outriggers is not properly set on the ground. - Stowed status shall indicate all outriggers are stowed for vehicle travel. <p>- A bedding assist alert shall indicate that the aerial device is being aligned by the Command Zone system as the operator lowers the aerial device into the cradle with the joystick.</p> <p>- <i>At a Glance</i> color features shall be utilized on this screen. Caution type conditions shall be indicated via a yellow background. Warning type conditions shall be indicated via a red background. Conditions operating within acceptable limits shall be indicated via a green background.</p> <p><u>MENU SCREENS</u></p> <p>The following screens shall be available through the Menu button:</p> <p>The View System Information screen shall display aerial device hours, aerial PTO hours, ladder aligned for stowing, aerial rotation angle, total water flow (if applicable), and aerial waterway valve status (if applicable).</p> <p>The Set Display Brightness screen shall allow brightness increase and decrease and include a default setting button.</p> <p>The Configure Video Mode screen shall allow setting of video contrast, video color and video tint.</p> <p>The Set Startup screen allows setting of the screen that shall be active at vehicle power-up.</p>		

	Bidder Complies	
	Yes	No
<p>The Set Date and Time screen has a 12- or 24-hour format, and allows setting of the time and date.</p> <p>The View Active Alarms screen shows a list of all active alarms including the date and time of each alarm occurrence and shows all alarms that are silenced.</p> <p>The System Diagnostics screen allows the user to view system status for each module and it's respective inputs and outputs. Viewable data shall include the module type and ID number; the module version; and module diagnostics information including input or output number, the circuit number connected to that input or output, the circuit name (item connected to the circuit), status of the input or output, and other module diagnostic information.</p> <p>Aerial calibrations screen indicates items that may be calibrated by the user and instructions to follow for proper calibration of the aerial device.</p> <p>Button functions and button labels may change with each screen.</p> <p><u>LOWER CONTROL STATION</u></p> <p>A lower control station shall be located at the rear of the apparatus in an easily accessible area. The controls and indication labels shall be illuminated for nighttime operation. The following items shall be furnished at the lower control station and shall be clearly identified and conveniently located for ease of operation and viewing:</p> <ul style="list-style-type: none"> - Level assist switch - Override switch to override microprocessor - Emergency power unit switch <p><u>TURNTABLE CONTROL STATION</u></p> <p>There shall be one (1) device control station located on the left side of the turntable so the operator may easily observe the ladder tip while operating the controls. All elevation, extension and rotation controls shall operate from this location. The controls shall permit the operator to regulate the speed of the aerial functions, within the safe limits, as determined by the manufacturer and NFPA standards. Each control shall be equipped, with a positive lock to hold the control in a neutral position, preventing accidental activation. In addition to the neutral lock, a console cover shall be provided at the turntable control station. The controls shall be so designed to allow the turntable control station to immediately override the tip controls, if equipped, even if the ladder is being operated by the tip controls.</p> <p>The following items shall also be provided at the turntable control station, clearly identified, lighted for nighttime operation and conveniently located for ease of operation and viewing:</p>		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> - Intercom controls - Tip tracking light switch - Emergency stop switch - Emergency power unit switch - Operator's load chart - Two (2) position switch for selecting aerial operational speed <p><u>HIGH IDLE</u></p> <p>The high idle shall be controlled by the microprocessor. The microprocessor shall automatically adjust the engine rpm to compensate for the amount of load placed upon the system. The system shall include a safety device that allows activation of the high idle, only when the parking brake is set and the transmission is placed in neutral.</p> <p><u>STABILIZERS</u></p> <p>The vehicle shall come equipped with a stabilization system consisting of four (4) hydraulically operated stabilizers. The front two (2) shall be out and down style, the rear two (2) shall be down only. This system shall meet or exceed all requirements of the NFPA specifications related to stabilization and setup on sloped surfaces.</p> <p>The stabilizer/leveling jacks shall have a maximum spread of 16' measured from the centerline of the jack footpads when the beams are fully extended. The beams shall be 6.88" wide x 9.00" high with 3/4" thick top and bottom plates and 1/2" thick sides of 100,000-PSI minimum yield strength steel. The cylinders shall have pilot-operated check valves with thermal relief designed to insure that the beams shall not drift out of the stowed position during travel. Wear pads shall guide the stabilizers.</p> <p>The horizontal extension cylinders shall be totally enclosed within the beams and shall incorporate telescoping hydraulic tubing to supply the jack cylinder hydraulic power. Stabilizer hydraulic hoses shall remain stationary during operation of the stabilizers to prevent hose wear and potential failure. The cylinders shall be equipped with decelerators to reduce the speed of extension and retraction when the beams are near the fully retracted and extended positions. The stabilizer extension hydraulic cylinders shall have the following dimensions: 2.25" bore, 1.38" rod, and 39.25" stroke.</p> <p>The vertical jack cylinders shall be capable of 18.00" ground penetration. The cylinders shall be supplied with pilot operated check valves on each jack cylinder to hold the cylinder in the stowed or working position, should a charged line be severed at any point in the hydraulic system. For safety, the integral holding valves shall be located in the cylinder base, NOT in the transfer tube.</p>		

	Bidder Complies	
	Yes	No
<p>Vertical jack cylinder rods shall be fully enclosed by a telescoping inner box to protect the cylinder rods from damage. The stabilizer jack hydraulic cylinders shall have the following dimensions: 4.25" bore, 3.00" rod, and 28.88" stroke.</p> <p>Each stabilizer jack shall have a polished stainless steel shield. The stainless steel shield shall be a maximum of 14.00" wide so as to allow the extension of the stabilizer between parked cars or other obstacles. This plate shall serve as a protective guard and a mounting surface for warning lights. The top, forward, and rear edges shall be flanged back 90 degrees for added strength.</p> <p><u>STABILIZER PADS</u></p> <p>The stabilizer footpad shall be 12.00" in diameter. The footpad shall be attached to the jack cylinder rod by means of a machined ball at the end of the jack cylinder rod which mates to a socket machined into the footpad. The footpad shall have the ability to pivot 20 degrees from horizontal in any direction to allow setup on uneven terrain.</p> <p><u>AUXILIARY STABILIZER PADS</u></p> <p>An auxiliary ground pad shall be supplied for each stabilizer to provide additional load distribution on soft surfaces. The pads shall be 31" x 26" and made from lightweight composite material. The ground pressure shall not exceed 75 pounds per square inch when the ground pads are used and the apparatus is fully loaded and the aerial device is carrying its rated capacity in any position. The pads shall be stored in a double stacked configuration, two (2) behind each rear tandem axle in a single bracket.</p> <p><u>STABILIZER CONTROLS</u></p> <p>A portable stabilizer control box shall be provided. The control box shall be weatherproof and oil resistant. Each function and indicator light shall be labeled on a metal photo panel. The control box can be taken as far away as 15' from the vehicle with an extension cable.</p> <p>The stabilizer control box shall include the following:</p> <ul style="list-style-type: none"> - One (1) green power indicator light for stabilizer control that shall be illuminated when the aerial master and "PTO" switches in the cab are activated. - Four (4) electric toggle switches for stabilizers: each toggle switch shall control the extend/retract (front only) and raise/lower of its respective stabilizer to allow vehicle set up in restricted areas and/or on uneven surfaces. - Auto leveling assist switch: The outrigger control system shall incorporate a computerized self-leveling system in addition to the standard outrigger controls. The operator shall have the option to manually or automatically level the truck. The computerized system shall ensure full outrigger extension, proper jack penetration, and shall level the vehicle within 1/2 a degree of level for safe operation of the aerial device. 		

	Bidder Complies	
	Yes	No
<p>-One (1) electric toggle switch for the engaging the emergency power unit.</p> <p>- One (1) red "stabilizer not stowed" indicator light: this light shall illuminate when the stabilizers are not in the fully stowed position.</p> <p>- Two (2) fully extended beams green indicator lights: these lights shall be illuminated when each of the respective stabilizer beams are fully extended.</p> <p>- Four (4) firm on ground green indicator lights: each light shall be illuminated when its respective stabilizer shoe is in the load supporting condition.</p> <p>Each toggle switch shall activate the engine fast idle automatically.</p> <p>Manual override shall be supplied for each stabilizer control valve.</p> <p>A "Stabilizers Not Stowed" indicator shall be provided in the driver's compartment. It shall illuminate automatically whenever the stabilizers are not fully stowed to prevent damage to the apparatus if moved. The stabilizer system shall also be wired to the "Do Not Move Indicator Light", which shall flash whenever the apparatus parking brake is not fully engaged and the stabilizers are not fully stowed.</p> <p><u>CRADLE INTERLOCK SYSTEM</u></p> <p>A cradle interlock system shall be provided, to prevent the lifting of the aerial from the nested position, until the operator has positioned all the stabilizers in a load supporting configuration. A switch shall be installed at the cradle, to prevent operation of the stabilizers once the aerial has been elevated from the nested position.</p> <p><u>STABILITY ALARM</u></p> <p>An audible alarm shall be provided at the control console, to alert the operator should the stability limitations of the ladder be exceeded. The alarm shall only notify the operator of the condition, but in no way restrict further operation of the ladder. Two (2) amber strobe lights shall be located at the tip of the base section, one (1) each side, wired to the load gauge to indicate an unsafe condition.</p> <p><u>STABILIZER PINS</u></p> <p>The stabilizer jacks shall not have holes for the stabilizer pins.</p> <p><u>STABILIZER CONTROL BOX ALUMINUM DOOR</u></p> <p>A vertically hinged smooth aluminum door shall be provided over the stabilizer control box. The door shall be hinged outboard.</p>		

	Bidder Complies	
	Yes	No
<p><u>HYDRAULIC SYSTEM</u></p> <p>All hose assemblies shall be assembled and crimped by the hose manufacturers certified technician.</p> <p>All manufacturing employees responsible for the installation of hydraulic components shall be properly trained. Training shall include: proper handling, installation, torque requirements, cleanliness and quality control procedures for hydraulic components.</p> <p>Hoses used in the aerial hydraulic system shall be of a premium quality hose with a high abrasion resistant cover. All pressure hoses shall have a working pressure of 4000 psi and a burst pressure rating of 16,000 psi.</p> <p>All hydraulic fittings and tubing shall be plated to minimize corrosion.</p> <p>The fitting shall use an O-ring seal where possible to minimize hydraulic leaks.</p> <p>An interlock shall be provided that prevents activation of the hydraulic pump until the transmission is placed in neutral and the parking brake is set as outlined in the current NFPA 1901 standard.</p> <p>The system shall meet the performance requirement of the current NFPA 1901 standard, which requires adequate cooling less than 2.5 hours of operations.</p> <p>All hydraulic components that are non-sealing whose failure could result in the movement of the aerial shall comply with current NFPA 1901 standards and have burst strength of 4:1.</p> <p>Dynamic sealing components whose failure could cause aerial movement shall have a margin of 2:1 on maximum operating pressure per the current NFPA 1901 standard.</p> <p>All hydraulic hoses, tubes, and connections shall have a minimum burst strength of 4:1 per the current NFPA 1901 standard.</p> <p>A chassis mounted positive displacement piston pump for consistent pressure and rapid responses shall supply hydraulic power for all aerial operations. The positive displacement pump shall provide 3,150psi. The hydraulic pump shall be solely dedicated to aerial operations (no exception).</p> <p>Each aerial shall be evaluated as to the region and climate where it shall be used to determine the optimum viscosity and proper oil grade. Oil viscosity shall be based on an optimum range of 80 to 1000 SUS during normal aerial use. Before shipment of the unit, an oil sample shall be taken and analyzed to confirm the oil is within the allowable ISO grade tolerance.</p>		

	Bidder Complies	
	Yes	No
<p>The aerial hydraulic system shall have a minimum oil cleanliness level of ISO 18/15/13 based on the ISO 4406:1999 cleanliness standard. Each customer shall receive a certificate of actual cleanliness test results and an explanation of the rating system.</p> <p>Each aerial shall include an oil sample port, identified with a yellow dust cap and a label, for subsequent customer testing.</p> <p>Ball valves shall be provided in the hydraulic suction lines to permit component servicing without draining the oil reservoir.</p> <p>The aerial shall incorporate the use of trombone steel tubes inside the stabilizer beams to eliminate hydraulic hose wear and leaks.</p> <p>Hydraulic power to the ladder shall be transferred from the pedestal by a hydraulic swivel.</p> <p>The system hydraulic pressure shall be displayed on the turntable display.</p> <p>The hydraulic system shall be additionally protected from excessive pressure by a secondary pressure relief valve set at 3,150 psi. In the event the main hydraulic pump compensator malfunctions, the secondary relief shall prevent system damage.</p> <p><u>HYDRAULIC CYLINDERS</u></p> <p>All cylinders used on the aerial device shall be produced by a manufacturer that specializes in the manufacture of hydraulic cylinders.</p> <p>Each cylinder shall include integral safety holding cartridges. No manifold or transfer tube mounted cartridge shall be acceptable.</p> <p>Each cylinder shall be designed to a minimum safety factor of 4:1 to failure.</p> <p>All safety holding cartridges shall be installed at the cylinder manufacturer, in a controlled clean environment to avoid possible contamination and or failure.</p> <p><u>POWER TAKEOFF/HYDRAULIC PUMP</u></p> <p>The apparatus shall be equipped with a power takeoff driven by the chassis transmission and actuated by an electric shift, located inside the cab. The power takeoff which drives the hydraulic pump shall meet all the requirements for the aerial unit operations.</p> <p>Am amber indicator light shall be installed on the cab instrument panel to notify the operator that the power takeoff is engaged.</p> <p>An interlock shall be provided that allows operation of the aerial power takeoff shift only after the chassis spring brake has been set and the chassis transmission has either been placed in the neutral position or drive position after the driveline has been disengaged from the rear axle.</p>		

	Bidder Complies	
	Yes	No
<p>The hydraulic system shall be supplied by a variable displacement load and pressure compensating piston pump. The pump shall meet the demands of all three simultaneous aerial functions. The pump shall provide proper flow for single aerial function with the engine at idle speed. A switch shall be provided on the control console to increase the engine speed for multiple function operation.</p> <p><u>EMERGENCY PUMP</u></p> <p>The hydraulic system shall be designed with an auxiliary power unit meeting the guidelines of the current NFPA 1901 standard.</p> <p>The aerial shall be equipped with an emergency hydraulic pump, electrically driven from the truck batteries. The pump shall be capable of running for 30 minutes for limited aerial functions to stow the unit in case of a main pump or truck system failure. A momentary switch shall be located at the stabilizer and aerial control locations to activate the emergency pump.</p> <p><u>AERIAL CONTROL VALVE</u></p> <p>The aerial hydraulic control valve shall be designed with special spool flows, limiting the oil flow for the designed function speed. The valve shall be electrically controlled and be located in the control console with the handles oriented downward for manual operation. The activation handles shall be spaced a minimum of 3.50" for ease of operation. The valve spools shall be designed to bleed off downstream pressure, in the neutral position and allow proper sealing of any cylinder holding cartridge.</p> <p><u>OIL RESERVOIR</u></p> <p>The oil reservoir shall have a minimum capacity of 38 gallons. The oil fill location shall be easily accessible and be labeled "Hydraulic Oil Only" and also indicate the grade of oil that is installed in the reservoir. The fill shall have a desiccant breather filter with a water capacity of 4 fluid ounces and a 5 micron rating. A drain hose shall be included and shall terminate with a quarter turn ball valve.</p> <p>Two suction ports shall be provided, one for the main hydraulic pump and one for the emergency pump. The main suction shall be slightly elevated off the bottom of the reservoir and include a 100 mesh suction strainer. The emergency suction port shall be closer to the bottom of the reservoir to provide some reserve oil for emergency operation.</p> <p>A six (6) disc type magnetic drain shall also be provided to collect any ferrous contaminants.</p> <p>A float type sending unit in the reservoir shall provide an indication of oil level on an electronic display. A temperature sending unit in the reservoir shall provide indication of the oil temperature on an electronic display.</p> <p>The hydraulic oil reservoir shall be labeled per the current edition of NFPA 1901 standard.</p>		

	Bidder Complies	
	Yes	No
<p><u>RETURN FILTER</u></p> <p>The low pressure oil return filter shall be integrated with the hydraulic manifold and designed to prevent oil loss during filter change. A 50 psi bypass shall be included to protect the element and hydraulic system during lower than normal operating temperatures. The system shall incorporate the following filter to provide dependable service:</p> <ul style="list-style-type: none"> • return filter: beta 200 at 6 micron <p><u>HYDRAULIC SWIVEL</u></p> <p>The aerial ladder shall be equipped with a three (3) port, high pressure hydraulic swivel which shall connect the hydraulic lines from the hydraulic pump and reservoir through the rotation point to the aerial control bank. The hydraulic swivel shall allow for 360 degree continuous rotation of the aerial.</p> <p><u>ELECTRIC SWIVEL</u></p> <p>The ladder shall be equipped with an electric swivel to allow 360 degrees rotation of the aerial while connecting all electrical circuits through the rotation point. A minimum of 28 collector rings shall be provided that are capable of supplying 20 amp continuous service. All collector rings shall be enclosed and protected with desiccant plugs against condensation and corrosion. No oil or silicone shall be used.</p> <p><u>12-BIT ABSOLUTE ENCODER</u></p> <p>The aerial ladder shall be equipped with a 12-Bit Absolute Encoder which provides 4096 counts per shaft turn for position and direction reference.</p> <p>The 12-Bit Absolute Encoder shall provide a unique binary word to reference each position and direction for all 360 degrees of rotation.</p> <p>If the power is interrupted for any reason, the 12-Bit Absolute Encoder shall allow power to be returned to the system without having to re-zero the settings.</p> <p>The 12-Bit Absolute Encoder shall be an integral part of a micro-processor based control system.</p> <p><u>ELECTRICAL SYSTEM</u></p> <p>The 107' heavy duty ladder shall utilize a microprocessor-based control system. The system shall consist of the following components:</p> <p>A tethered stabilizer control shall be provided. The tethered control shall be weatherproof and oil resistant. A Super Bright LED indicator light shall be labeled on a metal photo panel for each function. The electrical connection at the tethered control shall be permanently attached by a strained relieved coil cord that shall allow the operator to move 14ft away from the electrical connection for operation.</p>		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • Remote Stabilizer Controls • Weatherproof and oil resistant • One (1) green "power" indicator light • One (1) red "stabilizer not stowed" indicator light • One (1) electric toggle switch for auto level assist • One (1) electric toggle switch for the emergency power unit • One (1) electric toggle switch for each stabilizer to control: <ul style="list-style-type: none"> • Extend/retract function (front only) • Raise/lower function • One (1) green "stabilizer fully extended" indicator light for each front stabilizer • One (1) green "firm on ground" indicator light for each stabilizer <p><u>Control System Modules</u></p> <p>Each of the control system modules shall be configured as follows:</p> <ul style="list-style-type: none"> • Sealed to a NEMA 4 rating • Operating range from -40 degrees F to 185 degrees F (-40 degrees C to 85 degrees C) • Communicate using J1939 data link • Two (2) diagnostic LED light • One (1) green light that illuminates when module has power (B+) and ground • One (1) red light that flashes to indicate the module is capable of communicating via the data link • Ground matrix identification system <p>The following control system modules shall be used:</p> <p>Control Module</p> <ul style="list-style-type: none"> • Main controller for the system • USB connection allows for computer diagnostics <p>Power Module</p> <ul style="list-style-type: none"> • Built-in fault sensing • Eight (8) digital outputs • Pulse width modulating (PWM) capable • 10A continuous per output • Circuit protection based on actual current draw (not affected by heat) 		

	Bidder Complies	
	Yes	No
<p>Constant Current Module</p> <ul style="list-style-type: none"> Built-in fault sensing Three (3) analog inputs Eight (8) digital outputs Pulse width modulating (PWM) capable 3A continuous per output Circuit protection based on actual current draw (not affected by heat) Closed Loop System <p>Input Module</p> <ul style="list-style-type: none"> 16 software selectable (digital or analog) inputs <p>Output Module</p> <ul style="list-style-type: none"> 16 digital outputs <p>Input/Output Module</p> <ul style="list-style-type: none"> Eight (8) software selectable (digital or analog) inputs Eight (8) digital outputs <p><u>AERIAL DEVICE LIGHTING</u></p> <p>There shall be white 12 volt DC halogen, spotlights furnished on the aerial device:</p> <ul style="list-style-type: none"> One (1) shall be installed on the right side of the base section of the ladder. One (1) shall be installed on the left side of the base section of the ladder. One (1) shall be installed on the right side at the end of the aerial device. One (1) shall be installed on the left side at the end of the aerial device. <p>Individual on/off switches shall be provided on each light.</p> <p>Power to the lights shall be controlled by a master on/off switch at the turntable control operator's position.</p> <p>The lights shall be mounted below the top edge of the aerial device so as not to increase the overall height of the unit.</p> <p><u>STABILIZER WARNING LIGHTS</u></p> <p>There shall be four (4) LED flashing warning lights with chrome flanges installed, one (1) on each stabilizer cover panel.</p> <ul style="list-style-type: none"> The front stabilizer pan lights shall be red LED with a clear lens 		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> The rear stabilizer pan lights shall be red LED with a clear lens <p>These warning lights shall be activated by the same switch as the side warning lights.</p> <p><u>STABILIZER BEAM WARNING LIGHTS</u></p> <p>There shall be two (2) 2.00" round red LED flashing lights mounted on each out and down stabilizer, one (1) facing forward and one (1) facing rearward.</p> <p>The lights shall be recessed in the horizontal beam of the stabilizer.</p> <p>These warning lights shall be activated with the aerial master switch.</p> <p><u>STABILIZER SCENE LIGHTS</u></p> <p>There shall be one (1) 4.00" incandescent, scene light installed under each stabilizer beam to illuminate the surrounding area. A total of four (4) lights shall be installed. These lights shall be activated by the aerial master switch.</p> <p><u>2-WAY AERIAL COMMUNICATION SYSTEM</u></p> <p>There shall be a two-way intercom system provided. The control module shall be located on the turntable operator console, provided there is room, and have an LED volume display and push-button volume control.</p> <p>A hands free module shall be located at the aerial tip or platform and constantly transmit to the other module unless the control module push-to-talk button is pressed.</p> <p>Each intercom unit shall be weatherproof.</p> <p><u>RAISED AERIAL PEDESTAL</u></p> <p>The aerial pedestal shall be raised to accommodate the height of the cab.</p> <p><u>LIFTING EYE ASSEMBLY - ROPE RESCUE ATTACHMENT</u></p> <p>A lifting eye assembly shall be provided that is designed to evenly distribute load at the tip of the aerial. The lift eye assembly is retained by two (2) locking pins, one (1) at each end outboard side of the egress. Leveling is maintained by the lifting eye assembly rotating within the egress mounting.</p> <p><u>AERIAL TURNTABLE SAFETY BARS</u></p> <p>Safety bars shall be installed at the aerial turntable.</p> <p><u>WATER SYSTEM</u></p> <p>A waterway system shall be provided consisting of the following components and features:</p>		

	Bidder Complies	
	Yes	No
<p>A 5.00" pipe shall be connected to the water supply on one end and to a 5.00" internal diameter water swivel at the rotation point of the turntable. The water swivel shall permit 360 degree continuous rotation of the aerial device.</p> <p>The 5.00" waterway swivel is to be routed through the rotation point up to the heel pin swivel. The heel pin swivel shall allow the water to flow to the ladder pipe while elevating the aerial ladder from -10 degrees to 77 degrees. The heel pivot pin is not integral with the waterway swivel at any point. The design of the waterway shall allow complete servicing of the waterway swivel without disturbing the heel pivot pin.</p> <p>The integral telescopic water system shall consist of a 4.50" diameter tube in the base section, a 4.00" diameter tube in the mid-section and a 3.50" diameter tube in the fly section. The telescopic waterway shall be constructed of anodized aluminum pipe.</p> <p>The aerial shall be capable of discharging up to 1000 gpm at 100 psi parallel to the ladder and 90 degrees to each side of center while maintaining the 500lb tip load.</p> <p>The aerial shall be capable of discharging between 1001 and up to 1500 gallons per minute at 100 psi parallel to the ladder and 40 degrees to each side of center while maintaining the 500lb tip load.</p> <p>When the aerial device is positioned at -10 to 0 degrees of elevation, the master stream shall be capable of flow up to 30 degrees above horizontal.</p> <p>An adjustable pressure relief valve shall be furnished to protect the aerial waterway from a pressure surge.</p> <p>A 1.50" drain valve shall be located at the lowest point of the waterway system.</p> <p><u>WATERWAY SEALS</u></p> <p>The waterway seals shall be of type-B PolyPak design, composed of nitroxile seal and a nitrile wiper, which together offer maximum stability and extrusion resistance on the waterway. The seal shall be capable of withstanding pressures up to 2000 psi, temperatures in excess of 250 degrees Fahrenheit and have resistance to all foam generating solutions. The seals shall be internally lubricated.</p> <p>The waterway seals shall have automatic centering guides constructed of synthetic thermalpolymer. The guides shall provide positive centering of the extendible sections within each other and the base section to insure longer service life and smoother operation.</p>		

	Bidder Complies	
	Yes	No
<p><u>AERIAL MONITOR</u></p> <p>A monitor with stow and deploy shall be provided at the tip with a Akron 1500 gpm Model 5178. This monitor shall allow for an additional 30 degrees of travel above horizontal at the aerial tip.</p> <p>The monitor's functions shall be controlled electrically from two (2) separate locations. One (1) control shall be located at the control console and the other at the ladder tip.</p> <p>There shall be a courtesy light at the tip of the aerial to illuminate the controls.</p> <p>If the aerial has a quick-lock waterway, a limit switch shall be provided to disable the extended vertical travel when the monitor is locked to the lower ladder section.</p> <p><u>AERIAL WATERWAY FLOW METER</u></p> <p>Waterway flow, including total water flowed, shall be monitored by the microprocessor. An LCD display shall be located at the turntable control station.</p> <p><u>REAR INLET</u></p> <p>A 5.00" NST inlet to the aerial waterway shall be provided at the rear of the apparatus. It shall be furnished with a 5.00" chrome plated adapter and a 5.00" chrome plated, long handle cap.</p> <p><u>WATERWAY LOCKING SYSTEM</u></p> <p>The aerial ladder waterway monitor shall be capable of being positioned at either the fly section or at the next lower section of the ladder.</p> <p>The monitor location shall be changeable by the use of a single handle, located at the side of the ladder.</p> <p>The handle, attached to a cam bracket, shall simply be moved forward to lock the monitor at the fly section and back to lock it to the previous section.</p> <p>There shall be no pins to remove and reinstall.</p> <p>The monitor shall be operational at all times, regardless of its position, without connecting or disconnecting electrical lines.</p> <p><u>TOOLS</u></p> <p>The following tools shall be provided for retorquing of all specified bolts as recommended by the manufacturer:</p> <p>Torque Wrench</p> <p>All Required Extensions, Sockets and Adapters</p>		

	Bidder Complies	
	Yes	No
<p>4-to-1 Multiplier</p> <p><u>MANUALS</u> Two (2) operator maintenance manuals and two (2) wiring diagrams pertaining to the aerial device shall be provided with the apparatus at time of pick-up.</p> <p><u>INITIAL INSTRUCTION</u> On initial delivery of the fire apparatus, the contractor shall supply a qualified representative to demonstrate the apparatus and provide initial instruction to the fire department regarding the operation, care, and maintenance of the apparatus for a period of three (3) days.</p> <p><u>LOOSE EQUIPMENT</u> The following equipment shall be furnished with the completed unit:</p> <p>- One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit</p> <p><u>NFPA REQUIRED LOOSE EQUIPMENT PROVIDED BY FIRE DEPARTMENT</u> The following loose equipment as outlined in NFPA 1901, 2016 edition, section 9.9.3 and 9.9.4 shall be provided by the fire department.</p> <ul style="list-style-type: none"> • 800 ft (240 m) of 2.50" (65 mm) or larger fire hose, in any combination. • 400 ft (120 m) of 1.50" (38 mm), 1.75" (45 mm), or 2.00" (52 mm) fire hose, in any combination. • One (1) handline nozzle, 200 gpm (750 L/min) minimum. • Two (2) handline nozzles, 95 gpm (360 L/min) minimum. • One (1) playpipe with shutoff and 1.00" (25 mm), 1.125" (29 mm), and 1.25" (32 mm) tips. • 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) salvage covers, each a minimum size of 12 ft × 14 ft (3.6 m × 5.5 m). • 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. • Four (4) ladder belts meeting the requirements of NFPA 1983. 		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • One (1) 150 ft (45 m) light-use life safety rope meeting the requirements of NFPA 1983. • One (1) 150 ft (45 m) general-use life safety rope meeting the requirements of NFPA 1983. • One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, <i>Standard for High Visibility Public Safety Vests</i>, 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). • 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 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. <p><u>SOFT SUCTION HOSE</u> There shall be a 15' length of 6.00" soft suction hose provided with a 6.00" long handle swivel coupling on one (1) end and a 4.50" long handle swivel coupling on the other.</p> <p><u>DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT</u> NFPA 1901, 2016 edition, section 9.9.4 requires one (1) approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus.</p> <p>The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher.</p>		

	Bidder Complies	
	Yes	No
<p><u>WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT</u></p> <p>NFPA 1901, 2016 edition, section 9.9.4 requires one (1) 2.5 gallon or larger water extinguisher mounted in a bracket fastened to the apparatus.</p> <p>The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher.</p> <p><u>FLATHEAD AXE PROVIDED BY FIRE DEPARTMENT</u></p> <p>NFPA 1901, 2016 edition, Section 9.9.4 requires one (1) flathead axe mounted in a bracket fastened to the apparatus.</p> <p>The axe is not on the apparatus as manufactured. The fire department shall provide and mount the axe.</p> <p><u>PICKHEAD AXE PROVIDED BY FIRE DEPARTMENT</u></p> <p>NFPA 1901, 2016 edition, Section 9.9.4 requires one (1) pickhead axe mounted in a bracket fastened to the apparatus.</p> <p>The axe is not on the apparatus as manufactured. The fire department shall provide and mount the axe.</p> <p><u>PAINT</u></p> <p>The exterior custom cab and body painting procedure shall consist of a seven (7) step finishing process as follows:</p> <ol style="list-style-type: none"> 1. <u>Manual Surface Preparation</u> - 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. <u>Chemical Cleaning and Pretreatment</u> - 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. <u>Surfacer Primer</u> - The Surfacer Primer shall be applied to a chemically treated metal surface to provide a strong corrosion protective basecoat. A minimum thickness of 2 mils of Surfacer Primer is applied to surfaces that require a Critical aesthetic finish. The Surfacer Primer is a two-component high solids urethane that has excellent sanding properties and an extra smooth finish when sanded. 		

	Bidder Complies	
	Yes	No
<p>4. <u>Finish Sanding</u> - 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.</p> <p>5. <u>Sealer Primer</u> - The Sealer Primer is applied prior to the Basecoat in all areas that 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 topcoated.</p> <p>6. <u>Basecoat Paint</u> - Two coats of a high performance, two component high solids polyurethane basecoat shall be applied. The Basecoat shall be applied to a thickness that shall achieve the proper color match. The Basecoat shall be used in conjunction with a urethane clear coat to provide protection from the environment.</p> <p>7. <u>Clear Coat</u> - Two (2) coats of Clear Coat shall be applied over the Basecoat color. The Clear Coat is a two-component high solids urethane that provides superior gloss and durability to the exterior surfaces. Lap style and roll-up doors shall be Clear Coated to match the body. Paint warranty for the roll-up doors shall be provided by the roll-up door manufacture.</p> <p>Each batch of basecoat 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 shall 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 shall be used to determine the color match. A Delta E reading shall be used to determine a good color match within each family color.</p> <p>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.</p> <p>The paint finish quality levels for critical areas of the apparatus (cab front and sides, body sides and doors, and boom lettering panels) are to meet or exceed Cadillac/General Motors GMW15777 global paint requirements. Orange peel levels are to meet or exceed the #6 A.C.T.standard in critical areas. These requirements must be met in order for the exterior paint finish to be considered acceptable. The manufacture's written paint standards shall be available upon request.</p> <p>The cab shall be two-tone, with the upper section painted #20 white along with a shield design on the cab face and lower section of the cab and body painted #90 red.</p>		

Bidder Complies	
Yes	No

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.
- 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 are disposed of in an environmentally safe manner.
- Empty metal paint containers shall be 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 his State EPA rules and regulations.

PAINT CHASSIS FRAME ASSEMBLY

The chassis frame assembly shall be painted black 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 painted are:

- Frame rails
- Frame liners
- Cross members
- Axles
- Suspensions
- Steering gear
- Battery boxes
- Bumper extension weldment

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • Frame extensions • Body mounting angles • Rear Body support substructure (front and rear) • Pump house substructure • Air tanks • Fuel tank • Castings • Individual piece parts used in chassis and body assembly <p>Components treated with epoxy E-coat protection prior to paint:</p> <ul style="list-style-type: none"> • Two (2) C-channel frame rails • Two (2) frame liners <p><u>AERIAL DEVICE BOOM SUPPORT PAINT</u> The aerial device boom support shall be painted black 101.</p> <p><u>COMPARTMENT INTERIOR PAINT</u> The interior of compartmentation shall be painted with a gray spatter type paint.</p> <p><u>AERIAL DEVICE PAINT COLOR</u> The aerial device paint procedure shall consist of a six (6) step finishing process as follows:</p> <ol style="list-style-type: none"> 1. <u>Manual Surface Preparation</u> - All exposed metal surfaces on the aerial device structural components above the rotation point shall be thoroughly cleaned and mechanically shot-blasted to remove metal impurities and prepare the aerial for painting. 2. <u>Primer/Surfacer Coats</u> - A two (2) component urethane primer/surfacer shall be hand applied to the chemically treated metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface. All seams shall be caulked before painting. 3. <u>Hand Sanding</u> - The primer/surfacer coat shall be lightly sanded to an ultra-smooth finish. 4. <u>Sealer Primer Coat</u> - A two (2) component sealer primer coat shall be applied over the sanded primer. 5. <u>Topcoat Paint</u> - Urethane base coat shall be applied to opacity for correct color matching. 6. <u>Clearcoat</u> - Two (2) coats of an automotive grade two (2) component urethane shall be applied. <p>Surfaces that shall not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum treadplate.</p>		

	Bidder Complies	
	Yes	No
<p>All buy out components, such as monitor, nozzle, gauges, etc. shall be supplied as received from the vendor.</p> <p>Removable items such as brackets shall be removed and painted separately to ensure paint coverage behind all mounted items.</p> <p>The aerial device (turntable and ladder sections) be painted white 10 using the six (6) step finishing process. The support structure, rotation motor, components below the rotation point and the stabilizers shall be cleaned, caulked, primed and painted high gloss black.</p> <p>The stabilizer beams and torque box shall be treated with epoxy E-coat prior to painting to help provide resistance to corrosion and chemicals.</p> <p>The tip of the ladder shall be painted a contrasting color for high visibility.</p> <p><u>REFLECTIVE BAND</u></p> <p>A 10.00" white reflective band shall be provided across the front of the vehicle and along the sides of the body.</p> <p>The reflective band provided on the cab face shall be at the headlight level.</p> <p><u>REAR CHEVRON STRIPING</u></p> <p>There shall be alternating chevron striping located on the rear-facing vertical surface of the apparatus. Covered surfaces shall include the rear wall and aluminum doors. Rear compartment doors, stainless steel access doors, and the rear bumper shall not be covered.</p> <p>The colors shall be red and fluorescent yellow green diamond grade.</p> <p>Each stripe shall be 6.00" in width.</p> <p>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.</p> <p><u>REFLECTIVE STRIPE ON STABILIZERS</u></p> <p>There shall be a 4.00" wide fluorescent yellow green diamond grade reflective stripe provided on the forward and rear facing side of all aerial stabilizers.</p> <p><u>CAB DOOR REFLECTIVE STRIPE</u></p> <p>A 6.00" x 16.00" white 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.</p> <p>This stripe shall meet the NFPA 1901 requirement.</p>		

	Bidder Complies	
	Yes	No
<p><u>LETTERING</u> The lettering shall be totally encapsulated between two (2) layers of clear vinyl.</p> <p><u>LETTERING</u> Forty-one (41) to sixty (60) genuine gold leaf lettering, 3.00" high, with outline and shade shall be provided.</p> <p><u>FIRE APPARATUS PARTS CD MANUAL</u> There shall be two (2) custom parts manuals for the complete fire apparatus provided in CD format with the completed unit.</p> <p>The manuals shall contain the following:</p> <ul style="list-style-type: none"> • Job number • Part numbers with full descriptions • 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 <p>The manuals 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.</p> <p><u>SERVICE PARTS INTERNET SITE</u> 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.</p> <p><u>CHASSIS SERVICE CD MANUALS</u> There shall be two (2) CD format chassis service manuals containing parts and service information on major components provided with the completed unit.</p> <p>The manual shall contain the following sections:</p> <ul style="list-style-type: none"> • Job number • Table of contents • Troubleshooting • Front Axle/Suspension • Brakes • EngineTires 		

	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> • Wheels • Cab • Electrical, DC • Air Systems • Plumbing • Appendix <p>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.</p> <p><u>CHASSIS OPERATION CD MANUALS</u> There shall be two (2) CD format chassis operation manuals provided.</p> <p><u>ONE (1) YEAR MATERIAL AND WORKMANSHIP</u> 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.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>ENGINE WARRANTY</u> A five (5) year limited engine warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package.</p> <p><u>STEERING GEAR WARRANTY</u> A three (3) year limited steering gear warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package.</p> <p><u>FIFTY (50) YEAR STRUCTURAL INTEGRITY</u> 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.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY</u> Independent front suspension shall be provided with a three (3) year material and workmanship limited warranty. The manufacturer's warranty shall provide that the independent front suspension and steering gears be free from any defect related to material and workmanship on the portion of the apparatus built by the manufacturer that would arise under normal use and</p>		

	Bidder Complies	
	Yes	No
<p>service. A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>REAR AXLE TWO (2) YEAR MATERIAL AND WORKMANSHIP WARRANTY</u> A two (2) year axle limited warranty shall be provided.</p> <p><u>BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY</u> A three (3) year brake system limited warranty shall be provided.</p> <p><u>TEN (10) YEAR STRUCTURAL INTEGRITY</u> 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.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>TEN (10) YEAR PRO-RATED PAINT AND CORROSION</u> 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.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>COMPARTMENT LIGHT WARRANTY</u> A ten (10) year material and workmanship limited warranty shall be provided for the Pierce 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.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>TRANSMISSION WARRANTY</u> The transmission shall have a five (5) year/unlimited mileage warranty covering 100 percent parts and labor. The warranty is to be provided by transmission supplier and not the apparatus builder.</p> <p><u>TRANSMISSION COOLER WARRANTY</u> 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.</p>		

	Bidder Complies	
	Yes	No
<p><u>WATER TANK WARRANTY</u></p> <p>The poly water tank shall be provided with a lifetime material and workmanship limited warranty.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>TEN (10) YEAR STRUCTURAL INTEGRITY</u></p> <p>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.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY</u></p> <p>A 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.</p> <p>A copy of the warranty certificate shall be submitted with the bid package.</p> <p><u>SIX (6) YEAR PARTS, ONE (1) YEAR LABOR</u></p> <p>The pump and its components shall be provided with a six (6) year parts and one (1) year labor limited warranty. The manufacturer's warranty shall provide that the pump and its components shall be free from failures caused by defects in material and workmanship that would arise under normal use and service.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>TEN (10) YEAR PUMP PLUMBING WARRANTY</u></p> <p>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.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>TWENTY (20) YEAR AERIAL DEVICE STRUCTURAL INTEGRITY WARRANTY</u></p> <p>The aerial device shall be provided with a twenty (20) year 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</p>		

	Bidder Complies	
	Yes	No
<p>service. This warranty shall be limited to the torque box, turntable, aerial sections and other structural components.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>AERIAL SWIVEL WARRANTY</u></p> <p>A five (5) year limited swivel warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>HYDRAULIC SYSTEM COMPONENTS WARRANTY</u></p> <p>Aerial hydraulic system components shall be provided with a five (5) year material and workmanship limited warranty.</p> <p><u>HYDRAULIC SEAL WARRANTY</u></p> <p>Aerial hydraulic seals shall be provided with a three (3) year material and workmanship limited warranty.</p> <p>A copy of the warranty certificates shall be submitted with the bid package (no exception).</p> <p><u>AERIAL WATERWAY WARRANTY</u></p> <p>A ten (10) year limited waterway warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>FOUR (4) YEAR PRO-RATED PAINT AND CORROSION</u></p> <p>The aerial device shall be provided with a four (4) year pro-rated paint and corrosion limited warranty. The warranty shall cover exterior painted surfaces of the aerial device 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.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>TEN (10) YEAR PRO-RATED PAINT AND CORROSION</u></p> <p>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 arise under normal use and service.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p>		

	Bidder Complies	
	Yes	No
<p><u>THREE (3) YEAR MATERIAL AND WORKMANSHIP</u></p> <p>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.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>VEHICLE STABILITY CERTIFICATION</u></p> <p>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.</p> <p><u>ENGINE INSTALLATION CERTIFICATION</u></p> <p>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.</p> <p><u>POWER STEERING CERTIFICATION</u></p> <p>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.</p> <p><u>CAB INTEGRITY CERTIFICATION</u></p> <p>The fire apparatus manufacturer shall provide a cab crash test certification with this proposal. Testing shall meet or exceed the requirements below:</p> <ul style="list-style-type: none"> - 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. <p>There shall be no exception to any portion of the cab integrity certification. Nonconformance shall lead to immediate rejection of bid.</p> <p><u>CAB DOOR DURABILITY CERTIFICATION</u></p> <p>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.</p>		

	Bidder Complies	
	Yes	No
<p><u>WINDSHIELD WIPER DURABILITY CERTIFICATION</u></p> <p>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 <i>Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles</i>. The bidder shall certify that the wiper system design has been tested and that the wiper system has met these criteria.</p> <p><u>SEAT BELT ANCHOR STRENGTH</u></p> <p>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.</p> <p><u>SEAT MOUNTING STRENGTH</u></p> <p>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 time of delivery, that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.</p> <p><u>CAB DEFROSTER CERTIFICATION</u></p> <p>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.</p> <p><u>CAB HEATER CERTIFICATION</u></p> <p>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.</p> <p><u>CAB AIR CONDITIONING PERFORMANCE CERTIFICATION</u></p> <p>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.</p>		

Bidder Complies	
Yes	No

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:
 - The nameplate rating of the alternator.
 - The alternator rating under the conditions specified per:
 - Applicable NFPA 1901 or 1906 (Current Edition).
 - The minimum continuous load of each component that is specified per:
 - Applicable NFPA 1901 or 1906 (Current Edition).
 - Additional loads that, when added to the minimum continuous load, determine the total connected load.
 - Each individual intermittent load.

All of the above listed items shall be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).