

Northshore Fire Department
1500 GPM SINGLE STAGE PUMPER
KING COUNTY FIRE DISTRICT #16
Specifications - September 11, 2019

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		Bidder Complies	
		Yes	No
<p style="text-align: center;"><u>SPECIFICATIONS FOR A TRIPLE COMBINATION PUMPER</u></p> <p>Sealed bids will be received by King County Fire District 16 - Northshore Fire Department for the furnishing of all necessary labor, equipment and material for the Fire Apparatus and other equipment as outlined in the following specifications.</p> <p><u>INTENT OF SPECIFICATIONS</u></p> <p>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.</p> <p>Images and illustrative material in this specification are as accurate as known at the time of publication, but are subject to change without notice. Images and illustrative material is for reference only, and may include optional equipment and accessories and may not include all standard equipment.</p> <p><u>INSTRUCTIONS TO BIDDERS</u></p> <p>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.</p> <p>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 15 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).</p> <p>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.</p> <p>Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified.</p> <p>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).</p> <p>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</p>			

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	Yes	No
<p>though written on company letterhead, shall not be sufficient. An exception to this requirement shall not be acceptable.</p> <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>		

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	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 ten (10) 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> <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>		

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	Yes	No
<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 drivers compartment which specifies the quantity and type of fluid required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.</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>		
<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>		

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	Yes	No
<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. The service center must be within fifty (50) miles of the Fire Department.</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> <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>		

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<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.</p> <p><u>INSURANCE PROVIDED BY BIDDER</u></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>Each Occurrence\$1,000,000</p> <p>Products/Completed Operations Aggregate\$1,000,000</p> <p>Personal and Advertising Injury\$1,000,000</p> <p>General Aggregate\$2,000,000</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 and coverage shall be written on a Commercial Automobile liability form:</p> <p>Each Accident Combined Single Limit:\$1,000,000</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>Aggregate:\$3,000,000</p> <p>Each Occurrence:\$3,000,000</p> <p>The umbrella policy shall be written on an occurrence basis and at a minimum provide excess to the bidder's General Liability and Automobile Liability policies.</p>		

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<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. Best.</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.</p> <p>Bidder agrees to furnish owner with a current Certificate of Insurance with the coverages listed above along with the bid. The certificate shall show the purchaser as certificate holder.</p> <p><u>INSURANCE PROVIDED BY MANUFACTURER</u></p> <p><u>PRODUCT LIABILITY INSURANCE</u></p> <p>The manufacturer shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of Product Liability insurance:</p> <p>Each Occurrence\$1,000,000</p> <p>Products/Completed Operations Aggregate\$1,000,000</p> <p>Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form. The manufacturer's policy shall include the owner as additional insured when required by written contract between the Owner and a Manufacturer authorized dealer.</p> <p><u>UMBRELLA/EXCESS LIABILITY INSURANCE</u></p> <p>The manufacturer shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:</p> <p>Each Occurrence:\$25,000,000</p> <p>Aggregate:\$25,000,000</p> <p>The umbrella policy shall be written on an occurrence basis and provide excess to the manufacturer's General Liability/Products 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. Best.</p>		

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		Yes	No
<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.</p> <p>Manufacturer agrees to furnish owner with a current Certificate of Insurance with the coverages listed above along with the bid. The certificate shall show the purchaser as the certificate holder.</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> <p><u>PERFORMANCE BOND</u></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</p>			

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	Yes	No
the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision shall prevail.		
<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 operator's panel) and body being designed, fabricated and assembled on the bidder's premises. The electrical system (hardwire or multiplex) shall be both designed and integrated by the same apparatus manufacturer. The warranties relative to these major components (excluding component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body, pump house, cab weldment and chassis). 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> <p><u>SPECIAL INSTRUCTIONS</u></p> <p>The apparatus being proposed shall be designed and built to match the department's previous Pierce pumper. However, some variation may be necessary due to changes in manufacturing processes or product offering. Revisions in NFPA guidelines and/or other regulations may also affect the ability to match the previous unit.</p> <p><u>NFPA 2016 STANDARDS</u></p> <p>This unit shall comply with the NFPA standards effective January 1, 2016, except for fire department specifications that differ from NFPA specifications. These exceptions shall be set forth in the Statement of Exceptions.</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>		

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	Yes	No
<p>An official of the company shall designate, in writing, who is qualified to witness and certify test results.</p> <p><u>NFPA COMPLIANCY</u> Apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications shall be indicated in the proposal as "non-NFPA".</p> <p><u>VEHICLE INSPECTION PROGRAM CERTIFICATION</u> To assure the vehicle is built to current NFPA 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 NFPA 1901. 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> <p><u>PUMP TEST</u> Underwriters Laboratory (UL) will test, approved, and certify the pump. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the pump manufacturer's record of pump construction details will be forwarded to the Fire Department.</p> <p><u>INSPECTION TRIP(S)</u> The bidder shall provide three (3) factory inspection trip(s) for three (3) customer representative(s). The inspection trip(s) shall be scheduled at times mutually agreed upon between the manufacturer's representative and the customer. All costs such as travel, lodging and meals shall be the responsibility of the bidder.</p> <p><u>TABLE OF CONTENTS</u> A table of contents shall be provided with all proposals, for ease in locating items which shall be provided by the bidder.</p> <p><u>APPROVAL DRAWING</u> 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>		

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		Yes	No
<u>DRAWING, CAB TOP VIEW</u>			
On the sales drawing a top view of the cab seating shall be provided. The top view shall be a reference only of the seating in the order.			
<u>DRAWING, RIGHT PUMP PANEL</u>			
A detailed drawing to scale of the right pump panel shall be provided for approval prior to construction. This drawing shall include all of the items located on the left pump panel.			
<u>DRAWING, PRELIMINARY LAYOUT, PUMP OPERATOR'S PANEL</u>			
A detailed drawing, to scale, of the pump operator's panel shall be provided for the purpose of illustrating the drawing of configuration that was done previously. However, some variation may be necessary due to changes in our manufacturing processes or our product offerings. Revisions to NFPA guidelines and/or regulations may also affect our ability to match the previous unit.			
The pump panel drawing provided shall match Northshore's current Pierce pumper as closely as possible.			
<u>PUMP OPERATOR'S PANEL DRAWING</u>			
A detailed drawing to scale of the pump operator's panel shall be provided for approval prior to construction. This drawing shall include all of the gauges and controls located on the pump operator's panel.			
This is a multiple unit order, and the customer shall receive one (1) hard copy drawing total for all the units.			
<u>ELECTRICAL WIRING DIAGRAMS</u>			
Two (2) electrical wiring diagrams, prepared for the model of chassis and body, shall be provided.			
<u>CHASSIS</u>			
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.			
<u>WHEELBASE</u>			
The wheelbase of the vehicle shall be no greater than 187.50.			
<u>GVW RATING</u>			
The gross vehicle weight rating shall be a minimum of 43,500.			
<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".			

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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><u>FRAME REINFORCEMENT</u></p> <p>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></p> <p>The front axle shall be of the independent suspension design with a ground rating of 19,500 lb.</p> <p>Upper and lower control arms shall be used on each side of the axle. Upper control arm castings shall be made of 100,000-psi yield strength 8630 steel and the lower control arm casting shall be made of 55,000-psi yield ductile iron.</p> <p>The center cross members and side plates shall be constructed out of 80,000-psi yield strength steel.</p> <p>Each control arm shall be mounted to the center section using elastomer bushings. These rubber bushings shall rotate on low friction plain bearings and be lubricated for life. Each bushing shall also have a flange end to absorb longitudinal impact loads, reducing noise and vibrations.</p> <p>There shall be nine (9) grease fittings supplied, one (1) on each control arm pivot and one (1) on the steering gear extension.</p> <p>The upper control arm shall be shorter than the lower arm so that wheel end geometry provides positive camber when deflected below rated load and negative camber above rated load.</p> <p>Camber at load shall be zero degrees for optimum tire life.</p> <p>The ball joint bearing shall be of low friction design and be maintenance free.</p> <p>Toe links that are adjustable for alignment of the wheel to the center of the chassis shall be provided.</p> <p>The wheel ends must have little to no bump steer when the chassis encounters a hole or obstacle.</p> <p>The steering linkage shall provide proper steering angles for the inside and outside wheel, based on the vehicle wheelbase.</p> <p>The axle shall have a third party certified turning angle of 45 degrees. Front discharge, front suction, or aluminum wheels shall not infringe on this cramp angle.</p>		

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<p><u>FRONT SUSPENSION</u></p> <p>An independent front suspension shall be provided with a minimum ground rating of 19,500 lb.</p> <p>The independent suspension system shall be designed to provide maximum ride comfort. The design shall allow the vehicle to travel at highway speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicle's crew compartment.</p> <p>Each wheel shall have a torsion bar type spring. In addition, each front wheel end shall also have energy absorbing jounce bumpers to prevent bottoming of the suspension.</p> <p>The suspension design shall be such that there is at least 10.00" of total wheel travel and a minimum of 3.75" before suspension bottoms.</p> <p>The torsion bar anchor lock system allows for simple lean adjustments, without the use of shims. One can adjust for a lean within 15 minutes per side. Anchor adjustment design is such that it allows for ride height adjustment on each side.</p> <p>The independent suspension shall have been put through a durability test that simulated a minimum of 140,000 miles of inner city driving.</p> <p><u>FRONT SHOCK ABSORBERS</u></p> <p>KONI heavy-duty telescoping shock absorbers shall be provided on the front suspension.</p> <p><u>FRONT OIL SEALS</u></p> <p>Oil seals with viewing window shall be provided on the front axle.</p> <p><u>FRONT TIRES</u></p> <p>Front tires shall be Michelin 425/65R22.50 radials, load range L, XZY3 wide base tread, rated for 22,800 lb. maximum axle load and 75 mph maximum speed.</p> <p>The tires shall be mounted on Alcoa 22.50" x 12.25" polished aluminum disc type wheels with a ten (10)stud, 11.25" bolt circle.</p> <p><u>REAR AXLE</u></p> <p>The rear axle shall be a Meritor™, Model RS-23-186, with a capacity of 24,000 lb.</p> <p><u>TOP SPEED OF VEHICLE</u></p> <p>A rear axle ratio shall be furnished to allow the vehicle to reach a top speed of 68 mph.</p> <p><u>REAR SUSPENSION</u></p> <p>The rear suspension shall be Standens, semi-elliptical, 3.00" wide x 53.00" long, 12-leaf pack with a ground rating of 24,000 lb. The spring hangers shall be castings.</p> <p>The two (2) top leaves shall wrap the forward spring hanger pin, and the rear of the spring shall be a slipper style end that shall ride in a rear slipper hanger. To reduce bending stress due to</p>		

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<p>acceleration and braking, the front eye shall be a berlin eye that shall place the front spring pin in the horizontal plane within the main leaf.</p> <p>A steel encased rubber bushing shall be used in the spring eye. The steel encased rubber bushing shall be maintenance free and require no lubrication.</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 four (4) Michelin 12R22.50 radials, 16 ply all season XDN2 tread, rated for 27,120 lb. maximum axle load and 75 mph maximum speed.</p> <p>The tires shall be mounted on Alcoa 22.50" x 8.25" polished aluminum disc wheels with a ten (10) stud 11.25" bolt circle.</p> <p><u>TIRE BALANCE</u> All tires shall be dynamically balanced with wheel weights.</p> <p><u>TIRE PRESSURE MANAGEMENT</u> There shall be a tire pressure management system provided that shall monitor each tires pressure and temperature. A 2.00" gauge located in the cab instrument panel shall indicate each tires position, pressure and temperature. A wireless sensor shall be mounted to each wheel for a total of six (6) sensors.</p> <p>The system shall have three (3) alert levels:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Critical Low Pressure Alert <input type="checkbox"/> Pressure Deviation Alert <input type="checkbox"/> High Temperature Alert <p>Each alert shall trigger an audible alarm and an indicator light within the gauge to signal the driver of the problem</p> <p>The system shall be covered by a five (5) year parts and labor warranty. Please see warranty document for details.</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> A pair of stainless steel high hat hub covers shall be provided on rear axle hubs.</p> <p><u>CHROME LUG NUT COVERS</u> Chrome lug nut covers shall be supplied on front and rear wheels.</p>		

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	Bidder Complies	
	Yes	No
<p><u>MUD FLAPS</u></p> <p>Mud flaps shall be installed behind the front and rear wheels of the apparatus.</p> <p><u>AUTOMATIC TIRE CHAINS</u></p> <p>One (1) pair of ONSPOT automatic tire chains shall be provided at the rear. System shall be electric over air operated with switch on cab instrument panel. System to be operable at speeds up to 35 mph.</p> <p><u>WHEEL CHOCKS</u></p> <p>There shall be one (1) pair of folding Ziamatic, Model SAC-44-E, aluminum alloy, Quick-Choc wheel blocks with easy-grip handle provided.</p> <p><u>WHEEL CHOCK BRACKETS</u></p> <p>There shall be one (1) pair of Zico, Model SQCH-44-H, horizontal mounting wheel chock brackets provided for the Ziamatic, Model SAC-44-E, 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 below compartment LS3.</p> <p><u>AUTOMTIC TRACTION CONTROL</u></p> <p>An anti-slip feature shall be included with the ABS. The Automatic Traction Control shall be used for traction in poor road and weather conditions. The Automatic Traction Control shall act as an electronic differential lock that shall not allow a driving wheel to spin, thereby supplying traction at all times. The ABS electronic control unit (ECU) shall work with the engine ECU, sharing information concerning wheel slip. Engine ECU shall use information to control engine speed, allowing only as much throttle application as required for the available traction, regardless of how much the driver is asking for. A "mud/snow" switch shall be provided on the instrument panel. Activation of the switch shall allow additional tire slip to let the truck climb out and get on top of deep snow or mud.</p> <p><u>ELECTRONIC STABILITY CONTROL</u></p> <p>A vehicle control system shall be provided as an integral part of the ABS brake system from Meritor Wabco.</p> <p>The system shall monitor and update the lateral acceleration (cornering) of the vehicle and compare it to a critical threshold where a side roll event may occur. If the critical threshold is met, the vehicle control system shall automatically reduce engine RPM, engage the engine retarder (if equipped), and selectively apply brakes to the individual wheel ends of the front and rear axles to reduce the possibility of a side roll event.</p> <p>The system shall monitor directional stability through an electronic lateral accelerometer, steer angle sensor and yaw rate sensor. If spinout or drift out is detected, the vehicle control system shall selectively apply brakes to the individual wheel ends of the front and rear axles to assist in bringing the vehicle back to its intended direction. The operator shall continue to provide steering input in the desired direction as the system compensates.</p> <p>Electronic Stability Control is not a guarantee that a side roll event, spinout or drift out shall not occur. ESC is a supplemental safety system that shall be used in conjunction with safe driving habits.</p>		

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<p><u>ANTI-LOCK BRAKE SYSTEM</u></p> <p>The vehicle shall be equipped with a Meritor WABCO 4S4M, anti-lock braking system. The ABS shall provide a 4-channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology shall control the anti-lock braking system. Each wheel shall be monitored by the system. When any particular wheel begins to lockup, a signal shall be sent to the control unit. This control unit shall then reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system shall eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.</p> <p><u>BRAKES</u></p> <p>The service brake system shall be full air type.</p> <p>The front brakes shall be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.</p> <p>The brake system shall be certified, third party inspected, for improved stopping distance.</p> <p>The rear brakes shall be Meritor™ 16.50" x 8.63" cam operated with automatic slack adjusters. Dust shields cannot be provided.</p> <p><u>AIR COMPRESSOR, BRAKE SYSTEM</u></p> <p>The air compressor shall be a Bendix®, Model BA-921, with 15.80 cubic feet per minute output at 1,250 rpm.</p> <p><u>BRAKE SYSTEM</u></p> <p>The brake system shall include:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Brake treadle valve <input type="checkbox"/> Heated automatic moisture ejector on air dryer <input type="checkbox"/> Total air system minimum capacity of 4,272 cubic inches <input type="checkbox"/> Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi <input type="checkbox"/> Spring set parking brake system <input type="checkbox"/> Parking brake operated by a push-pull style control valve <input type="checkbox"/> A parking "brake on" indicator light on instrument panel <input type="checkbox"/> Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, with an automatic spring brake application at 40 psi <input type="checkbox"/> 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) 		

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<p><input type="checkbox"/> 1/4 turn drain valves on each air tank</p> <p>The air tank shall be primed and painted to meet a minimum 750 hour salt spray test.</p> <p>To reduce the effects of corrosion, the air tank shall be mounted with stainless steel brackets (no exception).</p> <p><u>BRAKE SYSTEM AIR DRYER</u></p> <p>The air dryer shall be a WABCO System Saver 1200 IWT, with internal wet tank, spin-on coalescing filter cartridge and 100 watt heater.</p> <p><u>BRAKE LINES</u></p> <p>Color-coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom where necessary in the chassis.</p> <p><u>AIR INLET WITH AUTOMATIC EJECT</u></p> <p>One (1) air inlet with Kussmaul Air Eject shall be provided. The inlet shall be located above LS front wheel well next to shoreline. It shall allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet shall automatically disconnect the air line when the truck is started. It shall be equipped with a male coupling and be recessed. 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 coupling shall also be provided with the loose equipment.</p> <p><u>COVER OVER AIR INLET</u></p> <p>A Kussmaul, Model 091-28-AK, weatherproof red cover shall be provided over the recessed automatic airline disconnect.</p> <p><u>ADDITIONAL AIR TANK</u></p> <p>An additional air tank with 1,454 cubic inch displacement shall be provided to increase the capacity of the air system. This tank shall be dedicated for air horn use.</p> <p>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).</p> <p>The output flow of the engine air compressor varies with engine rpm. Full compressor output is only achieved at governed engine speed. Engine speed may be limited by generators, pumps and other PTO driven options.</p> <p><u>ALL WHEEL LOCK-UP</u></p> <p>An all wheel lock-up system shall be installed which applies air to the front brakes and uses the spring brake at the rear. A control switch shall be provided for the driver on the instrument panel.</p> <p>The all wheel lock-up system shall be operational only when the parking brake is applied, the truck transmission is in neutral and engine is running.</p>		

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MANUAL MOISTURE EJECTOR(S)

Manual moisture ejectors for a single axle pumper reservoir capacity shall be installed in the brake system.

The moisture ejector(s) shall be remote mounted on the driver side of vehicle, as close to the edge of vehicle as possible.

A loop shall be provided at the moisture ejector, to allow for ease of pulling the drain.

Each moisture ejector shall have a label directly under the ejector, stating air tank drain.

Nylon tubing, .38" diameter, shall be routed from the air tank to the moisture ejector. The nylon tubing shall be covered with protective split loom.

The moisture ejector(s) shall be provided on the under LS3 reservoir(s).

COMPRESSION FITTINGS ONLY

Any nylon tube on the apparatus that is pneumatic shall be plumbed with compression type fittings where applicable. Push lock fittings shall not be acceptable for any pneumatic nylon tube plumbing.

ENGINE

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

Make:	Detroit™
Model:	DD13®
Power:	525 hp at 1625 rpm
Torque:	1850 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)
Displacement:	781 cubic inches (12.8L)
Starter:	Delco Remy 39MT™
Fuel Filters:	Dual cartridge style with check valve, water separator, and water in fuel sensor

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.

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<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>A Jacobs® 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> <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>EXHAUST MODIFICATION</u></p> <p>The exhaust pipe shall be brought out from under the body at a 35 degree angle to the rear.</p>		

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<p>The diffuser will not be cut straight to the body, and the outer edge shall extend slightly outside of the body. There shall be a minimum of 2.50" from the exhaust pipe to the underside of the body heat shield. The last 7.00" of the exhaust shall be free of hangers and/or clamps.</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> <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>Gates® silicone hoses shall be used for all engine/heater coolant lines installed by the chassis manufacturer.</p> <p>The chassis manufacturer shall also use Gates brand hose on other heater, defroster and auxiliary coolant circuits. There shall be some areas in which an appropriate Gates product is not available. In those instances a comparable silicone hose from another manufacturer shall be used.</p>		

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	Yes	No
<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 rearward of the rear axle.</p> <p>A 0.50" drain plug shall be provided in a low point of the tank for drainage.</p> <p>A fill inlet shall be provided and marked "Diesel Exhaust Fluid Only". The fill inlet shall be located adjacent to the air bottle storage behind a common door on the driver side of the vehicle.</p> <p>The tank shall meet the engine manufacturer's requirement for 10 percent expansion space in the event of tank freezing.</p> <p>The tank shall include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.</p> <p><u>FUEL COOLER</u></p> <p>An air to fuel cooler shall be installed in the engine fuel return line.</p> <p>The fuel filler cap shall have a retaining chain and holder provided on the fuel fill door.</p> <p><u>TRANSMISSION</u></p> <p>An Allison 5th generation, Model EVS 4500P, electronic, torque converting, automatic transmission shall be provided.</p> <p>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.</p>		

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	Yes	No
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.		
<u>TRANSMISSION SHIFTER</u>		
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 - 4.70 to 1.00, 2nd - 2.21 to 1.00, 3rd - 1.53 to 1.00, 4th - 1.00 to 1.00, 5th - 0.76 to 1.00, 6th - 0.67 to 1.00, R - 5.55 to 1.00.		
<u>TRANSMISSION COOLER</u>		
A Modine plate and fin transmission oil cooler shall be provided using engine coolant to control the transmission oil temperature.		
<u>DRIVELINE</u>		
Drivelines shall be a heavy-duty metal tube and be equipped with Spicer® 1810 universal joints.		
The shafts shall be dynamically balanced before installation.		
A splined slip joint shall be provided in each driveshaft where the driveline design requires it. The slip joint shall be coated with Glidecoat® or equivalent.		
<u>STEERING</u>		
Dual Sheppard, Model M110, 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 an Eaton, Model VN20, hydraulic pump with integral pressure and flow control. All power steering lines shall have wire braded lines with crimped fittings.		
A tilt and telescopic steering column shall be provided to improve fit for a broader range of driver configurations.		
<u>STEERING WHEEL</u>		
The steering wheel shall be 18.00" in diameter, have tilting and telescoping capabilities, and a four (4)-spoke design.		
There shall be a switch pod provided on each side of the steering wheel between the spokes. The switch pods shall be an integral part of the steering wheel. Each switch pod shall contain four (4) switches. The following switches shall be provided:		
Air horn		
Emergency lighting		
Area lighting		

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	Yes	No
Front dome light		
Rear dome light		
Q2B siren activate		
Q2B siren brake		
Wiper mist		
Full floating horn pad		
<p><u>BUMPER</u></p> <p>A one (1) piece, ten (10) gauge 304-2B polished stainless steel bumper, minimum of 10.00" high, shall be attached to the front of the chassis frame.</p> <p>A 9.00" formed steel channel shall be mounted directly behind bumper for additional strength.</p> <p><u>GRAVEL PAN</u></p> <p>A gravel pan, constructed of bright aluminum treadplate, shall be furnished between the bumper and cab face.</p> <p><u>TOW EYES</u></p> <p>Two (2) chrome tow eyes shall be mounted through the front face of the bumper.</p> <p>The inner and outer edges of the tow eyes shall have a .25" radius.</p> <p>Tow eyes shall be mounted directly to the bumper frame.</p> <p>Cutouts shall be provided in the front face of stainless-steel bumper to allow tow eyes to extend out the front.</p> <p>The tow eyes shall be designed and positioned to allow up to a 9,000 lb straight horizontal pull in line with the centerline of the vehicle. The tow eyes shall not be used for lifting of the apparatus.</p> <p><u>CAB</u></p> <p>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</p>		

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<p>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> <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 wireway 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 forward cab section shall have an overall height (from the cab roof to the ground) of approximately 99.00". The crew cab section shall have a 10.00" raised roof, with an overall cab height of approximately 109.00". The overall height listed shall be calculated based on a truck configuration with the lowest suspension weight rating, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension shall increase the overall height listed.</p> <p>The floor to ceiling height inside the crew cab shall be a minimum of 64.50" in the center and outboard positions.</p> <p>The crew cab floor shall measure a minimum of 46.00" from the rear wall to the back side of the rear facing seat risers.</p> <p>The engine tunnel, at the rearward highest point (knee level), shall measure a minimum of 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>		

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<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>		
<p><u>INTERIOR CAB INSULATION</u></p> <p>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></p> <p>Full circular inner fender liners in the wheel wells shall be provided.</p>		
<p><u>PANORAMIC WINDSHIELD</u></p> <p>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></p> <p>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></p> <p>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></p> <p>The exterior surface of the rear wall of the cab shall be overlaid with bright aluminum treadplate except for areas that are not typically visible when the cab is lowered.</p>		
<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>		

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<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>SCUFFPLATES, BOTTOM CREWCAB COMPARTMENTS</u></p> <p>Both crew cab exterior compartments shall be furnished with a lower door frame stainless steel scuffplate. Each scuffplate shall be polished stainless steel with a .38" lip down.</p> <p><u>SIDE OF CAB MOLDING</u></p> <p>Chrome molding shall be provided on both sides of cab.</p> <p><u>MIRRORS</u></p> <p>A Retractable, Model 613423, 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>		

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	Bidder Complies	
	Yes	No
<p><u>DOORS</u></p> <p>To enhance entry and egress to the cab, the forward cab doors shall be a minimum of 37.50" wide x 75.50" high. The crew cab doors shall be located on the sides of the cab and shall be constructed in the same manner as the forward cab doors. The crew cab door openings shall be a minimum of 34.30" wide x 85.50" high.</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.</p> <p>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 keys shall be Model 751. The locks shall be capable of activating when the doors are open or closed. The doors shall remain locked if locks are activated when the doors are opened, then closed.</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 grab handle shall be provided on the inside of each cab door for ease of entry.</p> <p>The cab steps at each cab door location shall be located inside the cab doors to protect the steps from weather elements.</p> <p><u>DOOR PANELS</u></p> <p>The inner cab door panels shall be constructed out of painted aluminum.</p> <p><u>ELECTRIC OPERATED CAB DOOR WINDOWS</u></p> <p>All four (4) cab doors shall be equipped with electric operated windows with one (1) flush mounted automotive style switch on each door. The driver's door shall have four (4) switches, one (1) to control each door window.</p> <p>Each switch shall allow intermittent or auto down operation for ease of use. Auto down operation shall be actuated by holding the window down switch for approximately 1 second.</p> <p><u>ELECTRIC CAB DOOR LOCKS</u></p> <p>The front driver and officer doors shall have a door lock master switch that shall control all front and rear crew cab door locks. Each rear crew cab door shall have its own lock control.</p>		

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<p>There shall be one (1) concealed switch located under the driver door.</p> <p><u>CAB STEPS</u> 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 grip strut inserts 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 an 8.00" minimum depth. The inside cab steps shall not exceed 16.50" in height.</p> <p>The vertical surfaces of the step well shall be aluminum treadplate.</p> <p><u>CAB EXTERIOR HANDRAILS</u> A 1.25" diameter slip-resistant, knurled aluminum handrail shall be provided adjacent to each cab and crew cab door opening to assist during cab ingress and egress.</p> <p><u>STEP LIGHTS</u> There shall be six (6) white LED step lights installed for cab and crew cab access steps.</p> <ul style="list-style-type: none"> <input type="checkbox"/> One (1) light for the driver's access steps. <input type="checkbox"/> Two (2) lights for the driver's side crew cab access steps. <input type="checkbox"/> Two (2) lights for the passenger's side crew cab access steps. <input type="checkbox"/> One (1) light for the passenger's side access step. <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 activated when the battery switch is on and the adjacent door is opened.</p> <p><u>FENDER CROWNS</u> Stainless steel fender crowns shall be installed at the cab wheel openings.</p> <p><u>CREW CAB WINDOWS</u> 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 16.00" high. The top of the window shall be located in the standard position and go down to the top of the EMS compartments on each side.</p> <p>To enhance both visibility out of and light penetration into the crew cab, two (2) tinted windows shall be provided in the front slanted portion of the raised roof. Each window shall be approximately 7.50" high x 15.00" wide. The profile of the glass shall match the painted metal side sheet opening, creating a uniform threshold appearance. The windows shall be bonded to the vehicle using urethane adhesive.</p>		

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<p><u>Window Tint</u></p> <p>The upper window in the left side crew cab door shall be tinted medium gray.</p> <p><u>Window Tint</u></p> <p>The rollup window in the left side crew cab door shall be tinted medium gray.</p> <p><u>Window Tint</u></p> <p>The window behind the left side front cab door shall be tinted medium gray.</p> <p><u>Window Tint</u></p> <p>The window(s) on the front of the slanted raised roof shall be tinted privacy dark gray.</p> <p><u>Window Tint</u></p> <p>The window behind the right side front cab door shall be tinted medium gray.</p> <p><u>Window Tint</u></p> <p>The upper window in the right side crew cab door shall be tinted medium gray.</p> <p><u>Window Tint</u></p> <p>The rollup window in the right side crew cab door shall be tinted medium gray.</p> <p><u>STORAGE COMPARTMENTS</u></p> <p>Provided on each side of the cab, to the rear of the crew cab access doors, shall be a storage compartment.</p> <p>The left side compartment shall be 13.75" wide x 30.00" high x 20.00" deep below the floor and 22.00" deep above the floor. The clear door opening shall be 10.50" wide x 28.00" high.</p> <p>The right side compartment shall be 13.75" wide x 44.00" high x 20.00" deep below the floor and 26.00" deep above the floor. The clear door opening shall be 10.50" wide x 42.50" high.</p> <p>The doors shall be two (2) reverse hinged double pan doors painted to match the cab exterior with a locking D-Ring latch with #751 key, one (1) on each side of the cab. Each door shall include hinge springs. A pneumatic stay arm for each exterior door shall be used as a door stop.</p> <p>The compartment interior shall be painted spatter gray.</p> <p><u>Compartment Light</u></p> <p>There shall be two (2) white LED strip lights provided, one (1) each hinged side of compartment door openings. The lights shall be controlled by an automatic door switch.</p> <p><u>CAB ROOF COVERING</u></p> <p>Horizontal cab roof surfaces shall be covered with bright aluminum treadplate. The fastening screws and the perimeter between the roof and the bottom of the aluminum treadplate, no more than 1.00" in from the edge of the aluminum treadplate, shall be properly caulked to prevent water from leaking under aluminum. Front and side warning lights shall not be mounted on top of treadplate. The treadplate shall extend and terminate next to the warning lights.</p>		

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<p><u>WEB STRAP</u> There shall be four (4) web strap(s), made from 2.00" black nylon installed two (2) on the rear of the engine cover mounting plate, one (1) on the RS of the engine cover mounting plate in the deep section and one (1) on the LS of the mounting plate in the deep section. Place so these straps will keep equipment from sliding out.. Each strap shall be secured with footman loops and hook and loop fastener.</p> <p><u>WORK SURFACE</u> There shall be a work surface provided on the engine tunnel. The work surface shall be flat. It shall not contour to the engine tunnel. The front of the work surface shall be spaced off the engine tunnel 1.00". The work surface shall cover the entire engine tunnel and shall be constructed of 0.25" aluminum to allow for the mounting of equipment. The left and right sides of the work surface shall be flanged down to enclose the area below. The end of the work surface, facing the rear of the crew cab, shall be open to allow for equipment storage. The work surface shall be painted to match the cab interior.</p> <p><u>COMPUTER DOCKING STATION LOCKING SLIDE ARM</u> There shall be a locking slide arm that can telescope from 9.00" to 13.00", rotate 360 degrees with 15 degree lock points (within the confines of mounting location), and tilt up to 90 degrees located officer side dash.</p> <p>The following Gamber Johnson components shall be supplied and installed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> One (1) 7160-0220 Mongoose locking slide arm <input type="checkbox"/> One (1) 7160-0577-00 Computer dock <p><u>CAB INTERIOR</u> The cab interior shall be constructed of primarily metal (painted aluminum) to withstand the severe duty cycles of the fire service.</p> <p>The officer side dash shall be a flat faced design to provide easy maintenance and shall be constructed out of painted aluminum.</p> <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 padded and covered, on the top and sides, with dark silver gray 46 ounce leather grain vinyl resistant to oil, grease, and mildew.</p> <p>For durability and ease of maintenance, the cab interior side walls shall be painted aluminum. The rear wall shall be painted aluminum.</p> <p>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>		

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Forward portion of cab headliner shall permit easy access for service of electrical wiring or other maintenance needs.	Yes	No
All wiring shall be placed in metal raceways. Routing through holes in tubing shall not be accepted due to chaffing that installation shall cause.		
<u>CAB INTERIOR UPHOLSTERY</u>		
The cab interior upholstery shall be dark silver gray.		
<u>CAB INTERIOR PAINT</u>		
The cab interior metal surfaces shall be painted fire smoke gray, vinyl texture paint.		
<u>CAB FLOOR</u>		
The cab and crew cab floor areas shall be covered with Polydamp™ acoustical floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler.		
The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has a 0.25" thick closed cell foam (no water absorption) which offers a sound dampening material for reducing sound levels.		
<u>CAB DEFROSTER</u>		
To provide maximum defrost and heating performance, a minimum of 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.		
<u>CAB/CREW CAB HEATER</u>		
Two (2) auxiliary heaters with minimum of 44,180 BTU and 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.		
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		

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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><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 minimum of 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"> <input type="checkbox"/> Four (4) shall be directed towards the driver's location <input type="checkbox"/> Four (4) shall be directed towards the officer's location <input type="checkbox"/> 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> <p><u>Gravity Drain Tubes</u></p> <p>Two (2) condensate drain tubes shall be provided for the air conditioning evaporator. The drip pan shall have two (2) drain tubes plumbed separately to allow for the condensate to exit the drip pan. No pumps shall be provided.</p> <p><u>WINDOW DEFROST FAN</u></p> <p>A window defrost fan shall be mounted on the ceiling of the cab, located on the driver's side.</p> <p><u>WINDOW DEFROST FAN</u></p> <p>A window defrost fan shall be mounted on the ceiling of the cab, located on the passenger side.</p> <p><u>SUN VISORS</u></p> <p>Two (2) smoked Lexan™ sun visors provided. The sun visors shall be located above the windshield with one (1) mounted on each side of the cab.</p>		

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<p>There shall be no retention bracket provided to help secure each sun visor in the stowed position.</p> <p><u>GRAB HANDLES</u> 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> There shall be two (2) Whelen, Model 3SC0CDCR, 12 volt DC, 3.00" white LED light(s) with Whelen, Model 3FLANGEC, chrome flange kit(s) installed under the cab to be used as engine compartment illumination. One of the lights shall be installed to illuminate the dipstick tube area when the cab is in the down position,</p> <p>These light(s) shall be activated automatically when the cab is raised or when the dipstick door opened.</p> <p><u>ACCESS TO ENGINE DIPSTICKS</u> 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>MAP BOX</u> A map box with four (4) bins, open from top, shall be installed shipped loose and packaged for travel. The map box shall be divided into four (4) bins, each being 12.50" wide x 2.25" high x 12.00" deep. Each bin shall slant 30 degrees from horizontal. The map box shall be constructed of .125" aluminum and shall be painted to match the cab interior.</p> <p><u>CAB SAFETY SYSTEM</u> 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"> <input type="checkbox"/> 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. <input type="checkbox"/> A slave SRS sensor shall be installed in the cab to provide capacity for eight (8) crew cab seating positions. 		

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<input type="checkbox"/> 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. <input type="checkbox"/> 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. <input type="checkbox"/> 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. <input type="checkbox"/> Air curtains shall be provided in the outboard bolster of outboard seat backs to provide a cushion between occupant and the cab wall. <input type="checkbox"/> Suspension seats shall be provided with devices to retract them to the lowest travel position during a side roll or frontal impact event. <input type="checkbox"/> 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"> <input type="checkbox"/> Driver side front air bag <input type="checkbox"/> Passenger side knee bolster air bag <input type="checkbox"/> Air curtains mounted in the outboard bolster of outboard seat backs <input type="checkbox"/> Suspension seats shall be retracted to the lowest travel position <input type="checkbox"/> Seat belts shall be pre-tensioned to firmly hold the occupant in place 		

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<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> <ul style="list-style-type: none"> <input type="checkbox"/> Air curtains mounted in the outboard bolster of outboard seat backs <input type="checkbox"/> Suspension seats shall be retracted to the lowest travel position <input type="checkbox"/> Seat belts shall be pre-tensioned to firmly hold the occupant in place <p><u>SEATING CAPACITY</u></p> <p>The seating capacity in the cab shall be four (4).</p> <p><u>DRIVER SEAT</u></p> <p>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"> <input type="checkbox"/> 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. <input type="checkbox"/> 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></p> <p>A seat shall be provided in the cab for the passenger. The seat shall be a cam action type, with air suspension. For increased convenience, the seat shall be provided with 6.00" double locking fore/aft slide adjustment. 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>		

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<p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> A suspension seat safety system shall be included. When activated, this system shall pretension the seat belt and then retract the seat to its lowest travel position.</p> <p>The seat shall be furnished with a 3-point, shoulder type seat belt.</p> <p><u>REAR FACING LEFT SIDE EMS CABINET</u></p> <p>A rear facing cabinet shall be provided in the crew cab at the left side outboard position. The cabinet shall be mounted 4.75" off the edge of the seat riser.</p> <p>The cabinet shall be 23.00" wide x 22.00" high x 22.00" deep. The interior door shall be web netting. The netting is to be made with 1.00" wide nylon material with 2.00" openings. The nylon webbing shall be permanently fastened at the outboard side of the cabinet and have spring clip and hook fasteners on the opposite side to secure it. The clear door opening shall be 20.50" wide x 19.00" high.</p> <p>The cabinet shall include no adjustable shelves or trays in the cabinet interior.</p> <p>The cabinet shall include no louvers and louvers provided on the right side of the cabinet for ventilation.</p> <p>The cabinet shall be constructed of smooth aluminum and painted to match the cab interior.</p> <p><u>Cabinet Light</u></p> <p>There shall be one (1) white LED strip light installed on the right side of the interior cabinet door opening. The lights shall be controlled by a rocker switch on the cabinet exterior.</p> <p><u>REAR FACING RIGHT SIDE CABINET</u></p> <p>A rear facing cabinet shall be provided in the crew cab at the right side outboard position. The cabinet shall be mounted 4.75" off the edge of the seat riser.</p> <p>The cabinet shall be 22.00" wide x 18.00" high x 22.00" deep. The interior door shall be web netting. The netting is to be made with 1.00" wide nylon material with 2.00" openings. The nylon webbing shall be permanently fastened at the outboard side of the cabinet and have spring clip and hook fasteners on the opposite side to secure it. The interior clear door opening shall be 15.00" wide x 15.00" high.</p> <p>The cabinet shall include no adjustable shelves or trays in the cabinet interior.</p> <p>The cabinet shall include louvers provided on the left side of the cabinet for ventilation.</p> <p>The cabinet shall also provide access from outside the cab with one (1) reverse hinged double pan door painted to match the cab exterior with a locking D-ring latch with #751 key. The exterior clear door opening shall be 17.00" wide x 16.50" high. The door shall be located on the side of the cab over the wheel well with a pneumatic stay arm as a door stop.</p>		

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<p>The exterior access shall be provided with a polished stainless steel scuffplate on the lower door frame.</p> <p>The cabinet shall be constructed of smooth aluminum and painted to match the cab interior.</p> <p><u>Cabinet Light</u></p> <p>There shall be one (1) white LED strip light installed on the right side of the exterior cabinet door opening and one (1) white LED strip light installed on the left side of the interior cabinet door opening. The lights shall be controlled by an automatic door switch and a rocker switch on the interior of the cabinet.</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 17.00" 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> <p><input type="checkbox"/> A seat safety system shall be included. When activated, this system shall pretension the seat belt.</p> <p>The seats shall be furnished with a 3-point, shoulder type seat belt.</p> <p><u>SLIDE-OUT DRAWER(S)</u></p> <p>The interior cabinet shall have one (1) sliding drawer(s) provided located LS EMS cabinet at the bottom. The drawer shall slide out the front of the cabinet.</p> <p>Each drawer shall be maximized for the space. The construction shall consist of smooth aluminum formed to provide a 12.00" high wall around the perimeter. The corners shall be welded to form a rigid unit. There shall be four (4) evenly spaced dividers that run from front to rear of each drawer.</p> <p>Each drawer shall be provided with two (2) floor mounted sliding tracks.</p> <p>The front face of drawer(s) shall be constructed of the same material as the cabinet, and have one (1) Non-locking latch D-ring latch.</p> <p>An automatic lock shall be provided for both the in and out drawer positions. The lock trip mechanism shall be located at the front of the drawer and shall be easily operated with a gloved hand.</p>		

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	Bidder Complies	
	Yes	No
<p><u>SEAT UPHOLSTERY</u></p> <p>All seat upholstery shall be 46 ounce leather grain dark silver gray vinyl resistant to oil, grease and mildew. The cab shall have four (4) seating positions.</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 3 SCBA brackets.</p> <p><u>CREW CAB SEAT RISER DRAWER</u></p> <p>The forward facing crew cab seat riser shall be provided with a access drawer on the front face of the riser.</p> <p>The slide-out drawer shall have clear dimensions of 40.00" wide x 10.00" high x 22.00" deep. The sides of the drawer shall be as high as possible. The drawer shall be provided with non-locking slides and shall be fastened to the front panel with a large non-locking push to close latch.</p> <p>The drawer shall be fabricated from smooth aluminum, and painted to match the cab interior.</p> <p><u>TABLET/COMPUTER POCKET</u></p> <p>There shall be one (1) pocket constructed from smooth aluminum with inside dimensions of 10.50" tall x 9.00" wide x 0.75" deep shall be mounted to the passenger side of the crew cab seat riser to store a Microsoft Surface Pro tablet.</p> <p><u>SEAT BELTS</u></p> <p>All cab and tiller cab (if applicable) 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> <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 the ReadyReach D-loop assembly to the shoulder belt system. The ReadyReach feature adds an extender arm to the D-loop location placing the D-loop in a closer, easier to reach location.</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>		

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	Yes	No
<p><u>HELMET HOLDER</u></p> <p>There shall be three (3) On Scene Talon, Model 92510, helmet holder bracket(s) provided in the cab. Each bracket shall provide quick access and secure storage of the helmet.</p> <p>The bracket location(s) shall be determined at time of final inspection.</p> <p><u>CAB DOME LIGHTS</u></p> <p>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>MAP LIGHT</u></p> <p>There shall be one (1) Sunnex®, Model SL 9, LED map light(s) provided in the cab and located RS outside corner of the dash. Each map light shall have a square base with an on/off switch. The map light(s) shall have a 20.00" long flexible neck that exits the top of the chassis mount.</p> <p>Each light shall be provided with a red lens that easily slides over the clear lamp for night vision.</p> <p>The light switch(es) shall be connected directly to the battery power.</p> <p><u>HAND HELD LIGHT</u></p> <p>There shall be four (4) Streamlight, Vulcan, Model #44315, hand lights provided with a vehicle mount with 12VDC direct wire charging rack and quick release buckle strap mounted one (1) on LS & RS side of the crew cab seat riser (two (2) total), one (1) in LS3 on the tank wall mid high and one (1) in RS3 on the tank wall mid high.</p> <p>Each light housing shall be orange in color.</p> <p><u>CAB INSTRUMENTATION</u></p> <p>The cab instrument panel shall be a molded ABS panel and include gauges, an LCD display, 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.</p>		

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Yes	No

GAUGES

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

- ☐ Voltmeter gauge (volts):
 - o Low volts (11.8 VDC)
 - ☐ Amber caution indicator on the information center with intermittent alarm
 - ☐ Amber caution light on gauge assembly
 - o High volts (15.5 VDC)
 - ☐ Amber caution indicator on the information center with intermittent alarm
 - ☐ Amber caution light on gauge assembly
 - o Very low volts (11.3 VDC)
 - ☐ Red warning indicator on the information center with a steady alarm
 - ☐ Amber caution light on gauge assembly
 - o Very high volts (16.0 VDC)
 - ☐ Red warning indicator on the information center with a steady alarm
 - ☐ Amber caution light on gauge assembly
- ☐ Engine Tachometer (RPM)
- ☐ Speedometer MPH (Major Scale), KM/H (Minor Scale)
- ☐ Fuel level gauge (Empty - Full in fractions):
 - o Low fuel (1/8 full)
 - ☐ Amber caution indicator on the information center with intermittent alarm
 - ☐ Amber caution light on gauge assembly
 - o Very low fuel (1/32 full)
 - ☐ Red caution indicator on the information center with steady alarm
 - ☐ Amber caution light on gauge assembly
- ☐ Engine Oil pressure Gauge (PSI):
 - o Low oil pressure to activate engine warning lights and alarms

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		Bidder Complies	
		Yes	No
<input type="checkbox"/> Red caution indicator on the information center with steady alarm			
<input type="checkbox"/> Amber caution light on gauge assembly			
<input type="checkbox"/> Front Air Pressure Gauges (PSI): <ul style="list-style-type: none"> o Low air pressure to activate warning lights and alarm <ul style="list-style-type: none"> <input type="checkbox"/> Red warning indicator on the information center with a steady alarm <input type="checkbox"/> Amber caution light on gauge assembly 			
<input type="checkbox"/> Rear Air Pressure Gauges (PSI): <ul style="list-style-type: none"> o Low air pressure to activate warning lights and alarm <ul style="list-style-type: none"> <input type="checkbox"/> Red warning indicator on the information center with a steady alarm <input type="checkbox"/> Amber caution light on gauge assembly 			
<input type="checkbox"/> Transmission Oil Temperature Gauge (Fahrenheit): <ul style="list-style-type: none"> o High transmission oil temperature activates warning lights and alarm <ul style="list-style-type: none"> <input type="checkbox"/> Amber caution indicator on the information center with intermittent alarm <input type="checkbox"/> Amber caution light on gauge assembly 			
<input type="checkbox"/> Engine Coolant Temperature Gauge (Fahrenheit): <ul style="list-style-type: none"> o High engine temperature activates an engine warning light and alarms <ul style="list-style-type: none"> <input type="checkbox"/> Amber caution indicator on the information center with intermittent alarm <input type="checkbox"/> Amber caution light on gauge assembly 			
<input type="checkbox"/> Diesel Exhaust Fluid Level Gauge (Empty - Full in fractions): <ul style="list-style-type: none"> o Low fluid (1/8 full) <ul style="list-style-type: none"> <input type="checkbox"/> Amber indicator light in gauge dial 			
<p>All gauges shall perform prove out at initial power-up to ensure proper performance.</p> <p><u>INDICATOR LAMPS</u></p> <p>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.</p> <p>The following amber telltale lamps shall be present:</p>			

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		Bidder Complies	
		Yes	No
<input type="checkbox"/> Low coolant			
<input type="checkbox"/> Trac cntl (traction control) (where applicable)			
<input type="checkbox"/> Check engine			
<input type="checkbox"/> Check trans (check transmission)			
<input type="checkbox"/> Aux brake overheat (Auxiliary brake overheat)			
<input type="checkbox"/> Air rest (air restriction)			
<input type="checkbox"/> Caution (triangle symbol)			
<input type="checkbox"/> Water in fuel			
<input type="checkbox"/> DPF (engine diesel particulate filter regeneration)			
<input type="checkbox"/> Trailer ABS (where applicable)			
<input type="checkbox"/> Wait to start (where applicable)			
<input type="checkbox"/> HET (engine high exhaust temperature) (where applicable)			
<input type="checkbox"/> ABS (antilock brake system)			
<input type="checkbox"/> MIL (engine emissions system malfunction indicator lamp) (where applicable)			
<input type="checkbox"/> Side roll fault (where applicable)			
<input type="checkbox"/> Front air bag fault (where applicable)			
<p>The following red telltale lamps shall be present:</p> <input type="checkbox"/> Warning (stop sign symbol) <input type="checkbox"/> Seat belt <input type="checkbox"/> Parking brake <input type="checkbox"/> Stop engine <input type="checkbox"/> Rack down			
<p>The following green telltale lamps shall be provided:</p> <input type="checkbox"/> Left turn <input type="checkbox"/> Right turn <input type="checkbox"/> Battery on			

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		Bidder Complies	
		Yes	No
The following blue telltale lamp shall be provided:			
<input type="checkbox"/> High beam			
<u>ALARMS</u> Audible steady tone warning alarm: A steady audible tone alarm shall be provided whenever a warning message is present. Audible pulsing tone caution alarm: A pulsing audible tone alarm (chime/chirp) shall be provided whenever a caution message is present without a warning message being present. Alarm silence: Any active audible alarm shall be able to be silenced by holding the ignition switch at the top position for three (3) to five (5) seconds. For improved safety, silenced audible alarms shall intermittently chirp every 30 seconds until the alarm condition no longer exists. The intermittent chirp shall act as a reminder to the operator that a caution or warning condition still exists. Any new warning or caution condition shall enable the steady or pulsing tones respectively.			
<u>INDICATOR LAMP AND ALARM PROVE-OUT</u> 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 at initial power-up to ensure proper performance.			
<u>CONTROL SWITCHES</u> For ease of use, the following controls shall be provided immediately adjacent to the cab instrument panel within easy reach of the driver. All switches shall have backlit labels for low light applications. Headlight/Parking light switch: A three (3)-position maintained rocker switch shall be provided. The first switch position shall deactivate all parking and headlights. The second switch position shall activate the parking lights. The third switch shall activate the headlights. Panel back lighting intensity control switch: A three (3)-position momentary rocker switch shall be provided. Pressing the top half of the switch, "Panel Up" increases the panel back lighting intensity and pressing the bottom half of the switch, "Panel Down" decreases the panel back lighting intensity. Pressing the half or bottom half of the switch several times shall allow back lighting intensity to be gradually varied from minimum to maximum intensity level for ease of use. Ignition switch: A three (3)-position maintained/momentary rocker switch shall be provided. The first switch position shall turn off and deactivate vehicle ignition. The second switch position shall activate vehicle ignition and shall perform prove-out on the telltale indicators and alarms for 3 to 5 seconds after the switch is turned on. A green indicator lamp is activated with vehicle ignition. The third momentary position shall temporarily silence all active cab alarms. An alarm "chirp" may continue as long as alarm condition exists. Switching ignition to off position shall terminate the alarm silence feature and reset function of cab alarm system.			

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<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, defroster, and optional air conditioning control panel: A control panel with membrane switches shall be provided to control heater/defroster temperature and heater, defroster, and air conditioning fan speeds. A green LED status bar shall indicate the relative temperature and fan speed settings.</p> <p>Turn signal arm: A self-canceling turn signal with high beam headlight and windshield wiper/washer controls shall be provided. The windshield wiper control shall have high, low, and intermittent modes.</p> <p>Parking brake control: An air actuated push/pull park brake control valve shall be provided.</p> <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 momentary 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 accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel shall allow diagnostic tools</p>		

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<p>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"> <input type="checkbox"/> Engine diagnostic port <input type="checkbox"/> Transmission diagnostic port <input type="checkbox"/> ABS diagnostic port <input type="checkbox"/> Roll sensor diagnostic port <input type="checkbox"/> Command Zone USB diagnostic port <input type="checkbox"/> ABS diagnostic switch (blink codes flashed on ABS telltale indicator) <input type="checkbox"/> Diesel particulate filter regeneration switch (where applicable) <input type="checkbox"/> Diesel particulate filter regeneration inhibit switch (where applicable) <p><u>CAB LCD DISPLAY</u></p> <p>A digital four (4)-row by 20-character dot matrix display shall be integral to the gauge panel. The display shall be capable of showing simple graphical images as well as text. The display shall be split into three (3) sections. Each section shall have a dedicated function. The upper left section shall display the outside ambient temperature.</p> <p>The upper right section shall display the following, along with other configuration specific information:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Odometer <input type="checkbox"/> Trip mileage <input type="checkbox"/> PTO hours <input type="checkbox"/> Fuel consumption <input type="checkbox"/> Engine hours <p>The bottom section shall display INFO, CAUTION, and WARNING messages. Text messages shall automatically activate to describe the cause of an audible caution or warning alarm. The LCD shall be capable of displaying multiple text messages should more than one caution or warning condition exist.</p> <p><u>AIR RESTRICTION INDICATOR</u></p> <p>A high air restriction warning indicator light LCD message with amber warning indicator and audible alarm shall be provided.</p>		

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<p><u>"DO NOT MOVE APPARATUS" INDICATOR</u></p> <p>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."</p> <p>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>DO NOT MOVE TRUCK MESSAGES</u></p> <p>Messages shall be displayed on the Command Zone™, color display located within sight of the driver whenever the Do Not Move Truck light is active. The messages shall designate the item or items not in the stowed for vehicle travel position (parking brake disengaged).</p> <p>The following messages shall be displayed (where applicable):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Do Not Move Truck <input type="checkbox"/> DS Cab Door Open (Driver Side Cab Door Open) <input type="checkbox"/> PS Cab Door Open (Passenger's Side Cab Door Open) <input type="checkbox"/> DS Crew Cab Door Open (Driver Side Crew Cab Door Open) <input type="checkbox"/> PS Crew Cab Door Open (Passenger's Side Crew Cab Door Open) <input type="checkbox"/> DS Body Door Open (Driver Side Body Door Open) <input type="checkbox"/> PS Body Door Open (Passenger's Side Body Door Open) <input type="checkbox"/> Rear Body Door Open <input type="checkbox"/> DS Ladder Rack Down (Driver Side Ladder Rack Down) <input type="checkbox"/> PS Ladder Rack Down (Passenger Side Ladder Rack Down) <input type="checkbox"/> Deck Gun Not Stowed <input type="checkbox"/> Lt Tower Not Stowed (Light Tower Not Stowed) <input type="checkbox"/> Fold Tank Not Stowed (Fold-A-Tank Not Stowed) <input type="checkbox"/> Aerial Not Stowed (Aerial Device Not Stowed) <input type="checkbox"/> Stabilizer Not Stowed <input type="checkbox"/> Steps Not Stowed <input type="checkbox"/> Handrail Not Stowed 		

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	Yes	No
Any other device that is opened, extended, or deployed that creates a hazard or is likely to cause major damage to the apparatus if the apparatus is moved shall be displayed as a caution message after the parking brake is disengaged.		
<p><u>SWITCH PANELS</u></p> <p>The built-in switch panels shall be located in the lower console or overhead console of the cab.</p> <p>The switches shall be rocker-type and include an integral indicator light. For quick, visual indication the switch shall be illuminated whenever the switch is active. A 2-ply, scratch resistant laser engraved Gravoply label indicating the use of each switch shall be placed below the switches. The label shall allow light to pass through the letters for improved visibility in low light conditions. Switches and light source are integral to the switch panel assembly.</p> <p><u>WIPER CONTROL</u></p> <p>Wiper control shall consist of a two (2)-speed windshield wiper control with intermittent feature and windshield washer controls.</p> <p>The wipers shall be interlocked to the parking brake. The wipers shall terminate operation when the parking brake is set.</p> <p><u>SPARE CIRCUIT</u></p> <p>There shall be four (4) pair of wires, including a positive and a negative, installed on the apparatus.</p> <p>The above wires shall have the following features:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The positive wire shall be connected directly to the battery power. <input type="checkbox"/> The negative wire shall be connected to ground. <input type="checkbox"/> Wires shall be protected to 20 amps at 12 volts DC. <input type="checkbox"/> Power and ground shall terminate LS1, tank wall, high, centered; LS3, tank wall, high, centered; RS1, tank wall, high, centered; RS3, tank wall, high, centered. <input type="checkbox"/> Termination shall be to a Blue Sea System, Model 5025, 6 circuit with negative bus bar. The terminal block shall include a cover with circuit labels. <p>Wires shall be sized to 125% of the protection.</p> <p>This circuit(s) may be load managed when the parking brake is set.</p> <p><u>SPARE CIRCUIT</u></p> <p>There shall be two (2) pair of wires, including a positive and a negative, installed on the apparatus.</p> <p>The above wires shall have the following features:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The positive wire shall be connected directly to the battery power 		

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		Bidder Complies	
		Yes	No
<input type="checkbox"/> The negative wire shall be connected to ground			
<input type="checkbox"/> Wires shall be protected to 15 amps at 12 volts DC			
<input type="checkbox"/> Power and ground shall terminate officer side dash area			
<input type="checkbox"/> Termination shall be with heat shrinkable butt splicing			
<input type="checkbox"/> 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>SPARE CIRCUIT</u></p> <p>There shall be three (3) pair of wires, including a positive and a negative, installed on the apparatus.</p> <p>The above wires shall have the following features:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The positive wire shall be connected directly to the isolated battery. <input type="checkbox"/> The negative wire shall be connected to ground. <input type="checkbox"/> Wires shall be protected to 20 amps at 12 volts DC. <input type="checkbox"/> Power and grounds shall terminate one (1) in the RS cabinet, one (1) in the LS EMS cabinet and one (1) in the passenger side of the crew cab seat riser. <input type="checkbox"/> Termination shall be to a Blue Sea System, Model 5025, 6 circuit with negative bus bar. The terminal block shall include a cover with circuit labels. <p>Wires shall be sized to 125% of the protection.</p> <p>This circuit(s) may be load managed when the parking brake is set.</p> <p><u>RADIO WITH CD PLAYER</u></p> <p>There shall be a Panasonic™, AM/FM/Weather Band stereo radio with compact disc player and auxiliary input jack installed.</p> <p>The compact disc stereo radio shall be mounted within reach of the officer.</p> <p>The quantity and location of the speakers shall be one (1) pair of 5.25" speakers in the cab and one (1) pair of 5.25" speakers in the crew cab.</p> <p>The type and location of the antenna shall be a roof-mounted rubber antenna located in an open space, on the cab roof.</p> <p><u>SWIVEL MOUNT</u></p> <p>There shall be one (1) Johnny Ray, Model 203 swivel mount bracket(s) provided for the fire department's radio equipment. The swivel mount bracket(s) shall be located center overhead.</p>			

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<u>INFORMATION CENTER</u>	Bidder Complies	
	Yes	No
<p>An information center employing a 7.00" diagonal touch screen color LCD display shall be encased in an ABS plastic housing.</p> <p>The information center shall have the following specifications:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Operate in temperatures from -40 to 185 degrees Fahrenheit <input type="checkbox"/> An Optical Gel shall be placed between the LCD and protective lens <input type="checkbox"/> Five weather resistant user interface switches <input type="checkbox"/> Grey with black accents <input type="checkbox"/> Sunlight Readable <input type="checkbox"/> Linux operating system <input type="checkbox"/> Minimum of 1000nits rated display <input type="checkbox"/> Display can be changed to an available foreign language <input type="checkbox"/> A LCD display integral to the cab gauge panel shall be included as outlined in the cab instrumentation area. <input type="checkbox"/> Programmed to read US Customary <p><u>GENERAL SCREEN DESIGN</u></p> <p>Where possible, background colors shall be used to provide "At a Glance" vehicle information. If information provided on a screen is within acceptable limits, a green background shall be used.</p> <p>If a caution or warning situation arises the following shall occur:</p> <ul style="list-style-type: none"> <input type="checkbox"/> An amber background/text color shall indicate a caution condition <input type="checkbox"/> A red background/text color shall indicate a warning condition <input type="checkbox"/> The information center shall utilize an "Alert Center" to display text messages for audible alarm tones. The text messages shall be written to identify the item(s) causing the audible alarm to sound. If more than one (1) text message occurs, the messages shall cycle every second until the problem(s) have been resolved. The background color for the "Alert Center" shall change to indicate the severity of the "warning" message. If a warning and a caution condition occur simultaneously, the red background color shall be shown for all alert center messages. <input type="checkbox"/> A label for each button shall exist. The label shall indicate the function for each active button for each screen. Buttons that are not utilized on specific screens shall have a button label with no text or symbol. 		

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		Bidder Complies	
		Yes	No
<u>HOME/TRANSIT SCREEN</u>			
This screen shall display the following:			
<input type="checkbox"/> Vehicle Mitigation (if equipped)			
<input type="checkbox"/> Water Level (if the water level system includes compatible communications to the information center)			
<input type="checkbox"/> Foam Level (if the foam level system includes compatible communications to the information center)			
<input type="checkbox"/> Seat Belt Monitoring Screen			
<input type="checkbox"/> Tire Pressure Monitoring (if equipped)			
<input type="checkbox"/> Digital Speedometer			
<input type="checkbox"/> Active Alarms			
<u>ON SCENE SCREEN</u>			
This screen shall display the following and shall be auto activated with pump engaged (if equipped):			
<input type="checkbox"/> Battery Voltage			
<input type="checkbox"/> Fuel			
<input type="checkbox"/> Oil Pressure			
<input type="checkbox"/> Coolant Temperature			
<input type="checkbox"/> RPM			
<input type="checkbox"/> Water Level (if equipped)			
<input type="checkbox"/> Foam Level (if equipped)			
<input type="checkbox"/> Foam Concentration (if equipped)			
<input type="checkbox"/> Water Flow Rate (if equipped)			
<input type="checkbox"/> Water Used (if equipped)			
<input type="checkbox"/> Active Alarms			
<u>VIRTUAL BUTTONS</u>			
There shall be four (4) virtual switch panel screens that match the overhead and lower lighting and HVAC switch panels.			

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Yes	No

PAGE SCREEN

The page screen shall display the following and allow the user to progress into other screens for further functionality:

- ☐ Diagnostics
 - o Faults
 - ☐ Listed by order of occurrence
 - ☐ Allows to sort by system
 - o Interlock
 - ☐ Throttle Interlocks
 - ☐ Pump Interlocks (if equipped)
 - ☐ Aerial Interlocks (if equipped)
 - ☐ PTO Interlocks (if equipped)
 - o Load Manager
 - ☐ A list of items to be load managed shall be provided. The list shall provide a description of the load.
 - ☐ The lower the priority numbers the earlier the device shall be shed should a low voltage condition occur.
 - ☐ The screen shall indicate if a load has been shed (disabled) or not shed.
 - ☐ "At a glance" color features are utilized on this screen.
 - o Systems
 - ☐ Command Zone
 - ☐ Module type and ID number
 - ☐ Module Version
 - ☐ Input or output number
 - ☐ Circuit number connected to that input or output
 - ☐ Status of the input or output
 - ☐ Power and Constant Current module diagnostic information
 - ☐ Foam (if equipped)

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		Bidder Complies	
		Yes	No
<input type="checkbox"/> Pressure Controller (if equipped)			
<input type="checkbox"/> Generator Frequency (if equipped)			
o Live Data			
<input type="checkbox"/> General Truck Data			
<input type="checkbox"/> Maintenance			
o Engine oil and filter			
o Transmission oil and filter			
o Pump oil (if equipped)			
o Foam (if equipped)			
o Aerial (if equipped)			
<input type="checkbox"/> Setup			
o Clock Setup			
o Date & Time			
<input type="checkbox"/> 12 or 24 hour format			
<input type="checkbox"/> Set time and date			
o Backlight			
<input type="checkbox"/> Daytime			
<input type="checkbox"/> Night time			
<input type="checkbox"/> Sensitivity			
o Unit Selection			
o Home Screen			
o Virtual Button Setup			
o On Scene Screen Setup			
o Configure Video Mode			
<input type="checkbox"/> Set Video Contrast			
<input type="checkbox"/> Set Video Color			

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		Bidder Complies	
		Yes	No
<input type="checkbox"/> Set Video Tint			
<input type="checkbox"/> Do Not Move <ul style="list-style-type: none"> o The screen shall indicate the approximate location and type of item that is open or is not stowed for travel. The actual status of the following devices shall be indicate <ul style="list-style-type: none"> <input type="checkbox"/> Driver Side Cab Door <input type="checkbox"/> Passenger's Side Cab Door <input type="checkbox"/> Driver Side Crew Cab Door <input type="checkbox"/> Passenger's Side Crew Cab Door <input type="checkbox"/> Driver Side Body Doors <input type="checkbox"/> Passenger's Side Body Doors <input type="checkbox"/> Rear Body Door(s) <input type="checkbox"/> Ladder Rack (if applicable) <input type="checkbox"/> Deck Gun (if applicable) <input type="checkbox"/> Light Tower (if applicable) <input type="checkbox"/> Hatch Door (if applicable) <input type="checkbox"/> Stabilizers (if applicable) <input type="checkbox"/> Steps (if applicable) 			
<input type="checkbox"/> Notifications <ul style="list-style-type: none"> o View Active Alarms <ul style="list-style-type: none"> <input type="checkbox"/> Shows a list of all active alarms including date and time of the occurrence is shown with each alarm <input type="checkbox"/> Silence Alarms - All alarms are silenced 			
<input type="checkbox"/> Timer Screen			
<input type="checkbox"/> HVAC (if equipped)			
<input type="checkbox"/> Tire Information (if equipped)			
<input type="checkbox"/> Ascendant Set Up Confirmation (if equipped)			
Button functions and button labels may change with each screen.			

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<u>VEHICLE DATA RECORDER</u>	Bidder Complies	
	Yes	No
<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"> <input type="checkbox"/> Vehicle Speed - MPH <input type="checkbox"/> Acceleration - MPH/sec <input type="checkbox"/> Deceleration - MPH/sec <input type="checkbox"/> Engine Speed - RPM <input type="checkbox"/> Engine Throttle Position - % of Full Throttle <input type="checkbox"/> ABS Event - On/Off <input type="checkbox"/> Seat Occupied Status - Yes/No by Position <input type="checkbox"/> Seat Belt Buckled Status - Yes/No by Position <input type="checkbox"/> Master Optical Warning Device Switch - On/Off <input type="checkbox"/> Time - 24 Hour Time <input type="checkbox"/> Date - Year/Month/Day <p><u>Seat Belt Monitoring System</u></p> <p>A seat belt monitoring system (SBMS) shall be provided on the color display and in the center overhead of the cab instrument panel. 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"> <input type="checkbox"/> Seat Occupied & Buckled = Green LED indicator illuminated <input type="checkbox"/> Seat Occupied & Unbuckled = Red LED indicator with audible alarm <input type="checkbox"/> No Occupant & Buckled = Red LED indicator with audible alarm <input type="checkbox"/> No Occupant & Unbuckled = No indicator and no alarm <p>The seat belt monitoring screen shall become active on the color display when:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The home screen is active: 		

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<ul style="list-style-type: none"> o and there is any occupant seated but not buckled or any belt buckled with an occupant. o and there are no other Do Not Move Apparatus conditions present. As soon as all Do Not Move Apparatus conditions are cleared, the SBMS shall be activated. <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>INTERCOM SYSTEM</u></p> <p>A four (4) position David Clark, Model U3800, intercom system with single radio interface at the driver and officer positions and remote radio push-to-transmit buttons located on the engine cover mounting plate convenient to the officer and driver shall be provided. Two (2) crew cab positions, located at two (2) inboard forward facing seats, shall have intercom only.</p> <p>The following components shall be supplied with this system:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Two (2) U3815 Radio Interface Modules (Driver, Officer) <input type="checkbox"/> Two (2) Remote Radio Push To Transmit <input type="checkbox"/> One (1) U3800 Intercom Unit (2 Crew) <input type="checkbox"/> One (1) C3820 Power Cable <input type="checkbox"/> All necessary cables and connectors <p><u>RADIO / INTERCOM INTERFACE INCLUDED</u></p> <p>All radio interfaced stations shall have universal radio interfaces installed. The interface wiring shall be routed within the cab to mounted to the exterior forward wall of the RS EMS cabinet.</p> <p><u>OVER THE HEAD HEADSET</u></p> <p>There shall be four (4) over the head, headset(s) provided driver, officer, forward facing, crew cab inboard seats.</p> <p>Each David Clark, Model H3432, headset shall feature:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 5' Coiled cord <input type="checkbox"/> Noise cancelling electric microphone <input type="checkbox"/> Flexible microphone boom rotates 200 degrees for left or right dress <input type="checkbox"/> Microphone on/off button <input type="checkbox"/> Comfort Gel Earseals <input type="checkbox"/> 23 dB noise reduction 			

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<p><u>HEADSET HANGERS</u></p> <p>There shall be four (4) headset hanger(s) installed driver's seat, officer's seat, driver's side inboard forward facing seat and passenger's side inboard forward facing seat. The hanger(s) shall meet NFPA 1901, Section 14.1.11, requirement for equipment mounting.</p> <p><u>TWO WAY RADIO SPEAKER INSTALLATION</u></p> <p>There shall be two (2) customer supplied two way radio speakers sent to the apparatus manufacturers preferred third party installer to be installed TBD.</p> <p>Specific shipping requirements shall be followed.</p> <p><u>TWO WAY RADIO INSTALLATION</u></p> <p>There shall be one (1) customer supplied two way radio(s) sent to the apparatus manufacturers preferred radio installer to be installed centered on a swivel forward cab ceiling near windshield per the shipping document.</p> <p>No antenna mount or whip shall be included in this option.</p> <p>Specific shipping requirements shall be followed.</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>COMBO ANTENNA</u></p> <p>There shall be one (1) Antenna Plus, bolt on, low profile antenna(s) for Cellular, LTE, Wi-Fi and GPS, installed on the cab roof. The antenna color shall be black . The cables shall be routed within the cab to the Sierra Wireless (Verizon) GX-450 modem</p> <p>The antenna shall be a SKU AP-GX450-Q-** and contains;</p> <ul style="list-style-type: none"> - two high gain cellular/LTE antennas connecting via SMA - one high gain WiFi antenna connecting via RP-SMA - GPS antenna connecting via SMA - threaded bolt mount - Special order 19 feet coax cable <p><u>RADIO ANTENNA MOUNT</u></p> <p>There shall be one (1) Larson brand antenna mounting base, Model NMOKHFUDTHK, with weatherproof cap provided installed on the cab roof. The cable shall be routed to a location in the cab to be determined at the pre-construction meeting, terminated in a SO-239 bulkhead fitting with tapered rear guard (hood) and cap.</p> <p><u>VEHICLE CAMERA SYSTEM</u></p> <p>There shall be a color vehicle camera system provided with the following:</p>		

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<input type="checkbox"/> One (1) camera located at the rear of the apparatus, pointing rearward, displayed automatically with the vehicle in reverse.			
<input type="checkbox"/> One (1) camera located on the right side of the apparatus, pointing rearward, displayed automatically with the right side turn signal.			
<input type="checkbox"/> One (1) camera located on the left side of the apparatus, pointing rearward, displayed automatically with the left side turn signal.			
<p>The camera images shall be displayed on the driver's vehicle information center display. Audio from the microphone on the rear camera shall be emitted by an amplified speaker with volume control in the blank panel to the left of the steering column.</p> <p>The following components shall be included:</p> <ul style="list-style-type: none"> <input type="checkbox"/> One (1) SV-CW134639CAI Camera <input type="checkbox"/> Two (2) CS134404CI Side cameras <input type="checkbox"/> One (1) Amplified speaker (if applicable) <input type="checkbox"/> All necessary cables <p><u>ELECTRICAL POWER CONTROL SYSTEM</u></p> <p>The primary power distribution shall be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers shall be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers shall be located strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers shall be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays shall be easily accessible.</p> <p>Distribution centers located throughout the vehicle shall contain battery powered studs for supplying customer installed equipment thus providing a lower cost of ownership.</p> <p>Circuit protection devices, which conform to SAE standards, shall be utilized to protect electrical circuits. All circuit protection devices shall be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers shall be Type-I automatic reset (continuously resetting). When required, automotive type fuses shall be utilized to protect electronic equipment. Control relays and solenoid shall have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.</p> <p><u>SOLID-STATE CONTROL SYSTEM</u></p> <p>A solid-state electronics based control system shall be utilized to achieve advanced operation and control of the vehicle components. A fully computerized vehicle network shall consist of</p>			

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<p>electronic modules located near their point of use to reduce harness lengths and improve reliability. The control system shall comply with SAE J1939-11 recommended practices.</p> <p>The control system shall operate as a master-slave system whereas the main control module instructs all other system components. The system shall contain patented Mission Critical software that maintains critical vehicle operations in the unlikely event of a main controller error. The system shall utilize a Real Time Operating System (RTOS) fully compliant with OSEK/VDX™ specifications providing a lower cost of ownership.</p> <p>For increased reliability and simplified use the control system modules shall include the following attributes:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Green LED indicator light for module power <input type="checkbox"/> Red LED indicator light for network communication stability status <input type="checkbox"/> Control system self test at activation and continually throughout vehicle operation <input type="checkbox"/> No moving parts due to transistor logic <input type="checkbox"/> Software logic control for NFPA mandated safety interlocks and indicators <input type="checkbox"/> Integrated electrical system load management without additional components <input type="checkbox"/> Integrated electrical load sequencing system without additional components <input type="checkbox"/> Customized control software to the vehicle's configuration <input type="checkbox"/> Factory and field re programmable to accommodate changes to the vehicle's operating parameters <input type="checkbox"/> Complete operating and troubleshooting manuals <input type="checkbox"/> USB connection to the main control module for advanced troubleshooting <p>To assure long life and operation in a broad range of environmental conditions, the solid-state control system modules shall meet the following specifications:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Module circuit board shall meet SAE J771 specifications <input type="checkbox"/> Operating temperature from -40C to +70C <input type="checkbox"/> Storage temperature from -40C to +70C <input type="checkbox"/> Vibration to 50g <input type="checkbox"/> IP67 rated enclosure (Totally protected against dust and also protected against the effect of temporary immersion between 15 centimeters and one (1) meter) <input type="checkbox"/> Operating voltage from eight (8) volts to 16 volts DC 		

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<p>The main controller shall activate status indicators and audible alarms designed to provide warning of problems before they become critical.</p> <p><u>CIRCUIT PROTECTION AND CONTROL DIAGRAM</u></p> <p>Copies of all job-specific, computer network input and output (I/O) connections shall be provided with each chassis. The sheets shall indicate the function of each module connection point, circuit protection information (where applicable), wire numbers, wire colors and load management information.</p> <p><u>ON-BOARD ELECTRICAL SYSTEM DIAGNOSTICS</u></p> <p>Advanced on-board diagnostic messages shall be provided to support rapid troubleshooting of the electrical power and control system. The diagnostic messages shall be displayed on the information center located at the driver's position.</p> <p>The on-board information center shall include the following diagnostic information:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Text description of active warning or caution alarms <input type="checkbox"/> Simplified warning indicators <input type="checkbox"/> Amber caution indication with intermittent alarm <input type="checkbox"/> Red warning indication with steady tone alarm <p><u>PROGNOSTICS</u></p> <p>A software based vehicle tool shall be provided to predict remaining life of the vehicles critical fluid and events (no exception).</p> <p>The system shall send automatic indications to the Command Zone, color display and/or wireless enabled device to proactively alert of upcoming service intervals.</p> <p>Prognostics shall include:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Engine oil and filter <input type="checkbox"/> Transmission oil and filter <input type="checkbox"/> Pump oil (if equipped) <input type="checkbox"/> Foam oil (if equipped) <input type="checkbox"/> Aerial oil and filter (if equipped) <p><u>ADVANCED DIAGNOSTICS</u></p> <p>An advanced, Windows-based, diagnostic software program shall be provided for this control system. The software shall provide troubleshooting tools to service technicians equipped with a Windows-based computer or wireless enabled device.</p>			

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<p>The service and maintenance software shall be easy to understand and use and have the ability to view system input/output (I/O) information.</p> <p><u>TECH MODULE WITH WIFI</u></p> <p>An in cab module shall provide WiFi wireless interface and data logging capability. The WiFi interface shall comply with IEEE 802.11 b/g/n capabilities while communicating at 2.4 Gigahertz. The module shall provide an external antenna connection allowing a line of site communication range of up to 300 feet with a roof mounted antenna.</p> <p>The module shall transmit a password protected web page to a WiFi enabled device (i.e. most smart phones, tablets or laptops) allowing two levels of user interaction. The firefighter level shall allow vehicle monitoring of the vehicle and firefighting systems on the apparatus. The technician level shall allow diagnostic access to inputs and outputs installed on the Command Zone, control and information system.</p> <p>The data logging capability shall record faults from the engine, transmission, ABS and Command Zone, control and information systems as they occur. No other data shall be recorded at the time the fault occurs. The data logger shall provide up to 2 Gigabytes of data storage.</p> <p>A USB connection shall be provided on the Tech Module. It shall provide a means to download data logger information and update software in the device.</p> <p><u>INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM</u></p> <p>A system shall be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.</p> <p><u>VOLTAGE MONITOR SYSTEM</u></p> <p>A voltage monitoring system shall be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system shall provide visual and audible warning when the system voltage is below or above optimum levels.</p> <p>The alarm shall activate if the system falls below 11.8 volts DC for more than two (2) minutes.</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> <ul style="list-style-type: none"> <input type="checkbox"/> One (1) 12-volt DC, 30 amp battery direct spare <input type="checkbox"/> One (1) 12-volt DC ground and un-fused switched battery stud located in or adjacent to the power distribution center <p><u>ENHANCED SOFTWARE</u></p> <p>The solid-state control system shall include the following software enhancements:</p> <p>All perimeter lights and scene lights (where applicable) shall be deactivated when the parking brake is released.</p>		

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<p>Cab and crew cab dome lights shall remain on for ten (10) seconds for improved visibility after the doors close. The dome lights shall dim after ten (10) seconds or immediately if the vehicle is put into gear.</p> <p>Cab and crew cab perimeter lights shall remain on for ten (10) seconds for improved visibility after the doors close. The dome lights shall dim after ten (10) seconds or immediately if the vehicle is put into gear.</p>		
<p><u>EMI/RFI PROTECTION</u></p> <p>To prevent erroneous signals from crosstalk contamination and interference, the electrical system shall meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system shall be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.</p> <p>The apparatus shall have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system shall meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10Khz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, shall provide EMC testing reports from testing conducted on an entire apparatus and shall certify that the vehicle meets SAE J551/2 and SAE J1113/25 Region 1, Class C EMR for 10Khz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.</p> <p>EMI/RFI susceptibility shall be controlled by applying appropriate circuit designs and shielding. 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>		

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<p>1. All holes made in the roof shall be caulked with silicon, rope caulk is not acceptable.</p> <p>Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.</p> <p>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.</p> <p>3. Electrical components designed to be removed for maintenance shall not be fastened with nuts and bolts. Metal screws shall be used in mounting these devices. Also a coil of wire shall be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.</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>Five (5) 12 volt, Exide, Model 31S950X3W, group 31 batteries that include the following features shall be provided:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 950 CCA, cold cranking amps <input type="checkbox"/> 190 amp reserve capacity <input type="checkbox"/> High cycle <input type="checkbox"/> Rating of 4750 CCA at 0 degrees Fahrenheit <input type="checkbox"/> 950 minutes of reserve capacity <input type="checkbox"/> Threaded stainless steel studs 			

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<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>ISOLATED BATTERY</u></p> <p>One (1) 12 volt, Exide, Model 31S950X3W, battery shall be provided for voltage sensitive components. A battery isolator appropriately suited for the battery capacity shall be supplied.</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> <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 Kussmaul™ 1200, Model 091-187-12-Remote, battery charger provided. A bar graph display indicating the state of charge shall be provided.</p> <p>The charger shall have a maximum output of 40 amps and a fully automatic regulation.</p> <p>The battery charger shall be wired to the AC shoreline inlet through an AC receptacle adjacent to the battery charger.</p> <p>The battery charger shall be located in the left body compartment mounted on the left wall as high as possible.</p>		

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<p>The battery charger indicator shall be displayed through the window behind the driver seat. The display shall be mounted on a bracket so that it is visible from outside the apparatus in the lower corner of the window.</p> <p><u>AUTO EJECT FOR SHORELINE</u></p> <p>There shall be one (1) Kussmaul™, Model 091-55-20-120, 20 amp 120 volt AC shoreline inlet(s) provided to operate the dedicated 120 volt AC circuits on the apparatus.</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> <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"> <input type="checkbox"/> Line Voltage <input type="checkbox"/> Current Rating (amps) <input type="checkbox"/> Phase <input type="checkbox"/> Frequency <p>The shoreline receptacle shall be located on the driver side of cab, above wheel.</p> <p><u>ALTERNATOR</u></p> <p>A C.E. Niehoff, model C680-1, alternator shall be provided. It shall have a rated output current of 430 amp as measured by SAE method J56. Also, it shall have a custom three (3)-set point voltage regulator, manufactured by C. E. Niehoff. 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 MANAGER</u></p> <p>An electronic load management (ELM) system shall be provided that monitors the vehicles 12-volt electrical system, automatically reducing the electrical load in the event of a low voltage condition, and automatically restoring the shed electrical loads when a low voltage condition expires. This ensures the integrity of the electrical system.</p> <p>For improved reliability and ease of use, the load manager system shall be an integral part of the vehicle's solid state control system requiring no additional components to perform load management tasks. Load management systems which require additional components shall not be allowed.</p> <p>The system shall include the following features:</p>		

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<input type="checkbox"/> System voltage monitoring.			
<input type="checkbox"/> A shed load shall remain inactive for a minimum of five minutes to prevent the load from cycling on and off.			
<input type="checkbox"/> Sixteen available electronic load shedding levels.			
<input type="checkbox"/> Priority levels can be set for individual outputs.			
<input type="checkbox"/> High Idle to activate before any electric loads are shed and deactivate with the service brake.			
o If enabled:			
<input type="checkbox"/> "Load Man Hi-Idle On" shall display on the information center.			
<input type="checkbox"/> Hi-Idle shall not activate until 30 seconds after engine start up.			
<input type="checkbox"/> Individual switch "on" indicator to flash when the particular load has been shed.			
<input type="checkbox"/> The information center indicates system voltage.			
<p>The information center, where applicable, includes a "Load Manager" screen indicating the following:</p>			
<input type="checkbox"/> Load managed items list, with priority levels and item condition.			
<input type="checkbox"/> Individual load managed item condition:			
o ON = not shed			
o SHED = shed			
<p><u>SEQUENCER</u></p> <p>A sequencer shall be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation shall allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.</p> <p>For improved reliability and ease of use, the load sequencing system shall be an integral part of the vehicle's solid state control system requiring no additional components to perform load sequencing tasks. Load sequencing systems which require additional components shall not be allowed.</p> <p>Emergency light sequencing shall operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights shall be activated one by one at half-second intervals. Sequenced emergency light switch indicators shall flash while waiting for activation.</p>			

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Yes	No	
<p>When the emergency master switch is deactivated, the sequencer shall deactivate the warning light loads in the reverse order.</p> <p>Sequencing of the following items shall also occur, in conjunction with the ignition switch, at half-second intervals:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cab Heater and Air Conditioning <input type="checkbox"/> Crew Cab Heater (if applicable) <input type="checkbox"/> Crew Cab Air Conditioning (if applicable) <input type="checkbox"/> Exhaust Fans (if applicable) <input type="checkbox"/> Third Evaporator (if applicable) <p><u>HEADLIGHTS</u></p> <p>There shall be four (4) JW Speaker®, Model 8800, 4" x 6" rectangular LED lights mounted in the front quad style, chrome housing on each side of the cab grille:</p> <ul style="list-style-type: none"> <input type="checkbox"/> the outside light on each side shall contain a part number 055***1 low beam module <input type="checkbox"/> the inside light on each side shall contain a part number 055***1 high beam module <input type="checkbox"/> the headlight to include chrome bezels <p>The low beam lights shall be activated when the headlight switch is on.</p> <p>The high beam and low beam lights shall be activated when the headlight switch and the high beam switch is activated.</p> <p><u>DIRECTIONAL LIGHTS</u></p> <p>There shall be two (2) Whelen 600 series, LED combination directional/marker lights provided. The lights shall be located on the outside cab corners, next to the headlights.</p> <p>The color of the lenses shall be clear.</p> <p><u>INTERMEDIATE LIGHT</u></p> <p>There shall be two (2) Truck-Lite®, Model 60115Y, amber LED lights furnished, one (1) each side, horizontally in the rear fender panel. The light shall double as a turn signal and marker light.</p> <p>A stainless steel trim shall be included with this installation.</p> <p><u>CAB CLEARANCE/MARKER/ID LIGHTS</u></p> <p>There shall be five (5) Truck-Lite, Model 10006Y kits, amber LED beehive lights provided to indicate the presence and overall width of the vehicle in the following locations:</p>		

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		Yes	No
<input type="checkbox"/> Three (3) amber LED identification lights shall be installed on the center of the cab roof, above the windshield.			
<input type="checkbox"/> Two (2) amber LED clearance/marker lights shall be installed, one (1) on each outboard side of the cab roof, above the windshield.			
<u>FRONT CAB SIDE DIRECTIONAL LIGHTS</u> There shall be two (2) Truck-Lite®, Model 19036Y, amber LED lights installed to the outside of the chrome wrap around bezel, one (1) on each side of the cab. The lights shall activate as additional directional lights with the corresponding directional circuit.			
<u>REAR CLEARANCE/MARKER/ID LIGHTING</u> There shall be three (3) Truck-Lite®, Model 35375R, LED lights used as identification lights located at the rear of the apparatus per the following: <ul style="list-style-type: none"> <input type="checkbox"/> As close as practical to the vertical centerline <input type="checkbox"/> Centers spaced not less than 6.00" or more than 12.00" apart <input type="checkbox"/> Red in color <input type="checkbox"/> All at the same height There shall be two (2) Truck-Lite, Model 35200R, LED lights recessed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following: <ul style="list-style-type: none"> <input type="checkbox"/> To indicate the overall width of the vehicle <input type="checkbox"/> One (1) each side of the vertical centerline <input type="checkbox"/> As near the top as practical <input type="checkbox"/> Red in color <input type="checkbox"/> To be visible from the rear <input type="checkbox"/> All at the same height There shall be two (2) Truck-Lite, Model 35200R, LED lights recessed on the side of the apparatus as marker lights as close to the rear as practical per the following: <ul style="list-style-type: none"> <input type="checkbox"/> To indicate the overall length of the vehicle <input type="checkbox"/> One (1) each side of the vertical centerline <input type="checkbox"/> As near the top as practical <input type="checkbox"/> Red in color 			

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	Yes	No
<input type="checkbox"/> To be visible from the side <input type="checkbox"/> All at the same height <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>REAR FMVSS LIGHTING</u> The rear stop/tail and directional LED lighting shall consist of the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Two (2) Whelen®, Model M6BTT, red LED stop/tail lights <input type="checkbox"/> Two (2) Whelen, Model M6T, 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) Whelen Model M6BUW, LED backup lights provided in the tail light housing.</p> <p><u>LICENSE PLATE BRACKET</u> 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> <p><u>LIGHTING BEZEL</u> There shall be two (2) Whelen, Model M6FCV4P, four (4) place chromed ABS housings provided for the rear M6 series stop/tail, directional, back up, scene lights or warning lights.</p> <p><u>BACK-UP ALARM</u> There shall be an ECCO, Model SA917, electronic audible back-up alarm provided.</p> <p>This alarm shall be activated when the truck is shifted into reverse.</p> <p><u>CAB PERIMETER SCENE LIGHTS</u> There shall be four (4) Amdor, Model AY-LB-12HW020, 350 lumens each, 20.00" white LED strip lights provided, one (1) for each cab door.</p>		

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	Yes	No
<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) Amdor, Model AY-LB-12HW020, 350 lumens each, 20.00" LED weatherproof strip lights with brackets provided under the pump panel running boards, one (1) each side. [Control, Perimeter Lts]</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) Amdor, Model AY-LB-12HW020, 350 lumens, 20.00" long, white LED's, 12 volt DC lights provided at the rear step area of the body, one (1) each side shining to the rear.</p> <p>The perimeter scene lights shall be activated when the parking brake is applied.</p> <p><u>ADDITIONAL PERIMETER LIGHTS</u></p> <p>There shall be four (4) lights - Amdor® Model AY-LB-12HW020, 350 lumens, 20.00" long, with white LED's installed with one (1) light under compartment D1, one (1) light under compartment D3, one (1) light under compartment P1 and one (1) light under compartment P3. [Control, Scene Lts]</p> <p>With the chassis battery switch energized, the lights shall be activated by the same means as the body perimeter lights.</p> <p><u>STEP LIGHTS</u></p> <p>There shall be four (4) white LED, step lights provided. One (1) step light shall be provided on each side, on the front compartment face and two (2) step lights at the rear to illuminate the tailboard.</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 controlled by the same means as the body perimeter lights and by the perimeter scene lights switch in the cab.</p> <p>All other steps on the apparatus shall be illuminated per the current edition of NFPA 1901.</p> <p><u>SCENE LIGHTS</u></p> <p>There shall be two (2) Whelen, Model PELCC LED scene light(s) with chrome flange(s) installed on the side of the apparatus, on each side of the rear of the cab to shine on the crosslay hose beds from the outside edges inboard as far as possible.</p> <p>A control for the light(s) selected above shall be the following:</p> <p>a switch at the driver's side switch panel</p>		

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	Yes	No
a switch at the driver's side pump panel		
a switch at the passenger's side pump panel		
no additional switch location		
These lights may be load managed when the parking brake is applied.		
<u>12 VOLT LIGHTING</u>		
There shall be one (1) Whelen® Model P*H2*, 17,750 lumens 12 volt DC light(s) with a combination of flood and spot optics provided on the front visor, centered.		
The painted parts of this light assembly to be white.		
The light(s) shall be controlled by a switch at the driver's side switch panel and by a switch at the passenger's side switch panel.		
These light(s) may be load managed when the parking brake is applied.		
<u>12 VOLT DC SCENE LIGHTS</u>		
There shall be one (1) Whelen® Model P*H2*, 17,750 lumens 12 volt DC powered lights with white LEDs and a combination of flood and spot optics installed on the apparatus located, LS of cab high between doors in raised roof area.		
The light(s) to be installed in a 0 degree vertical recessed bracket.		
The painted parts of this light assembly to be red number 106.		
The lights shall be activated by a switch at the driver's side switch panel, by a switch at the driver's side pump panel, by a switch at the passenger's side switch panel and by the same control that has been selected for the driver's side flood light(s).		
The light(s) may be load managed when the parking brake is applied.		
<u>12 VOLT DC SCENE LIGHTS</u>		
There shall be one (1) Whelen® Model P*H2*, 17,750 lumens 12 volt DC powered lights with white LEDs and a combination of flood and spot optics installed on the apparatus located, RS of cab high between crew cab doors in raised roof area.		
The light(s) to be installed in a 0 degree vertical recessed bracket.		
The painted parts of this light assembly to be red number 106.		
The lights shall be activated by a switch at the driver's side switch panel, by a switch at the driver's side pump panel, by a switch at the passenger's side switch panel, by a switch at the passenger's side pump panel and by the same control that has been selected for the passenger's side flood light(s).		
The light(s) may be load managed when the parking brake is applied.		

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	Yes	No
<p><u>12 VOLT LIGHTING</u></p> <p>There shall be one (1) Whelen® Model P*H2*, 17,750 lumens 12 volt DC LED light(s) with a combination of flood and spot optics installed on the apparatus located, rearward and high on the LS hatch compartment.</p> <p>The painted parts of this light assembly to be red number 106.</p> <p>The light(s) to be installed in a 0 degree vertical recessed bracket.</p> <p>The lights shall be controlled by the same control that has been selected for the driver's side flood light(s).</p> <p>The light(s) may be load managed when the parking brake is applied.</p> <p><u>12 VOLT LIGHTING</u></p> <p>There shall be one (1) Whelen® Model P*H2* 17,750 lumens 12 volt DC LED light(s) with a combination of flood and spot optics installed on the apparatus located, high and rear on the RS hatch compartment.</p> <p>The painted parts of this light assembly to be red number 106.</p> <p>The light(s) to be installed in a 0 degree vertical recessed bracket.</p> <p>The lights shall be controlled by the same control that has been selected for the passenger's side flood light(s).</p> <p>The light(s) may be load managed when the parking brake is applied.</p> <p><u>12 VOLT LIGHTING</u></p> <p>There shall be one (1) Whelen® Model P*H2* 17,750 lumens 12 volt DC LED light(s) with a combination of flood and spot optics installed on the apparatus located, on top of the RS hatch compartment facing rearward.</p> <p>The painted parts of this light assembly to be red number 106.</p> <p>The light(s) to be installed in a 0 degree vertical recessed bracket in an enclosure made of aluminum treadplate.</p> <p>The scene light shall be activated with a switch in the cab and at the rear of the apparatus.</p> <p>The light(s) may be load managed when the parking brake is applied.</p> <p><u>HOSE BED LIGHTS</u></p> <p>There shall be white 12 volt DC LED light strips with stainless steel protective cover, provided to light the hose bed area. Hose Bed lights shall meet the photometric levels listed in NFPA 1901 for Hose Bed lighting requirements.</p>		

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<input type="checkbox"/> Light strip(s) shall be installed along the upper edge of the left side of the hose bed.	Yes	No
<input type="checkbox"/> Light strip(s) shall be installed along the upper edge of the right side of the hose bed. The lights shall be activated by a cup switch at the rear of the apparatus no more than 72.00" from the ground. <u>LIGHTS BELOW HOSE BED COVER</u> Installed below the aluminum hose bed cover shall be four (4) Amdor Model AY-LB-12HW040, 700 lumens, white LED, 40.00" long light(s). One (1) light shall be installed two lights under each hose bed cover close to the middle near framework for protection but not too close so the frames cast shadows. on the edge of the reinforcing channel for each door, for protection of the light. The light(s) shall be activated when the battery switch is on, and when the hosebed cover is raised. <u>WALKING SURFACE LIGHT</u> There shall be Model FRP, 4" round black 12 volt DC LED floodlight(s) with bolt mount provided to illuminate the entire designated walking surface on top of the body. The light(s) shall be activated when the body step lights are on. <u>MASTER SWITCH FOR DEFROSTER FANS</u> A master switch shall be provided for the defroster fans at the cab instrument panel. <u>SPECIAL WATER TANK</u> Booster tank shall have a capacity of 500 gallons and be constructed of polypropylene plastic by United Plastic Fabricating, Incorporated. The Special tank shall be T-shaped to provide for deep side compartments and to serve as a large sump to limit the amount of undraftable water. The tank shall be designed to achieve a low hose bed. Tank design shall be a stepped design with the forward section of the tank higher than the section of the tank that is below the hose bed. Tank joints and seams shall be nitrogen welded inside and out. Tank shall be baffled in accordance with NFPA Bulletin 1901 requirements. Baffles shall have vent openings at both the top and bottom to permit movement of air and water between compartments. Longitudinal partitions shall be constructed of .38" polypropylene plastic and shall extend from the bottom of the tank through the top cover to allow for positive welding. Transverse partitions shall extend from 4.00" off the bottom of the tank to the underside of the top cover.		

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	Yes	No
All partitions shall interlock and shall be welded to the tank bottom and sides.		
Tank top shall be constructed of .50" polypropylene. It shall be recessed .38" and shall be welded to the tank sides and the longitudinal partitions.		
Tank top shall be sufficiently supported to keep it rigid during fast filling conditions.		
Construction shall include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions. Two (2) of the dowels shall be drilled and tapped (.50" diameter, 13.00" deep) to accommodate lifting eyes.		
A sump that is a minimum of 8.00" long x 8.00" wide x 6.00" deep shall be provided at the bottom of the water tank.		
Sump shall include a drain plug and the tank outlet.		
Tank shall have a combination vent and 14.00" fill tower.		
Tank shall be installed in a special size fabricated cradle assembly constructed of structural steel.		
Sufficient crossmembers shall be provided to properly support bottom of tank. Crossmembers shall be constructed of steel flat bar or rectangular tubing.		
Tank shall "float" in cradle to avoid torsional stress caused by chassis frame flexing. Rubber cushions, .50" thick x 3.00" wide, shall be placed on all horizontal surfaces that the tank rests on.		
Stops or other provision shall be provided to prevent an empty tank from bouncing excessively while moving vehicle.		
Mounting system to be approved by the tank manufacturer.		
Fill tower shall be constructed of .50" polypropylene and shall be a minimum of 8.00" wide x 14.00" long.		
Fill tower shall be furnished with a .25" thick polypropylene screen and a hinged cover.		
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.		
<u>SLEEVE, PLUMBING, THROUGH TANK</u>		
Two (2) sleeves shall be provided in the water tank for a 3.00" pipe to the rear.		
<u>WATER TANK RESTRAINT</u>		
A heavy-duty water tank restraint shall be provided.		

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	Yes	No
<p><u>HOSE BED</u></p> <p>The hose bed shall be fabricated of 0.125"-5052 aluminum with a nominal 38,000 psi tensile strength.</p> <p>The hose bed floor shall be 58.00" or lower.</p> <p>Upper and rear edges of side panels shall have a double break for rigidity, a split tube finish shall not be acceptable.</p> <p>Any area of the outboard hose bed wall that extends past the end of the hose bed floor shall be covered with brushed stainless steel to prevent damage to painted surface when hose is removed.</p> <p>Flooring of the hose bed shall be removable aluminum grating with the top surface corrugated to aid in hose aeration. The grating slats shall be a minimum of 0.50" x 4.50" with spacing between slats for hose ventilation.</p> <p>A cross divider shall be provided at the front of the hose bed before the tank transitions from the lower section to the upper section. The divider shall run from the top of the side sheet down below the hose bed grating.</p> <p>The hose bed floor shall be 60" or lower from the ground when the truck is fully loaded if possible without affecting the B1 compartment.</p> <p>Hose bed shall accommodate 550' x 1.75", 550' x 2.50" on a shelf 33"W & 16" above main hose bed & 1000'x4" Storz hose. Under the shelf the hose bed shall carry a skid load of 150' x 1.75" in a poly tray, 150'x2.50" poly tray 2 - 1.75"x100' bundles in one poly tray.</p> <p><u>HOSE BED DIVIDER</u></p> <p>Two (2) adjustable hosebed dividers shall be furnished for separating hose.</p> <p>Each divider shall be constructed of a .25" brushed aluminum sheet. Flat surfaces shall be sanded for uniform appearance, or constructed of brushed aluminum.</p> <p>An oval opening shall be provided near the rear of the divider to be used as a hand hold and aid in accessing the hose bed.</p> <p>Divider shall be fully adjustable by sliding in tracks, located at the front and rear of the hose bed.</p> <p>Divider shall be held in place by tightening bolts, at each end.</p> <p>Acorn nuts shall be installed on all bolts in the hose bed which have exposed threads.</p> <p><u>STORAGE HOSE BELOW MAIN HOSEBED</u></p> <p>An additional hose storage area shall be provided below the main hosebed on the left side. The additional storage area shall be designed to store poly hose trays. Hose bed grating shall be installed above this storage area.</p>		

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	Yes	No
<p>The size of the hose storage compartment shall be approximately 32" wide x 16" high. Tray ID dimensions shall be 9.00" id, 10.00" id and 10.00" id..</p> <p>A cross-divider shall be provided just behind the fill tower. The divider shall be bolted to the side sheet.</p> <p><u>REMOVABLE HOSE TRAY(S) IN HOSE BED</u></p> <p>There shall be three (3) removable U-shaped hose tray(s) provided inside the hose bed.</p> <p>Tray shall be sized one for 150' x 1.75" hose, one for 150' x 2.50", one for two bundles of 100' x 1.75". Tray dimensions shall be 9.00" ID, 10.00" ID and 10.00" ID.</p> <p>Tray shall be fabricated of poly with two (2) hand hold cutouts on each side. Tray shall slide on stainless steel angles. Bottom of angles shall be lined with Dura-surf anti friction poly slides for ease of removal. A stop shall be provided at the front of the tray to prevent the tray from moving forward and a strap shall be supplied at the rear.</p> <p>Tray shall be located left side of hose bed.</p> <p><u>HOSE BED COVER</u></p> <p>A two (2) section hose bed cover, constructed of .125" bright aluminum treadplate shall be furnished. The cover shall be hinged with full length stainless steel piano hinge. The sides shall be slanted down.</p> <p>The cover shall be reinforced so that it can support the weight of a man walking on the cover.</p> <p>The cover is designed with the left cover opening first.</p> <p>If access to the water tank fill tower is blocked by the hose bed cover, then a hinged door shall be provided in it so that the tank may be filled without raising cover doors.</p> <p>Chrome grab handles and four (4) gas filled cylinders shall be provided to assist in opening and closing the cover. A handrail is to be provided at the rear, in the center of the support, to assist in opening the cover.</p> <p>A black vinyl flap shall be installed on the rear of the bright aluminum treadplate hose bed cover, with a chain weight and a spring clip-and-hook hold downs shall be provided at the rear of the cover.</p> <p><u>RUNNING BOARDS</u></p> <p>Running boards shall be fabricated of .125" bright aluminum treadplate.</p> <p>Each running board shall be supported by a welded 2.00" square tubing and channel assembly, which shall be bolted to the pump compartment substructure.</p> <p>Running boards shall be 14.75" deep and spaced .50" away from the pump panel. The rear outside corner of the running board shall be finished with a 45 degree corner where it lines up with the body.</p>		

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A splashguard shall be provided above the running board treadplate.	Yes	No
<p><u>TAILBOARD</u></p> <p>The tailboard shall also be constructed of .125" bright aluminum treadplate and spaced .50" from the body, as well as supported by a structural steel assembly.</p> <p>The tailboard area shall be 16.00" deep in the center area and 8.00" deep to the rear of the side compartments. The tailboard shall be T-shaped. The outboard sides of the tailboard shall be angled at 45 degrees beginning at the point where the body meets the tailboard at the forward outboard edge angling rearward to the rear edge of the tailboard.</p> <p>The exterior side shall be flanged down and in for increased rigidity of tailboard structure.</p> <p><u>REAR WALL, SMOOTH ALUMINUM/BODY MATERIAL</u></p> <p>The rear facing surfaces of the center rear wall shall be smooth aluminum.</p> <p>The bulkheads, the surface to the rear of the side body compartments, shall be smooth and the same material as the body.</p> <p>Any inboard facing surfaces below the height of the hosebed shall be aluminum diamond plate.</p> <p><u>TOW BAR</u></p> <p>A tow bar shall be installed under the tailboard at center of truck 2.00" in from the rear of the tailboard.</p> <p>Tow bar shall be fabricated of 1.00" CRS bar rolled into a 3.00" radius.</p> <p>Tow bar assembly shall be constructed of .38" structural angle. When force is applied to the bar, it shall be transmitted to the frame rail.</p> <p>Tow bar assembly shall be designed and positioned to allow up to a 30 degree upward angled pull of 17,000 lb, or a 20,000 lb straight horizontal pull in line with the centerline of the vehicle.</p> <p>Tow bar design shall have been fully tested and evaluated using strain gauge testing and finite element analysis techniques.</p> <p><u>RUNNING BOARD HOSE RESTRAINT</u></p> <p>A pair of 2.00" wide black nylon straps with stainless steel seat belt buckle style latches shall be provided for each hose tray to secure the hose during travel. There shall be Two (2) hose trays located one (1) in each side running board.</p> <p><u>HOSE TRAY</u></p> <p>Two (2) hose trays shall be made free floating one (1) in each side running board.</p> <p>The tray(s) shall be flanged and drop in from the top. The ends shall be tapered at the front and rear towards the center. No fasteners shall be used to secure the tray(s).</p>		

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	Yes	No
Capacity of the tray shall be 50' of 4" supply hose with storage part of tray minimum of 42" long x 8" wide x 9" deep.		
Rubber matting shall be installed on the floor of the tray to provide proper ventilation.		
<u>COMPARTMENTATION</u>		
Body and compartments shall be fabricated of .125", 5052-H32 aluminum.		
Side compartments shall be an integral assembly with the rear fenders.		
Circular fender liners shall be provided for prevention of rust pockets and ease of maintenance.		
Compartment flooring shall be of the sweep out design with the floor higher than the compartment door lip.		
The compartment door opening shall be framed by flanging the edges in 1.75" and bending out again .75" to form an angle.		
Drip protection shall be provided above the doors by means of bright aluminum extrusion, formed bright aluminum treadplate or polished stainless steel.		
The top of the compartment shall be covered with bright aluminum treadplate rolled over the edges on the front, rear and outward side. These covers shall have the corners welded.		
Side compartment covers shall be separate from the compartment tops.		
Front facing compartment walls shall be covered with bright aluminum treadplate.		
All screws and bolts which protrude into a compartment shall have acorn nuts on the ends to prevent injury.		
<u>UNDERBODY SUPPORT SYSTEM</u>		
Due to the severe loading requirements of this pumper a method of body and compartment support suitable for the intended load shall be provided.		
The backbone of the support system shall be the chassis frame rails which is the strongest component of the chassis and is designed for sustaining maximum loads.		
The support system shall include .375" thick steel vertical angle supports bolted to the chassis frame rails with .625" diameter bolts.		
Attached to the bottom of the steel vertical angles shall be horizontal angles, with gussets welded to the vertical members, which extend to the outside edge of the body.		
A steel frame shall be mounted on the top of these supports to create a floating substructure which shall result in a 500 lb equipment support rating per lower compartment.		

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<p>The floating substructure shall be separated from the horizontal members with neoprene elastomer isolators. These isolators shall reduce the natural flex stress of the chassis from being transmitted to the body.</p> <p>Isolators shall have a broad load range, proven viability in vehicular applications, be of a fail safe design and allow for all necessary movement in three (3) transitional and rotational modes.</p> <p>The neoprene isolators shall be installed in a modified V three (3)-point mounting pattern to reduce the natural flex of the chassis being transmitted to the body.</p> <p>A design with body compartments hanging on the chassis in an unsupported fashion shall not be acceptable.</p> <p><u>AGGRESSIVE WALKING SURFACE</u></p> <p>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></p> <p>Louvers shall be stamped into compartment walls to provide the proper airflow inside the body compartments and to prevent water from dripping into the compartment. Where these louvers are provided, they shall be formed into the metal and not added to the compartment as a separate plate.</p> <p><u>TESTING OF BODY DESIGN</u></p> <p>Body structural analysis shall be fully tested. Proven engineering and test techniques such as finite element analysis, stress coating and strain gauging shall be performed with special attention given to fatigue, life and structural integrity of the cab, body and substructure.</p> <p>Body shall be tested while loaded to its greatest in-service weight.</p> <p>The criteria used during the testing procedure shall include:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Raising opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb. <input type="checkbox"/> Making a 90 degree turn, while driving at 20 mph to simulate aggressive driving conditions. <input type="checkbox"/> Driving the vehicle at 35 mph on a washboard road. <input type="checkbox"/> Driving the vehicle at 55 mph on a smooth road. <input type="checkbox"/> Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement. <p>Evidence of actual testing techniques shall be made available upon request.</p>		

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Specifications - September 11, 2019

	Bidder Complies	
	Yes	No
<p><u>GAS STRUTS FOR COMPARTMENT DOORS</u></p> <p>All double pan vertically hinged body compartment doors shall be equipped with gas charged cylinders as their hold open devices.</p> <p><u>LEFT SIDE COMPARTMENTATION</u></p> <p>The left side compartmentation shall consist of three lap door compartments.</p> <p>A full height, vertically hinged, single door compartment ahead of the rear wheels shall be provided. The interior dimensions of this compartment shall be 34.50" wide x 66.63" high x 25.88" deep in the lower 25.00" of the compartment and 12.00" deep in the remaining upper portion. The clear door opening shall be a minimum of 28.63" wide x 61.88" high.</p> <p>A horizontally hinged, single lift-up door compartment over the rear wheels shall be provided. The interior dimensions of this compartment shall be 66.50" wide x 32.88" high x 12.00" deep. The clear door opening shall be a minimum of 59.25" wide x 27.00" high.</p> <p>A full height, vertically hinged, double door compartment behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 47.75" wide x 67.63" high x 12.00" deep. A section of this compartment shall be 25.88" deep for the first 31.50" width x 26.00" height directly behind the rear wheels. The clear door opening shall be a minimum of 43.50" wide x 62.88" high.</p> <p>The interior height of the compartments shall be measured from the compartment floor to the ceiling. The depth of the compartments shall be measured from the back wall to the inside of the door frame.</p> <p>Closing of the doors shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.</p> <p>The lift-up door shall be furnished with two gas-charged cylinders to assist in the opening of the door and to maintain the door in an open position. There shall be a field adjustable, three-position bracket mounted on the vertical side door opening that shall allow the door to be held open at 87°, 90°, or 93°.</p> <p><u>RIGHT SIDE COMPARTMENTATION</u></p> <p>The right side compartmentation shall consist of three lap door compartments.</p> <p>A full height, vertically hinged, single door compartment ahead of the rear wheels shall be provided. The interior dimensions of this compartment shall be 34.50" wide x 65.13" high x 25.88" deep. The clear door opening shall be a minimum of 28.63" wide x 61.88" high.</p> <p>A horizontally hinged, single lift-up door compartment over the rear wheels shall be provided. The interior dimensions of this compartment shall be 66.50" wide x 31.38" high x 25.88" deep. The clear door opening shall be a minimum of 59.25" wide x 27.00" high.</p>		

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<p>A full height, vertically hinged, double door compartment behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 47.75" wide x 66.13" high x 25.88" deep. The clear door opening shall be a minimum of 43.50" wide x 62.88" high.</p> <p>The interior height of the compartments shall be measured from the compartment floor to the ceiling. The depth of the compartments shall be measured from the back wall to the inside of the door frame.</p> <p>Closing of the doors shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.</p> <p>The lift-up door shall be furnished with two gas-charged cylinders to assist in the opening of the door and to maintain the door in an open position. There shall be a field adjustable, three-position bracket mounted on the vertical side door opening that shall allow the door to be held open at 87°, 90°, or 93°.</p> <p><u>SIDE COMPARTMENT DOORS</u></p> <p>All hinged compartment doors shall be lap style with double panel construction and 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 .25" that is bolted or screwed on with stainless steel fasteners. (Hinges which are welded on shall not be acceptable.)</p> <p>All door locking 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 FMVSS approved door locking mechanisms.</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>REAR COMPARTMENTATION</u></p> <p>A roll-up door compartment above the rear tailboard shall be provided.</p> <p>Interior dimensions of this compartment shall be 40.00" wide x 33.63" high x 33.88" deep in the lower 26.00" of the compartment and 25.75" deep in the remaining upper portion. Depth of the compartment shall be calculated with the compartment door closed.</p>		

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	Yes	No
For a chassis with a rear mounted fuel tank, a louvered removable access panel shall be furnished on the back wall of the compartment.		
Rear compartment shall be open into the rear side compartments.		
Clear door opening of this compartment shall be 33.25" wide x 26.00" high.		
Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.		
<u>ROLLUP REAR COMPARTMENT DOOR</u>		
There shall be a rear rollup door. The door shall be double faced aluminum construction, an anodized satin finish and manufactured by Gortite®.		
Lath sections shall be an interlocking rib design and shall be individually replaceable without complete disassembly of door.		
Between each slat at the pivoting joint shall be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals shall allow door to operate in extreme temperatures ranging from 180 to -40 degrees Fahrenheit. Side, top and bottom seals shall be provided to resist ingress of dirt and weather and be made of Santoprene.		
All hinges, barrel clips and end pieces shall be nylon 66. All nylon components shall withstand temperatures from 300 to -40 degrees Fahrenheit. Hardened plastic shall not be acceptable.		
A polished stainless steel lift bar to be provided for each roll-up door. Lift bar shall be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge shall be supplied over lift bar for additional area to aid in closing the door.		
Door shall be constructed from an aluminum box section. The exterior surface of each slat shall be flat. The interior surface shall be concave to provide strength and prevent loose equipment from jamming the door from inside.		
To conserve space in the compartments, the spring roller assembly shall not exceed 3.00" in diameter. A garage style roll door shall not be acceptable.		
The header for the rollup door assembly shall not exceed 4.00".		
A heavy-duty magnetic switch shall be used for control of open compartment door warning lights.		
<u>SCUFFPLATE</u>		
There shall be brushed stainless steel stainless steel scuffplates furnished around the hose chute openings. There is two (2) hose chute(s) that shall be provided with the scuffplate.		
<u>SCUFFPLATE</u>		
A brushed stainless steel scuffplate shall be installed on the sides of the hosebed area both sides and front. This scuffplate shall cover from the top flange of the hosebed area down to the hosebed grating. The scuffplate shall be fastened with self tapping screws.		

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<p><u>KEYED LOCK(S)</u></p> <p>A keyed lock shall be furnished for one (1) compartment door. The compartmentation, to have a keyed lock, shall be B1.</p> <p><u>KEYED LOCK(S)</u></p> <p>There shall be ten (10) compartment doors that require a keyed lock. The compartments to have a keyed lock shall be LS1, LS2, LS3, LS4, LS5, RS1, RS2, RS3, LS4 and LS5.</p> <p><u>CONTROL OF ELECTRIC DOOR LOCKS</u></p> <p>The electric body door locks shall be locked or unlocked with the cab controls.</p> <p>In the event of loss of power, a manual override is available.</p> <p><u>ELECTRIC DOOR LOCKS</u></p> <p>There shall be eleven (11) door(s) located LS1, LS2, LS3, LS4, LS5, B1, RS1, RS2, RS3, RS4 and RS5 equipped with electric locks. The locks shall be wired battery direct. The switch for control shall be located under compartment LS3. In the event of loss of power, a manual override is available.</p> <p><u>REVERSE HINGED DOOR</u></p> <p>The two (2) compartment doors, located LS3 and RS3, shall have the hinge at the rear of the door.</p> <p><u>DOOR FRAME SCUFFPLATE</u></p> <p>The Eight (8) scuffplates shall be provided for the lower door frame(s) LS1, LS2, LS3, LS4, RS1, RS2, RS3 and RS4. Each scuffplate shall be brushed stainless steel with a .38" lip down.</p> <p><u>SCUFFPLATE ON INTERIOR OF COMPARTMENT DOOR(S)</u></p> <p>The eight (8) compartment doors shall include a brushed stainless steel scuffplate to cover the entire width and height on the inside panel of each door pan.</p> <p>Scuffplate shall be located LS1, LS2, LS3, LS4, RS1, RS2, RS3 and RS4.</p> <p><u>COMPARTMENT LIGHTING</u></p> <p>There shall be seven (7) compartment(s) with two (2) white 12 volt DC LED compartment light strips. The dual light strips shall be centered vertically along each side of the door framing. There shall be two (2) light strips per compartment. The dual light strips shall be in all body compartment(s).</p> <p>Any remaining compartments without light strips shall have a 4.00" diameter LED Truck-Lite model 44042C or equivalent. Opening the compartment door shall automatically turn the compartment lighting on.</p> <p><u>COMPARTMENT LIGHTING, ADDITIONAL</u></p> <p>There shall be eight (8) LED strip light(s) provided in the compartment(s) located two (2) under each hatch compartment door IPOS. Each light shall be 27.00" in length.</p>		

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Opening the compartment door(s) shall automatically turn the compartment lighting on.		
<p>One (1) hatch compartment on the passenger side shall have a vertically hinged double panel, lap style, hinged to the outside aluminum door located at the rear. The door shall have weather stripping on all four edges to help seal the door. A D-ring slam latch shall be provided on the door with a gas shock to help hold the door open.</p> <p><u>HATCH COMPARTMENT</u></p> <p>One (1) hatch compartment 151.75" long x 13.75" wide x 22.00" maximum depth shall be provided above the left side compartments, with two (2) liftup top opening hatch doors.</p> <p>Compartment shall extend the full length of the side body compartmentation.</p> <p>Sides of the compartment shall be constructed of the same material as the body and painted job color. A chrome and black vinyl molding shall be provided to cover the seam between the top of the body panel and the bottom of the hatch compartment.</p> <p>Top of the compartment shall be constructed of bright aluminum treadplate.</p> <p>Two (2) liftup, bright aluminum treadplate doors shall be provided on the top of the compartment, each with a chrome grab handle.</p> <p>Doors shall have lipped edges with a rubber seal for weather resistance, and an inner pan with one (1) recessed light.</p> <p>Doors shall be hinged on the outboard side and shall be held open with rubber covered chains.</p> <p>One (1) socket and plunger type latch shall be provided with each door to hold the doors in the closed position.</p> <p>Each door shall have a clear door opening of 64.00" long x 7.50" wide.</p> <p>Compartment shall drain to an area below the hose bed.</p> <p><u>HATCH COMPARTMENT</u></p> <p>One (1) hatch compartment 151.75" long x 27.75" wide x 22.00" maximum depth shall be provided above the right side compartments, with two (2) liftup top opening hatch doors.</p> <p>Compartment shall extend the full length of the side body compartmentation.</p> <p>Sides of the compartment shall be constructed of the same material as the body and painted job color. A chrome and black vinyl molding shall be provided to cover the seam between the top of the body panel and the bottom of the hatch compartment.</p> <p>Top of the compartment shall be constructed of bright aluminum treadplate.</p> <p>Two (2) liftup, bright aluminum treadplate doors shall be provided on the top of the compartment, each with a chrome grab handle.</p>		

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<p>Doors shall have lipped edges with a rubber seal for weather resistance, and an inner pan with one (1) recessed light.</p> <p>Doors shall be hinged on the outboard side and shall be held open with pneumatic stay arms.</p> <p>One (1) socket and plunger type latch shall be provided with each door to hold the doors in the closed position.</p> <p>Each door shall have a clear door opening of 64.00" long x 21.50" wide.</p> <p>Compartment shall drain to an area below the hose bed.</p> <p><u>MOUNTING TRACKS</u></p> <p>There shall be six (6) sets of tracks for mounting shelf(s) in LS1, LS2, LS3, RS1, RS3 and B1. These tracks shall be installed vertically to support the adjustable shelf(s), and shall be full height of the compartment. The tracks shall be painted to match the compartment interior.</p> <p><u>ADJUSTABLE SHELVES</u></p> <p>There shall be six (6) shelves 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 in RS1 in the lower third, in RS3 in the upper third, in LS1 in the lower third, in LS3 in the upper third, in LS3 in the upper third and in LS2 in the lower third to the right of the partition.</p> <p><u>SLIDE-OUT ADJUSTABLE HEIGHT TRAY</u></p> <p>There shall be one (1) slide-out tray 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>Each tray shall be mounted on a pair of side mounted slides. The slide mechanisms shall have ball bearings for ease of operation and years of dependable service. The slides shall be mounted to shelf tracks to allow the tray to be adjustable up and down within the designated mounting location.</p> <p>An automatic lock shall be provided for both the in and out tray positions. The lock trip mechanism shall be located at the front of the tray and shall be easily operated with a gloved hand.</p> <p>The location(s) shall be in B1 centered between the floor and ceiling</p>		

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<p><u>SLIDE-OUT FLOOR MOUNTED TRAY</u></p> <p>There shall be three (3) floor mounted slide-out tray(s) with 2.00" sides provided RS1, LS1 and B1. Each tray shall be rated for up to 500lb in the extended position. The tray(s) shall be constructed of a minimum .13" aluminum with welded corners. The finish shall be painted spatter gray.</p> <p>The trays shall be designed for maximum compartment depth.</p> <p>The RS1 tray shall have a minimum inside dimension of 42.00".</p> <p>The LS1 tray shall have a minimum inside dimension of 28.00".</p> <p>The B1 tray shall have a minimum inside dimension of 32.00".</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> <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><u>SWING OUT TOOLBOARD</u></p> <p>A swing out aluminum toolboard shall be provided.</p> <p>It shall be a minimum of .188" thick without holes in the board.</p> <p>A 1.00" x 1.00" aluminum tube frame shall be welded to the edge of the pegboard.</p> <p>The board shall be mounted on a pivoting device at the back of the compartment on the top and bottom to allow easy movement in and out of the compartment. The maximum tool load shall be 400 pounds.</p> <p>The board shall have positive lock in the stowed and extended position.</p> <p>The board shall be mounted on adjustable tracks from front to back within the compartment.</p> <p>There shall be One (1) toolboard(s) provided. The toolboard(s) shall be spatter gray painted and installed RS2.</p> <p><u>DRAWER ASSEMBLY</u></p> <p>A slideout drawer assembly shall be installed LS3.</p>		

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<p>The clear dimensions of the first drawer starting at the top shall be 3.25" with a face plate that is 4.00" high x 21.00" deep. The clear dimensions of the second drawer shall be 4.75" with a face plate that is 5.00" high x 21.00" deep. The clear dimensions of the third drawer shall be 7.75" with a face plate that is 8.00" high x 21.00" deep. Each drawer shall be the same width and not exceed 36.00".</p> <p>The drawers shall have a capacity of 250 pounds.</p> <p>The drawers shall be mounted in a cabinet housing constructed of light gray powder coated aluminum with anodized aluminum frames. The housing shall be 24.00" deep, and completely enclose the drawer.</p> <p>A full-length aluminum extruded rail shall be provided at the top edge of each drawer. This rail shall act as the latching mechanism as well as the handle for each drawer.</p> <p>There shall be a total of one (1) provided.</p> <p><u>BACKBOARD STORAGE</u></p> <p>A transverse area over the pump between the crosslays shall hold a backboard.</p> <p>The backboard shall be accessible from either side of the vehicle.</p> <p>The size of the backboard to be stored shall be 72" x 18" x 2" .</p> <p><u>COMPARTMENT MATTING</u></p> <p>Black rubber matting shall be provided in three (3) compartments. The locations are three drawers in C-TECH cabinet in compartment LS3.</p> <p>The matting shall be .13" thick with corrugated top ribs.</p> <p><u>MATTING, COMPARTMENT FLOOR</u></p> <p>Turtle Tile compartment matting shall be provided in six (6) compartments on the compartment floor. The locations are, B1, LS2, LS4, RS2, RS3 and RS4.</p> <p>The Turtle Tile shall be black and the leading edge of the matting shall include the beveled edge. The beveled edge shall be yellow .</p> <p><u>MATTING, FLOOR OF HATCH COMPARTMENT</u></p> <p>There shall be Turtle Tile compartment matting provided on the floor of the designated hatch compartment(s).</p> <p>The color of Turtle Tile matting shall be black.</p> <p>The Turtle Tile matting shall be provided on the floor of a total of two (2) hatch compartment(s) located RS & LS.</p>		

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<p><u>MATTING, COMPARTMENT SHELVING</u></p> <p>Turtle Tile compartment matting shall be provided in 12 shelves. The locations are, all shelves and all trays - three (3) in LS3, one (1) in LS2, three (3) in LS1, two (2) in B1, one (1) in RS3, two (2) in RS1; one (1) in RS hatch compartment.</p> <p>The color of Turtle Tile shall be black.</p> <p><u>HATCH COMPARTMENT FALSE WALL</u></p> <p>An aluminum false wall shall be installed inside the LS & RS hatch compartments hatch compartment to prevent damage to the outside surface, of the compartment. The wall shall extend from front to back of the compartment. There shall be a small space between the false wall and the outside wall of the compartment.</p> <p>One (1) partition shall be installed in RS hatch compartment, 74" forward from the inside of the rear hatch door. Each partition shall be the full vertical height of the hatch compartment.</p> <p><u>VERTICAL COMPARTMENT PARTITION</u></p> <p>One (1) partition shall be provided.</p> <p>The partition construction shall consist of .125" aluminum painted spatter gray. Each partition shall be the full vertical height of the compartment.</p> <p>The location(s) shall be in LS2, 16.00" from the forward door frame.</p> <p><u>TOOLBOARD</u></p> <p>There shall be four (4) aluminum toolboard(s) provided. The toolboard(s) shall be installed LS3, RS1, RS2 and RS3.</p> <p>The toolboard shall be .188" thick and painted spatter gray.</p> <p>Retainers shall be used to mount the toolboard to the tracks.</p> <p><u>STAINLESS STEEL SCUFFPLATE LADDER COMPT.</u></p> <p>A stainless steel scuffplate shall be provided at the bottom opening of the ladder storage compartment to protect the paint and chevron stripe.</p> <p><u>RUB RAIL</u></p> <p>Bottom edge of the side and rear of the body 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>		

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<p><u>BODY FENDER CROWNS</u></p> <p>Polished stainless steel fender crowns shall be provided around the rear wheel openings with a dielectric barrier shall be provided between the fender crown and the fender sheet metal to prevent corrosion.</p> <p>The fender crowns shall be held in place with stainless steel screws that thread directly into a composite nut and not directly into the parent body sheet metal to eliminate dissimilar metals contact and greatly reduce the chance for corrosion. Rubber welting shall be provided between the body and crown.</p>		
<p><u>BODY FENDER LINER</u></p> <p>A painted fender liner shall be provided. The liners shall be removable to aid in the maintenance of rear suspension components.</p>		
<p><u>HARD SUCTION HOSE</u></p> <p>Hard suction hose shall not be required.</p>		
<p><u>HANDRAILS</u></p> <p>The handrails shall be 1.25" diameter anodized aluminum extrusion, with a ribbed design, to provide a positive gripping surface.</p> <p>Chrome plated end stanchions shall support the handrail. Plastic gaskets shall be used between end stanchions and any painted surfaces.</p> <p>Drain holes shall be provided in the bottom of all vertically mounted handrails.</p> <p>Handrails shall be provided to meet NFPA 1901 section 15.8 requirements. The handrails shall be installed as noted on the sales drawing.</p>		
<p><u>HANDRAILS</u></p> <p>One (1) vertical handrail, not less than 29.00" long, shall be located on each rear beavertail.</p> <p>One (1) horizontal black rubber-covered handrail shall be provided above the hose bed at the rear of the apparatus. The hose bed dividers shall be tied to the upper handrail or cross bar in order to provide sufficient reinforcement.</p>		
<p><u>EXTINGUISHER/AIR BOTTLE/ STORAGE (TRIANGULAR)</u></p> <p>A total of one (1) extinguisher/air bottle/storage compartments shall be provided RS rear fender well. The triangular shaped compartment shall be sized to fit a 8.00" diameter extinguisher in the lower area and a 8.00" diameter extinguisher in the upper area. The compartment shall be approximately 25.50" deep. A partition shall be provided to separate the compartment. Also inside the compartment, black rubber matting shall be provided. The compartment shall be furnished with a drain hole. A polished stainless steel, triangular shaped door with a Southco raised trigger C2 chrome lever latch shall be provided to contain the air bottles. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal.</p>		

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<p><u>AIR BOTTLE COMPARTMENT STRAP</u></p> <p>A strap shall be provided in the air bottle compartment(s) to help contain the bottles when the vehicle is parked on an incline. The strap shall wrap around the neck and attach to the wall of the compartment.</p> <p><u>AIR PACK STORAGE</u></p> <p>A total of one (1) air pack compartment(s) shall be provided and located LS forward fender well. The air pack compartment(s) shall be tapered to match the profile of the space available in the fender. The compartment(s) shall be approximately 15.50" wide at the top and 5.00" wide at the bottom for the wheel cutout. The compartment(s) shall be 15.50" tall at the body side compartment and 6.00" tall at the wheel cutout. The compartment(s) shall be 26.00" deep and have a drain hole.</p> <p>Inside the compartment, black rubber matting shall be provided.</p> <p>A polished stainless steel hinged door with a Southco raised trigger C2 chrome lever latch shall be provided to contain the air pack. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal.</p> <p><u>AIR BOTTLE STORAGE (TRIPLE)</u></p> <p>A quantity of one (1) air bottle compartment designed to hold (3) air bottles up to 7.25" in diameter x 26.00" deep shall be provided on the right side forward of the rear wheels. A polished stainless steel door with a Southco raised trigger C2 chrome lever latch shall be provided to contain the air bottle. The door shall have a flanged edge along the top, bottom, and the straight edge of the side opposite the hinge. The side that is hinged as well as the side that is curved cannot be flanged. 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>AIR BOTTLE COMPARTMENT STRAP</u></p> <p>A strap shall be provided in the air bottle compartment(s) to help contain the air bottles when the vehicle is parked on an incline. The strap shall wrap around the neck and attach to the wall of the compartment.</p> <p><u>AIR BOTTLE STORAGE (SINGLE)</u></p> <p>A quantity of one air bottle compartment, approximately 7.50" wide x 7.50" tall x 26.00" deep, shall be provided on the driver side rearward of the rear wheels. The triangular door shall cover the air bottle opening, the DEF tank access, and fuel fill. The compartment will be square with angled corners. A polished stainless steel door with a Southco raised trigger C2 chrome lever latch shall be provided to contain the air bottle. The door shall have a flanged edge along the top, bottom, and side opposite the hinge. The side that is hinged as well as the side that is curved cannot be flanged. 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>		

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<p><u>AIR BOTTLE COMPARTMENT STRAP</u></p> <p>A strap shall be provided in the air bottle compartment to help contain the air bottle when the vehicle is parked on an incline. The strap shall wrap around the neck and attach to the wall of the compartment.</p>		
<p><u>EXTENSION LADDER</u></p> <p>There shall be a 24' two-section aluminum Duo-Safety Series 900-A extension ladder provided.</p>		
<p><u>ROOF LADDER</u></p> <p>There shall be a 14' aluminum Duo-Safety Series 775-A roof ladder provided.</p>		
<p><u>LADDER STORAGE</u></p> <p>The ladders shall be stored inside the upper section of the right side compartments. This ladder rack shall reduce the depth of the upper section in the side compartments.</p> <p>A partition shall be installed inside the compartment on the side of the rack to allow for equipment storage and to conceal the ladders.</p> <p>The ladders shall be banked in separate storage troughs.</p> <p>The ladder storage assembly shall be fabricated of stainless steel track angles to aid in loading and removal of ladders. The ladders that extend into the pump house shall also be enclosed. The pump house portion of the enclosure will be made of vinyl. The vinyl portion shall be fastened to the pump house structure with side release buckles. The vinyl portion shall allow the user to move the enclosure aside to access the pump area.</p> <p>Rear of the ladder storage area shall have a vertically hinged double pan door with a D-ring slam latch to contain the ladders. The enclosure shall be modified as necessary to create as water resistant a seal as possible.</p>		
<p><u>FOLDING LADDER PROVIDED BY FIRE DEPARTMENT</u></p> <p>NFPA 1901, 2016 edition, section 5.8.1.2 requires a folding ladder.</p> <p>The folding ladder is not on the apparatus as manufactured. There shall be one (1) 10' aluminum Series 585-A Duo-Safety folding ladder provided by the fire department. The ladder shall be installed in the left side hatch compartment.</p>		
<p><u>DURA-SURF MATERIAL</u></p> <p>Black Dura-Surf friction reducing material shall be added to the bottom of two (2) storage locations and located ladder rack storage slides to prevent damage. The Dura-Surf material shall be made to fit the storage area.</p>		
<p><u>PIKE POLE STORAGE</u></p> <p>Stainless steel U-shaped trough be used for the storage of four (4) pike poles, with D-handle style grip, shall be provided and installed on top of ladders in ladder storage compartment.</p>		

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<p><u>TRASH HOOK STORAGE</u></p> <p>There shall be two (2) stainless steel U-shaped trough(s) provided for storage of D-handle style trash hook(s). The trough(s) shall be installed RS hatch compartment. There will be a 10' trough against the left (tank) wall and a 6' trough mounted just to the right of the first trough..</p> <p><u>PIKE POLE STORAGE</u></p> <p>Aluminum tubing shall be used for the storage of six (6) pike poles and shall be located in ladder storage compartment and in the backboard compartment. If the head of a pike pole can come in contact with a painted surface, a stainless steel scuffplate shall be provided.</p> <p><u>STEPS</u></p> <p>A folding step shall be provided on the front of each fender compartment. The step shall be bright finished, non-skid with a luminescent coating that is rechargeable from any light source and can hold a charge for up to 24 hours. Each step shall incorporate an LED light to illuminate the stepping surface. The step can be used as a hand hold with two openings wide enough for a gloved hand.</p> <p><u>REAR FOLDING STEPS</u></p> <p>Bright finished, non-skid folding steps with a luminescent coating that is rechargeable from any light source and can hold a charge for up to 24 hours shall be provided at the rear. Each step shall incorporate an LED light to illuminate the stepping surface. The steps can be used as a hand hold with two openings wide enough for a gloved hand.</p> <p>Eleven (11) additional folding steps shall be located RS & LS front of bulkhead, three (3) each. LS rear tailboard inside wall, four (4) for access to top. RS rear tailboard inside wall at 18" one (1) step.. The step(s) shall be bright finished, non-skid luminescent folding type. The luminescent coating is rechargeable from any light source and can hold a charge for up to 24 hours. The step(s) can be used as a hand hold with two openings wide enough for a gloved hand.</p> <p><u>MIDSHIP FIRE PUMP</u></p> <p>Midship fire pump shall be a Hale QMAX-200, 2000 gpm single (1) stage midship mounted centrifugal type.</p> <p>Pump shall be the class "A" type.</p> <p>Pump shall deliver the percentage of rated discharges at the pressures indicated below:</p> <ul style="list-style-type: none"> - 100% of rated capacity at 150 psi net pump pressure. - 100% of rated capacity at 165 psi net pump pressure. -70% of rated capacity at 200 psi net pump pressure. -50% of rated capacity at 250 psi net pump pressure. 		

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<p>Entire pump and both suction and discharge passages shall be hydrostatically tested to a pressure of 500 psi.</p> <p>Pump shall be fully tested at the pump manufacturer's factory to the performance requirements as outlined by the current NFPA 1901 standards and shall be free from objectionable pulsation and vibration.</p> <p>Pump body and related parts shall be of fine grain, alloy cast iron with a minimum tensile strength of 30,000 psi (2041.2 bar).</p> <p>All moving parts in contact with water shall be of high quality bronze or stainless steel. Pumps utilizing castings made of lower tensile strength cast iron shall not be acceptable.</p> <p>Pump body shall be horizontally split, on a single plane in two (2) sections, for easy removal of entire impeller assembly, including wear rings and bearings from beneath the pump, without disturbing pump piping or the mounting of the pump in the chassis.</p> <p>Pump shall have one (1) double suction impeller. The pump body shall have two (2) opposed discharge volute cutwaters to eliminate radial unbalance.</p> <p>Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined, hand-ground and individually balanced. The vanes of the impeller intake eyes shall be hand-ground and polished to a sharp edge. They shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.</p> <p>Impeller clearance rings shall be bronze and easily renewable without replacing impeller or pump volute body. They shall be of the wrap-around double labyrinth design for maximum efficiency.</p> <p>Pump shaft shall be electric furnace heat-treated, corrosion resistant stainless steel. It shall be super-finished under packing with galvanic corrosion (zinc separators in packing) protection for longer shaft life. Pump shaft shall be sealed with double oil seal to keep road dirt and water out of drive unit.</p> <p>Pump shaft shall be rigidly supported by three (3) bearings for minimum deflection. A high lead bronze sleeve bearing shall be located immediately adjacent to the impeller (on the side opposite of the drive unit). The sleeve bearing shall be automatically oil lubricated and pressure balanced to exclude foreign material. The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and shall be splash lubricated.</p> <p><u>MECHANICAL SEAL ON PUMP</u></p> <p>Only one (1) mechanical seal shall be used on the suction (inboard) side of the pump. The mechanical seal shall be 2.00" in diameter and shall be spring loaded, maintenance-free, and self-adjusting.</p> <p>The mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton® rubber boot, and a tungsten carbide seat with a Teflon backup seal.</p>		

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<p><u>PUMP TRANSMISSION</u></p> <p>The drive unit shall be cast and completely manufactured and tested at the pump manufacturer's factory. The pump drive unit shall be of sufficient size to withstand up to 16,000 foot/pound of torque from the engine in both road and pump operating conditions. The drive unit shall be designed with ample lubrication reserve to maintain the proper operating temperature.</p> <p>The gearbox drive shafts shall be of heat treated chrome nickel steel and at least 2.75 inches in diameter, on both the input and output drive shafts. They shall be designed to withstand the full torque of the engine in both road and pump operating conditions. All gears, both drive and pump, shall be of the highest quality, electric furnace, chrome nickel steel. Bores shall be ground to size and teeth integrated, crown-shaved and hardened, to give an extremely accurate gear for long life, smooth, quiet running and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust.</p> <p>The pump ratio shall be selected by the apparatus manufacturer to provide the maximum performance with the engine and transmission selected. Three (3) green warning lights shall be provided to indicate to the operator(s) when the pump has completed the shift from Road to Pump position. Two (2) lights shall be located in the truck driving compartment and one (1) light on pump operator's panel, adjacent to the throttle control.</p> <p><u>PUMPING MODE</u></p> <p>An interlock system shall be provided to ensure that the pump drive system components are properly engaged so that the apparatus can be safely operated. The interlock system shall be designed to allow stationary pumping only.</p> <p><u>AIR PUMP SHIFT</u></p> <p>Pump shift engagement shall be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab.</p> <p>Two (2) indicator lights shall be provided adjacent to the pump shift inside the cab. One (1) green light shall indicate the pump shift has been completed and be labeled "pump engaged". The second green light shall indicate when the pump has been engaged and the chassis transmission is in pump gear. This indicator light shall be labeled "OK to pump".</p> <p>Another green indicator light shall be installed adjacent to the hand throttle on the pump panel and indicate either the pump is engaged and the road transmission is in pump gear, or the road transmission is in neutral and the pump is not engaged. This light shall be labeled "Warning: Do not open throttle unless light is on".</p> <p>The pump shift shall be interlocked to prevent the pump from being shifted out of gear when the chassis transmission is in gear to meet NFPA requirements.</p> <p>The pump shift control in the cab shall be illuminated to meet NFPA requirements.</p>		

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<p><u>TRANSMISSION LOCK-UP</u></p> <p>The direct gear transmission lock-up for the fire pump operation shall engage automatically when the pump shift control in the cab is activated.</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. Heat exchanger shall be cylindrical type and shall be a separate unit. It shall be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger shall be plumbed to the master drain valve.</p> <p><u>INTAKE RELIEF VALVE - PUMP</u></p> <p>An Elkhart Style 40 relief valve shall be installed on the suction side of the pump preset at 125 psig.</p> <p>The relief valve shall have a working range of 75 psig to 250 psig.</p> <p>The outlet shall terminate below the frame rails with a 2.50" National Standard hose thread adapter and shall have a "do not cap" warning tag.</p> <p>The relief valve pressure control shall be located behind an access door at the right side pump panel.</p> <p><u>PRESSURE GOVERNOR</u></p> <p>This apparatus shall be equipped with a Class1 "Total Pressure Governor" engine/pump governor/throttle system that is connected directly to the Electronic Control Module (ECM) mounted on the engine. The "Total Pressure Governor" is to operate as a pressure sensor (regulating) governor (PSG).</p> <p>A special preset feature shall permit a predetermined pressure of RPM to be set. The preset pressure or RPM will be displayed on the message display of the "Total Pressure Governor". The preset shall be easily adjustable by the operator</p> <p>The pressure sensor governor system shall be operable only after the vehicle parking brake has been set, the transmission is the pumping mode, and the fire pump has been engaged.</p> <p>The pressure sensor governor system shall have two (2) modes of operation: pressure mode or rpm mode.</p> <p>When in the pressure mode, the PSG system shall automatically maintain the discharge pressure set by the operator regardless of flow (within engine/pump operating capabilities).</p> <p>In the rpm mode, the PSG system shall automatically maintain a set engine speed, regardless of engine load (within engine operation capabilities).</p> <p>A pump cavitation protection feature shall be provided which shall return the engine to idle should the pump cavitate.</p>		

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<p>The pressure controller shall incorporate monitoring for engine coolant temperature, oil pressure, and battery voltage.</p>	Yes	No
<p><u>PRIMING PUMP</u></p> <p>The priming pump shall be a Trident Emergency Products compressed air powered, high efficiency, multistage venturi based AirPrime System, conforming to standards outlined in the current edition of NFPA 1901.</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>RECIRCULATING LINE WITH CHECK VALVE</u></p> <p>A 0.50" diameter recirculating line, from the pump to the water tank, shall be furnished with a control installed at the pump operator's control panel. A check valve shall be provided in this line to prevent the back flow of water from the tank to the pump if the valve is left in the open position.</p> <p><u>PUMP MANUALS</u></p> <p>There shall be a total of three (3) 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 one (1) hard, paper copy and two (2) electronic copies. Each manual shall cover pump operation, maintenance, and parts.</p> <p><u>PUMP TEST</u></p> <p>The water pump shall be 2,000 gpm capacity rated at 1,500 gpm. There shall be two (2) sets of pump manufacturers certificates furnished with the unit, reflecting the two (2) ratings. The pump panel tags and the third party test shall reflect the lower rating.</p> <p>The pump shall be tested, approved and certified by an independent third party testing agency at the manufacturer's expense. The test results along with the pump manufacturer's certification of hydrostatic test, the engine manufacturer's certified brake horsepower curve and the manufacturer's record of pump construction details shall be forwarded to the Fire Department</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>		

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<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> <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 removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.</p> <p><u>MAIN PUMP INLET CAP PROVIDED BY FIRE DEPARTMENT</u></p> <p>NFPA 1901, 2016 edition, section 16.6.8 requires all intakes to be provided with caps or closures capable of withstanding a hydrostatic gauge pressure of 500 psi.</p> <p>The caps are not on the apparatus as manufactured. The fire department shall provide both caps for the main pump inlets.</p> <p><u>INLET VALVE/DUMP</u></p> <p>One (1) butterfly valve shall be provided on the right side main pump inlet. The inlet valve shall be a combination butterfly valve and pressure relief valve with a .75" bleeder valve. The pressure relief valve shall have a range of 75 to 250 PSI and shall be factory set to 125 PSIG. The valve, less relief valve, shall be rated for 600 PSI of hydrostatic pressure and 26 inHg of vacuum. The valve shall cycle from full open to full closed in ten (10) turns of the handwheel. The bleeder valve control shall be located at the pump operator's panel.</p> <p>An indicator light shall be provided to show when the valve is in the closed position.</p> <p>The valve shall be fully recessed behind the pump panel.</p> <p>A chrome plated handwheel shall be provided next to the inlet valve.</p> <p><u>INLET VALVE/DUMP</u></p> <p>One (1) butterfly valve shall be provided on the left side main pump inlet. The inlet valve shall be a combination butterfly valve and pressure relief valve with a .75" bleeder valve. The pressure relief valve shall have a range of 75 to 250 PSI and shall be factory set to 125 PSIG. The valve, less relief valve, shall be rated for 600 PSI hydrostatic pressure and 26 inHg of vacuum. The valve shall cycle from full open to full closed in approximately ten (10) to twelve (12) turns of the handwheel.</p> <p>An indicator light shall be provided to show when the valve is in the closed position.</p> <p>The valve shall be fully recessed behind the pump panel.</p> <p>A chrome plated handwheel shall be provided next to the inlet valve.</p>		

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<p><u>VALVES</u></p> <p>All ball valves shall be Akron® Brass in-line valves. The Akron valves shall be the 8000 series heavy-duty style with a stainless steel ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve.</p> <p>Valves shall have a ten (10) year warranty.</p> <p><u>ELBOW, STORZ INLET</u></p> <p>Two (2) swiveling adapters for the inlets aluminum 6.00" FNST x 4.00" Storz 30 degree elbow with blind cap shall be provided on the side inlet.</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> <p><u>TANK TO PUMP</u></p> <p>The booster tank shall be connected to the intake side of the pump with stainless steel piping and a quarter turn 3.00" full flow line valve with the control remotely located at the operator's panel. Tank to pump line shall run straight (no elbows) from the pump into the front face of the water tank and angle down into the tank sump. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing.</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) discharge outlets with a 2.50" valve on the left side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.</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 2.50" (M) National Standard hose thread adapter.</p> <p>There shall be a 4.00" discharge outlet with a 3.00" valve with a 3.00" ball, installed on the right side of the apparatus, terminating with a 4.00" (M) National Standard hose thread adapter. This discharge outlet shall be actuated with a handwheel control with position indicator at the pump operator's control panel.</p>		

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<p><u>LARGE DIAMETER DISCHARGE OUTLET</u></p> <p>There shall be a 4.00" discharge outlet with a 4.00" Akron valve installed on the right side of the apparatus, terminating with a 4.00" (M) National Standard hose thread adapter. This discharge outlet shall be actuated with a handwheel control at the pump operator's control panel.</p> <p>An indicator shall be provided to show when the valve is in the closed position.</p> <p><u>REAR DISCHARGE OUTLET</u></p> <p>There shall be two (2) discharge outlets piped to the rear of the hose bed, on two (2) on the left side, installed so proper clearance is provided for spanner wrenches or adapters. Plumbing shall consist of 3.00" piping along with a 3.00" full flow ball valve with the control from the pump operator's panel. The two (2) discharge outlets shall terminate with a 2.50" male National Standard hose thread adapter.</p> <p><u>DISCHARGE CAPS</u></p> <p>Chrome plated, rocker lug, caps with chains shall be furnished for all discharge outlets 1.50" thru 3.00" in size.</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 ELBOWS</u></p> <p>The 2.50" discharge outlets located on the left side pump panel shall be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.</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 2.50" discharge outlets located on the right side pump panel shall be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.</p>		

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<p>The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).</p> <p><u>ADDITIONAL RIGHT SIDE OUTLET ELBOWS</u> The 4.00" outlet shall be furnished with a 4.00" (F) National Standard hose thread x 4.00" Storz elbow adapter with Storz cap.</p> <p><u>REAR OUTLET ELBOWS</u> The 2.50" discharge outlets located at the rear of the apparatus shall be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.</p> <p>The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).</p> <p><u>LARGE DIAMETER OUTLET ELBOWS</u> The 4.00" outlet shall be furnished with a 4.00" (F) National Standard hose thread x 4.00" Storz elbow adapter with Storz cap.</p> <p><u>REDUCER</u> There shall be six (6) adapters with 2.50" FNST x 1.50" MNST threads and a 1.50" chrome plated cap installed on two (2) on the LS 2.50" outlets, one (1) on the RS 2.50" outlet, two (2) on the rear 2.50" outlets and one (1) on the RS 4" Storz outlet.</p> <p><u>ADAPTERS</u> There shall be one (1) adapter with 4.00" Storz x 2.50" MNST threads and a 2.50" cap installed on RS pump panel on additional LDH outlet.</p> <p><u>DISCHARGE OUTLET CONTROLS</u> The control for five (5) discharge outlets shall be handwheel control with indicators. The discharge outlets with handwheels shall be two (2) LS rear outlets, No. 1 LS outlet, No. 2 RS outlet, No.3 LS outlet.</p> <p>The remaining valves shall incorporate a quarter-turn ball valve with the control located at the pump operator's panel.</p> <p><u>DELUGE RISER</u> A 3.00" deluge riser shall be installed above the pump in such a manner that a monitor can be mounted and used effectively. Piping shall be installed securely so no movement develops when the line is charged. The riser shall be gated and controlled at the pump operator's panel. The outlet shall include an Akron valve with a handwheel control.</p> <p><u>MONITOR</u> An Elkhart Model 8297 "Stinger" monitor shall be properly installed on the deluge riser.</p> <p>This monitor shall include both a fixed base and a portable base with a 4.00" Storz inlet.</p>			

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<p>The monitor shall be painted as provided by monitor manufacturer.</p> <p><u>NOZZLE</u> A Task Force Tips Master Stream Series M-R nozzle shall be provided.</p> <p><u>MONITOR MOUNTING BASE</u> An Elkhart Model 8298 deck mount base for an Elkhart "Stinger" monitor shall be properly installed on the deluge riser via the 3.00" four bolt flange. This base shall be painted to match the body.</p> <p><u>DEADLAY HOSE BEDS</u> Two (2) deadlay beds, without plumbing, shall be provided above the pump compartment capable of carrying 400' x 1.75" hose double stack in one (1) deadlay and 400' x 2.50" hose double stack in one (1) deadlay.</p> <p>The crosslay bed shall be painted job color.</p> <p>The center crosslay dividers shall be fabricated of .25" aluminum and shall provide adjustment from side to side. The divider shall be unpainted with a brushed finish.</p> <p>Stainless steel vertical scuffplates shall be provided at hose bed ends (each side of vehicle).</p> <p>The bottom of hose bed ends (each side) shall also be equipped with a stainless steel scuffplate.</p> <p>Deadlay bed flooring shall be approximately 60.00" from ground.</p> <p><u>CROSSLAY/DEADLAY HOSE RESTRAINT</u> There shall be black vinyl end flap provided across each end of two (2) crosslay/deadlay opening(s) to secure the hose during travel. Each vinyl end flap shall be permanently attached at the bottom of the crosslay/deadlay opening(s). 1.00" web straps shall loop through footman loops at the opposite end of the permanently attached vinyl. They shall be attached with 1.00" cam buckle fasteners.</p> <p><u>CROSSLAY COVER</u> A hinged .19" aluminum treadplate cover shall be installed over the crosslay hose beds. It shall include a latch at each end of the cover to hold it securely in place, a chrome grab handle at each end for opening and closing the cover and a foam rubber gasket where the cover comes into contact to a painted surface.</p> <p>The cover shall be provided with rubber latch hold open device.</p> <p>The hinge shall be to the front of the hose beds.</p> <p><u>BOOSTER HOSE REEL</u> A Hannay electric rewind booster hose reel shall be installed over the pump in a recessed open compartment on the left side of the apparatus. Reel to be fabricated of aluminum and have highly polished end discs.</p>		

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A polished stainless steel roller and guide assembly shall be mounted on the reel side of the apparatus.	Yes	No
Discharge control shall be provided at the pump operator's panel. Plumbing to the reel shall consist of 1.50" Aeroquip hose and a 1.50" valve.		
Reel motor shall be protected from overload with a circuit breaker rated to match the motor.		
Two (2) electric rewind control switches shall be provided, one (1) installed on each pump panel.		
Booster hose, 1.00" diameter and 150 feet, with chrome plated Barway, or equal couplings shall be provided.		
Working pressure of the booster hose shall be a minimum of 800 psi.		
Capacity of the hose reel shall be 150 feet of 1.00" booster hose.		
<u>HOSE REEL NOZZLE</u>		
A Task Force, model B-BGH 10-125 gpm, booster hose nozzle shall be provided.		
<u>PRESSURE GAUGE</u>		
There shall be a pressure gauge provided for one (1) hose reel(s). The gauge shall be located LS pump panel. The gauge shall match the discharge outlet gauges.		
<u>NOZZLE CUP AND BRACKET</u>		
A Zico nozzle cup and chrome plated mounting bracket shall be provided for storage of the booster reel nozzle.		
There shall be one (1) provided. The nozzle cup(s) shall have a 4-5/8" inside diameter and shall be located LS pump panel up high, exact location to be determined at pre-con.		
There shall be one (1) additional polished stainless steel roller and guide assembly mounted RS above cargo area side sheet.		
<u>PUMP COMPARTMENT</u>		
The pump compartment shall be separate from the hose body and compartments so that each may flex independently of the other. It shall be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards.		
The pump compartment shall be mounted on the chassis frame rails with rubber biscuits in a four point pattern to allow for chassis frame twist.		
Pump compartment, pump, plumbing and gauge panels shall be removable from the chassis in a single assembly.		

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	Bidder Complies	
	Yes	No
<p><u>PUMP MOUNTING</u></p> <p>Pump shall be mounted to a substructure which shall be mounted to the chassis frame rail using rubber isolators. The mounting shall allow chassis frame rails to flex independently without damage to the fire pump.</p> <p><u>PUMP CONTROL PANELS (SIDE CONTROL)</u></p> <p>All pump controls and gauges shall be located at the left side of the apparatus and properly marked.</p> <p>The pump panel on the right side is removable with lift and turn type fasteners. The left side is fastened with screws.</p> <p>The control panels shall be 48.00" wide.</p> <p>The gauge and control panels shall be two (2) separate panels for ease of maintenance.</p> <p>The side gauge panel shall be hinged at the bottom with a full length stainless steel hinge. The fasteners used to hold the panel in the upright position shall be quarter turn type. Vinyl covered cable or chains shall be used to hold the gauge panel in the dropped position.</p> <p>Polished stainless steel trim collars shall be installed around all inlets and outlets.</p> <p>All push/pull valve controls shall have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods shall be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls shall be capable of locking in any position. The control rods shall pull straight out of the panel and shall be equipped with universal joints to eliminate binding.</p> <p>The identification tag for each valve control shall be recessed in the face of the tee handle.</p> <p>All discharge outlets shall have color coded identification tags, with each discharge having its own unique color. Color coding shall include the labeling of the outlet and the drain for each corresponding discharge.</p> <p>All line pressure gauges shall be mounted in individual chrome plated castings with the identification tag recessed in the casting below the gauge. All remaining identification tags shall be mounted on the pump panel in chrome plated bezels. Mounting of the castings and identification bezels shall be done with a threaded peg cast on the back side of the bezel or screws.</p> <p><u>PUMP PANEL CONFIGURATION</u></p> <p>The left side and right-side pump panel configurations shall match Northshore's current Pierce pumps.</p> <p>Option differences may be evident, and an identical match is not possible. An as close as possible similarity shall be the intent.</p>		

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	Yes	No
<p><u>PUMP AND GAUGE PANEL</u></p> <p>The pump and gauge panels shall be constructed of stainless steel with a polished finish. A polished aluminum trim molding shall be provided around each panel.</p> <p>The right side pump panel shall be removable and fastened with swell type fasteners.</p> <p>On the front of the pump house structure, provisions shall be provided for access to the pump.</p> <p><u>PUMP COMPARTMENT LIGHT</u></p> <p>There shall be two (2) Whelen®, Model 3SC0CDCR, 3.00" white 12 volt DC LED light(s) with Whelen, Model 3FLANGEC, flange(s) installed in the pump compartment.</p> <p>There shall be a switch accessible through a door on the pump panel included with this installation.</p> <p>Engine monitoring graduated LED indicators shall be incorporated with the pressure controller.</p> <p>Also provided at the pump panel shall be the following:</p> <ul style="list-style-type: none"> - Master Pump Drain Control - Fuel Gauge <p><u>AIR HORN BUTTON</u></p> <p>An air horn control button shall be provided at the pump operator's control panel. This button shall be red in color and properly labeled and put within easy reach of the operator.</p> <p><u>HANDWHEEL OUTLET CONTROLS</u></p> <p>The control for one (1) shall be 6.25" handwheel control with indicators. The control shall include all u-joints with rubber coverings. The discharge outlets with handwheels shall be second RS 4" LDH outlet.</p> <p><u>VACUUM AND PRESSURE GAUGES</u></p> <p>The pump vacuum and pressure gauges shall be dry and manufactured by Ashcroft. The gauges shall be a 1009 series of gauge with the "Plus" needle dampener option installed to prevent needle bounce. The gauge case, ring and bourdon tube shall be S/S.</p> <p>The gauges shall be a minimum of 6.00" in diameter and shall have white faces with black lettering and a black needle. A logo shall be located in lower portion of the dial on the gauge face. The gauges shall have a pressure range of 30.00" 0-400 psi.</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 and properly labeled. One (1) shall be connected to the intake side of the pump, and the other to the discharge side of the pump. They shall have 0.25 in. standard pipe thread connections and polished stainless-steel plugs.</p>		

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	Yes	No
<p><u>LINE/PRESSURE GAUGES</u></p> <p>The individual "line" pressure gauges shall be dry and manufactured by Ashcroft. The gauges shall be a 1009 series of gauge with the "Plus" needle dampener option installed to prevent needle bounce. The gauge case, ring and bourdon tube shall be S/S.</p> <p>The gauges shall be a minimum of 2.50" in diameter and shall have white faces with black lettering and a black needle. A logo shall be located in lower portion of the dial on the gauge face. The gauge shall have a pressure range of 0-300 psi.</p> <p>The pressure sensors for the individual line pressure gauges shall be mounted within 6" to the discharge port.</p> <p>The individual line pressure gauge(s) will be installed as close to the discharge outlet control as practical and properly labeled.</p> <p><u>WATER LEVEL GAUGE</u></p> <p>There shall be a Class 1, Model ITL-40M multi colored LED electronic master water level gauge provided on the on the left side pump panel. The indicators shall include blue water level labels.</p> <p>The water level indicators shall be as follows:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 100% - Two (2) Green <input type="checkbox"/> 75% - Two (2) Blue <input type="checkbox"/> 50% - Two (2) Yellow <input type="checkbox"/> 25% - Two (2) Red steady burn <input type="checkbox"/> Refill - The entire light scrolls through all the lights. <p><u>WATER LEVEL GAUGE</u></p> <p>There shall be two (2) additional water level indicator, Whelen®, Model PSTANK, LED module installed one (1) on the cab behind the left cab door and one (1) on the cab behind the right cab door.</p> <p>This light module shall include four (4) colored levels, and function similar to the water level indicator located at the operators panel:</p> <ul style="list-style-type: none"> <input type="checkbox"/> First green module indicates a full water level <input type="checkbox"/> Second blue module indicates a water level above 3/4 full <input type="checkbox"/> Third amber module indicates a water level above 1/2 full <input type="checkbox"/> Last red module indicates a water level above 1/4 full and empty <ul style="list-style-type: none"> o Above 1/4 this light shall be steady burning 		

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	Yes	No
<p>o At empty this light shall be flashing</p> <p>This module shall be activated when the battery switch is on.</p> <p><u>LIGHT SHIELD</u></p> <p>There shall be a polished, 16 gauge stainless steel light shield installed over the pump operator's panel.</p> <ul style="list-style-type: none"> <input type="checkbox"/> There shall be 12 volt DC white LED lights installed under the stainless steel light shield to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights shall be activated by the pump panel light switch. Additional lights shall be included every 18.00" depending on the size of the pump house. <input type="checkbox"/> One (1) pump panel light shall come on when the pump is in ok to pump mode. <p>There shall be a light activated above the pump panel light switch when the parking brake is set. This is to afford the operator some illumination when first approaching the control panel.</p> <p>There shall be a green pump engaged indicator light activated on at the operator's panel when the pump is shifted into gear from inside the cab.</p> <p>An additional step/light shield shall be provided above passenger's side pump panel that shall have a minimum of an 8.00" stepping surface and shall be properly reinforced to support a man's weight.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The pump panel shall be illuminated by two (2) Amdor, Model XX9951, 20.00" 12 volt DC LED strip light installed under a bright aluminum treadplate step. <p>There shall be one (1) white 12 volt DC LED light provided above the step. The step light shall be installed to illuminate the top of the step for night time vision.</p> <p>The step light shall be activated by a switch on the pump operators panel.</p> <p>An additional step/light shield shall be provided above driver's side pump panel that shall have a minimum of an 8.00" stepping surface and shall be properly reinforced to support a man's weight.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The pump panel shall be illuminated by two (2) Amdor, Model XX9951, 20.00" 12 volt DC LED strip light installed under a bright aluminum treadplate step. <p>There shall be one (1) P25, 12 volt DC LED lights provided above the step. The step lights shall be installed to illuminate the top of the step for night time vision.</p> <p>The lights under the step and above the step shall be activated by a switch on the pump operator's panel.</p>		

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	Yes	No
<p><u>AIR HORN SYSTEM</u></p> <p>Two (2) Hadley round air horns with 6.00" bell shall be 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> <p><u>Air Horn Location</u></p> <p>The air horns shall be located on the left side of the bumper, outside of the frame rail.</p> <p><u>AIR HORN CONTROL</u></p> <p>The air horns shall be actuated by two (2) foot switches, one (1) located on the officer's side and one (1) on the driver's side. The air horns shall also be actuated by 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></p> <p>There shall be a Federal, Model EQ2B-200, electronic siren with noise canceling microphone provided.</p> <p>This siren to be active when the battery switch is on and that emergency master switch is on.</p> <p>Electronic siren head shall be recessed in the driver side center switch panel.</p> <p>The electronic siren shall be controlled on the siren head only. No horn button or foot switches shall be required.</p> <p><u>SPEAKERS</u></p> <p>There shall be two (2) Federal Signal DynaMax®, Model ES100, 100 watt speakers provided. The speakers shall use a Federal Signal, Model ESFMT-EF, recess mount with stainless steel grille. Each speaker shall be connected to the siren amplifier.</p> <p>The speakers shall be recessed in each side of the front bumper, inside of the frame rails.</p> <p><u>AUXILIARY MECHANICAL SIREN</u></p> <p>A Federal Q2B® siren shall be furnished. A siren brake button shall be installed on the switch panel.</p> <p>The control solenoid shall be powered up after the emergency master switch is activated.</p> <p>The mechanical siren shall be recessed in the front bumper in the center. The siren shall be supported by the bumper framework.</p> <p>The mechanical siren shall be actuated by a foot switch on the officer's side and by the horn button in the steering wheel. The driver shall have the option to control the siren or the chassis horns from the horn button by means of a selector switch located on the instrument panel.</p> <p><u>Q2B SIREN GUARD</u></p> <p>A chrome plated guard shall be provided over the Q2B siren recessed in front bumper extension. Guard shall consist of two (2) horizontal chrome plated bars.</p>		

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		Yes	No
A second siren brake switch shall be installed on the passenger side.			
<p><u>FRONT ZONE UPPER WARNING LIGHTS</u></p> <p>There shall be one (1) 81.00" Whelen Freedom IV LED lightbar mounted on the cab roof.</p> <p>The lightbar shall include the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> One (1) red flashing LED module in the driver's side end position. <input type="checkbox"/> One (1) red flashing LED module in the driver's side front corner position. <input type="checkbox"/> One (1) red flashing LED module in the driver's side first front position. <input type="checkbox"/> One (1) red flashing LED module in the driver's side second front position. <input type="checkbox"/> One (1) white flashing LED module in the driver's side third front position. <input type="checkbox"/> One (1) red flashing LED module in the driver's side fourth front position. <input type="checkbox"/> One (1) red flashing LED module in the driver's side fifth front position. <input type="checkbox"/> One (1) red flashing LED module in the driver's side sixth front position. <input type="checkbox"/> One (1) 795 LED traffic light controller set to national standard high priority in the center positions. <input type="checkbox"/> One (1) red flashing LED module in the passenger's side sixth front position. <input type="checkbox"/> One (1) red flashing LED module in the passenger's side fifth front position. <input type="checkbox"/> One (1) red flashing LED module in the passenger's side fourth front position. <input type="checkbox"/> One (1) white flashing LED module in the passenger's side third front position. <input type="checkbox"/> One (1) red flashing LED module in the passenger's side second front position. <input type="checkbox"/> One (1) red flashing LED module in the passenger's side first front position. <input type="checkbox"/> One (1) red flashing LED module in the passenger's side front corner position. <input type="checkbox"/> One (1) red flashing LED module in the passenger's side end position. <p>There shall be clear lenses included on the lightbar.</p> <p>The following switches may be installed in the cab on the switch panel to control the lightbar:</p> <ul style="list-style-type: none"> <input type="checkbox"/> a switch to control the flashing LED modules. <input type="checkbox"/> the traffic light controller with the emergency master switch only. 			

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<input type="checkbox"/> a passenger's side momentary cab switch with no emergency master control to activate the traffic light controller.	Yes	No
<p>The white flashing LED modules and the traffic light controller shall be disabled when the parking brake is applied.</p> <p>The ten (10) red flashing LED modules in the front positions may be load managed when the parking brake is applied.</p> <p><u>FRONT ZONE LOWER LIGHTS</u></p> <p>There shall be two (2) pair of Whelen, Model M6**, LED lights installed on the cab face above the headlights, in a common bezel matching the one for the headlamps.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The driver's side front outside warning light to be red <input type="checkbox"/> The driver's side front inside warning light to be red <input type="checkbox"/> The passenger's side front inside warning light to be red <input type="checkbox"/> The passenger's side front outside warning light to be red <input type="checkbox"/> The color of the lenses shall be clear <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 six (6) Whelen® Model M6V2**, 4.32" high x 6.75" long x 2.25" deep flashing LED warning and scene lights with chrome trim located in the following positions:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Two (2) lights, one (1) each side on the front cab corner. The side front lights to be red warning LEDs. <input type="checkbox"/> Two (2) lights, above the auxiliary transverse rear cab compartments. The side middle lights to be red warning LEDs. <input type="checkbox"/> Two (2) lights, above the rear wheel wells. The side rear lights to be red warning LEDs. <input type="checkbox"/> The color of the lenses for the warning lights shall be warning light lens color(s) to be clear. 		

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There shall be a switch in the cab on the switch panel to control the flashing warning lights.	Yes	No
<p>The scene LEDs shall be activated by a switch at the driver's side switch panel and by a switch at the passenger's side switch panel.</p> <p>The scene LEDs may be load managed when the parking brake is applied.</p> <p><u>SIDE WARNING LIGHTS</u></p> <p>There shall be two (2) pairs of Whelen Model Strip-Lite™, PS*00F*R LED lights, recessed within the rear body rub rail, in the rub rail under RS1/LS1 as far rearward as possible and in the rub rail under RS3/LS3 as far forward as possible.</p> <p>The color of the lights shall be red.</p> <p>The lens color shall be clear.</p> <p>These lights shall be activated with the emergency master.</p> <p>Any white warning lights shall be deactivated when the parking brake is set.</p> <p><u>SIDE WARNING LIGHTS</u></p> <p>There shall be two (2) Whelen, Model M9*C LED flashing warning light(s) with bezel(s) provided front on each hatch compartment.</p> <p>The color of the lights shall be red.</p> <p>All of these lights shall include a clear lens.</p> <p>These lights shall be activated with the Side Zone Lower warning lights.</p> <p><u>REAR ZONE LOWER LIGHTING</u></p> <p>There shall be two (2) Whelen®, Model M6*C, LED flashing warning lights located at the rear of the apparatus.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The driver's side rear light to be red <input type="checkbox"/> 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>WARNING LIGHTS (REAR)</u></p> <p>There shall be two (2) Whelen Model M9*, 6.50" high x 10.35" long x 2.63" deep LED flashing warning and scene light(s) with chrome trim provided mid high on rear of body both sides.</p> <p>The color of the warning light LED's shall be yellow.</p> <p>The lens color shall be the same color as the LED's.</p>		

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	Yes	No
The warning light(s) shall be controlled with the rear upper warning switch.		
The warning LED's and scene LED's may be load managed when the parking brake is applied.		
<u>WARNING LIGHTS (REAR)</u>		
There shall be two (2) Whelen Model M9V2**, 6.50" high x 10.35" long x 2.63" deep LED flashing warning and scene light(s) with chrome trim provided high on the rear of the body just below the hatch compartment doors.		
The color of the warning light LED's shall be red.		
The lens color shall be the same color as the LED's.		
The warning light(s) shall be controlled with the rear upper warning switch.		
The scene lights shall be activated with a switch in the cab and at the rear of the apparatus.		
The warning LED's and scene LED's may be load managed when the parking brake is applied.		
<u>WARNING LIGHTS (REAR AND SIDE UPPER ZONES)</u>		
Four (4) Whelen, model M9*C LED flashing warning lights shall be provided at the rear of the apparatus.		
The side rear upper light(s) on the driver's side to be red.		
The rear upper light(s) on the driver's side to be amber.		
The rear upper light(s) on the passenger's side to be amber.		
The side rear upper light(s) on the passenger's side to be red.		
These lights shall include a lens that is clear.		
There shall be a switch located in the cab on the switch panel to control the lights.		
The left side rear warning light shall be mounted on top of the compartmentation with all wiring totally enclosed. The clearance/marker light shall be mounted to the side of the compartment ridge.		
The right side rear warning light shall be mounted on a low mount stainless steel bracket with all wiring totally enclosed. This brackets shall also support the clearance/marker light.		
The rear deck lights shall be mounted on the beavertail flange to keep the overall height as low as possible.		
<u>120 VOLT RECEPTACLE</u>		
There shall be one (1), 4-place receptacle box(es) with four (4) 15/20 amp 120 volt AC three (3) wire straight blade receptacles with interior stainless steel wall plate(s) installed on the exterior of		

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<p>the RS EMS cabinet left wall high and forward. The NEMA configuration for the receptacles shall be 5-15R.</p> <p>The receptacle(s) shall be powered from the shoreline inlet.</p> <p>There shall be a label installed near the receptacle(s) that state the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Line Voltage <input type="checkbox"/> Current Rating (amps) <input type="checkbox"/> Phase <input type="checkbox"/> Frequency <input type="checkbox"/> Power Source <p><u>120 VOLT RECEPTACLE</u></p> <p>There shall be one (1), 4-place receptacle box(es) with four (4) 15/20 amp 120 volt AC three (3) wire straight blade receptacles with interior stainless steel wall plate(s) installed on the exterior of the LS EMS cabinet right wall high and forward. The NEMA configuration for the receptacles shall be 5-15R.</p> <p>The receptacle(s) shall be powered from the shoreline inlet.</p> <p>There shall be a label installed near the receptacle(s) that state the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Line Voltage <input type="checkbox"/> Current Rating (amps) <input type="checkbox"/> Phase <input type="checkbox"/> Frequency <input type="checkbox"/> Power Source <p><u>120 VOLT RECEPTACLE</u></p> <p>There shall be three (3), 15/20 amp 120 volt AC three (3) wire straight blade duplex GFCI receptacle(s) with interior flip up cover(s), installed LS1, RS1 and RS3. The NEMA configuration for the receptacle(s) shall be 5-20R.</p> <p>The receptacle(s) shall be powered from the shoreline inlet.</p> <p>There shall be a label installed near the receptacle(s) that state the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Line Voltage 		

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		Bidder Complies	
		Yes	No
<input type="checkbox"/> Current Rating (amps)			
<input type="checkbox"/> Phase			
<input type="checkbox"/> Frequency			
<input type="checkbox"/> Power Source			
<u>LOOSE EQUIPMENT</u> The following equipment shall be furnished with the completed unit: - One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit <u>NFPA REQUIRED LOOSE EQUIPMENT PROVIDED BY FIRE DEPARTMENT</u> The following loose equipment as outlined in NFPA 1901, 2016 edition, section 5.9.3 and 5.9.4 shall be provided by the fire department.			
<input type="checkbox"/> 800 ft. (60 m) of 2.50" (65 mm) or larger fire hose.			
<input type="checkbox"/> 400 ft. (120 m) of 1.50" (38 mm), 1.75" (45 mm), or 2.00" (52 mm) fire hose.			
<input type="checkbox"/> One (1) handline nozzle, 200 gpm (750 L/min) minimum.			
<input type="checkbox"/> Two (2) handline nozzles, 95 gpm (360 L/min) minimum.			
<input type="checkbox"/> One (1) smoothbore or combination nozzle with 2.50" shutoff that flows a minimum of 250 gpm.			
<input type="checkbox"/> 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.			
<input type="checkbox"/> 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).			
<input type="checkbox"/> One (1) first aid kit.			
<input type="checkbox"/> Four (4) combination spanner wrenches.			
<input type="checkbox"/> Two (2) hydrant wrenches.			
<input type="checkbox"/> One (1) double female 2.50" (65 mm) adapter with National Hose threads.			
<input type="checkbox"/> One (1) double male 2.50" (65 mm) adapter with National Hose threads.			
<input type="checkbox"/> One (1) rubber mallet, for use on suction hose connections.			
<input type="checkbox"/> Two (2) salvage covers each a minimum size of 12 ft x 14 ft (3.7 m x 4.3 m).			

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<input type="checkbox"/> 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.		
<input type="checkbox"/> 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.		
<input type="checkbox"/> Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities.		
<input type="checkbox"/> One (1) automatic external defibrillator (AED).		
<input type="checkbox"/> Four (4) ladder belts meeting the requirements of NFPA 1983, <i>Standard on Fire Service Life Safety Rope and System Components</i> (if equipped with an aerial device).		
<input type="checkbox"/> 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.		
<input type="checkbox"/> 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.		
<input type="checkbox"/> 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.		
<input type="checkbox"/> 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.		
<u>SOFT SUCTION HOSE PROVIDED BY FIRE DEPARTMENT</u> NFPA 1901, 2016 edition, section 5.8.2.1 requires a minimum of 20' of suction hose or 15' of supply hose shall be carried. Hose is not on the apparatus as manufactured. The fire department shall provide suction or supply hose.		
<u>DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT</u> NFPA 1901, 2016 edition, section 5.9.4 requires one (1) approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus.		

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		Bidder Complies	
		Yes	No
<p>The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher.</p> <p><u>WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT</u></p> <p>NFPA 1901, 2016 edition, section 5.9.4 requires one (1) 2.5 gallon or larger water extinguisher mounted in a bracket fastened to the apparatus.</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 5.9.4 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 5.9.4 requires one (1) pick head 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 			

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		Yes	No
<p>Surfacer Primer is a two-component high solids urethane that has excellent sanding properties and an extra smooth finish when sanded.</p> <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 top coated.</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 and the body shall be painted #90 red.</p>			

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<p><u>PAINT - ENVIRONMENTAL IMPACT</u></p> <p>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:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Topcoats and primers shall be chrome and lead free. <input type="checkbox"/> 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. <input type="checkbox"/> Particulate emission collection from sanding operations shall have a 99.99% efficiency factor. <input type="checkbox"/> 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 <input type="checkbox"/> Water from water wash booths shall be reused. Solids shall be removed on a continual basis to keep the water clean. <input type="checkbox"/> Paint wastes are disposed of in an environmentally safe manner. <input type="checkbox"/> Empty metal paint containers shall be to recover the metal. <input type="checkbox"/> Solvents used in clean-up operations shall be recycled on-site or sent off-site for distillation and returned for reuse. <p>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.</p> <p><u>PAINT CHASSIS FRAME ASSEMBLY</u></p> <p>The chassis frame assembly shall be finished with primer and gloss paint to match the lower job color before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc.</p> <p>Components that are included with the chassis frame assembly that shall be painted are:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Frame rails <input type="checkbox"/> Frame liners <input type="checkbox"/> Cross members <input type="checkbox"/> Axles <input type="checkbox"/> Suspensions 		

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		Yes	No
<div><input type="checkbox"/> Steering gear</div> <div><input type="checkbox"/> Battery boxes</div> <div><input type="checkbox"/> Bumper extension weldment</div> <div><input type="checkbox"/> Frame extensions</div> <div><input type="checkbox"/> Body mounting angles</div> <div><input type="checkbox"/> Rear Body support substructure (front and rear)</div> <div><input type="checkbox"/> Pump house substructure</div> <div><input type="checkbox"/> Air tanks</div> <div><input type="checkbox"/> Steel fuel tank</div> <div><input type="checkbox"/> Castings</div> <div><input type="checkbox"/> Individual piece parts used in chassis and body assembly</div> <div>Components treated with epoxy E-coat protection prior to paint:</div> <div><input type="checkbox"/> Two (2) C-channel frame rails</div> <div><input type="checkbox"/> Two (2) frame liners</div> <div>The E-coat process shall meet the technical properties shown.</div> <div><u>COMPARTMENT INTERIOR PAINT</u></div> <div>The interior of all compartments shall be painted with a gray spatter type paint.</div> <div><u>REFLECTIVE STRIPES</u></div> <div>Three (3) reflective stripes shall be provided across the front of the vehicle and along the sides of the body. The reflective band shall consist of a 1.00" white stripe at the top with a 1.00" gap then a 6.00" white stripe with a 1.00" gap and a 1.00" white stripe on the bottom.</div> <div>The reflective band provided on the cab face shall be at the headlight level.</div> <div><u>REAR CHEVRON STRIPING</u></div> <div>There shall be alternating chevron striping located on the rear-facing vertical surface of the apparatus. The rear surface, excluding the rear compartment door, shall be covered.</div> <div>The colors shall be red and fluorescent yellow green diamond grade.</div> <div>Each stripe shall be 6.00" in width.</div> <div>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.</div>			

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<p><u>REFLECTIVE STRIPE OUTLINE</u></p> <p>A black outline shall be applied on the top and the bottom of the reflective band. There shall be six (6) set of outline stripes required.</p>		
<p><u>REFLECTIVE STRIPE OUTLINE</u></p> <p>A black vinyl outline shall be provided for each chevron stripe at the rear of the truck.</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>		
<p><u>LETTERING</u></p> <p>Twenty-one (21) to forty (40) reflective lettering, 7.00" high, with outline and shade shall be provided.</p>		
<p><u>LETTERING</u></p> <p>One (1) to twenty (20) reflective lettering, 6.00" high, with outline and shade shall be provided.</p>		
<p><u>LETTERING</u></p> <p>There shall be reflective lettering, 4.00" high, with outline and shade provided. There shall be three (3) letters provided.</p>		
<p><u>LETTERING</u></p> <p>One (1) to twenty (20) reflective lettering, 3.00" high, with outline and shade shall be provided.</p>		
<p><u>LETTERING</u></p> <p>A White reflective "Proudly Serving the Cities of Lake Forest Park and Kenmore." will be provided. The lettering will be done in script style lettering. This is in addition to the standard lettering on the unit.</p>		
<p><u>SIGN KIT FOR LETTERING/NUMERALS</u></p> <p>Customer shall provide four (4) sign kits. The provided sign holders shall be painted by to match the body color. Each of the four (4) sign plates shall be provided four (4) reflective letters with outline and shaded, sized to fit, the sign plate. They shall be mounted one (1) on each side of the cab rear of the crew cab doors above the handrail, one (1) under the right side headlights and one (1) under the rear ladder storage area access door.</p>		
<p><u>EMBLEM</u></p> <p>There shall be three (3) reflective emblem(s), approximately 22.00" - 24.00" in size, installed cab doors, one each side, and B1 compartment door. The emblem shall be modeled after the department submitted information (art, patch, etc).</p>		
<p><u>FIRE APPARATUS PARTS MANUAL</u></p> <p>Two (2) custom parts manuals for the complete fire apparatus shall be provided in hard copy with the completed unit.</p>		

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<p>One (1) USB flash drive shall also be provided that shall include all of the information from the above manual.</p> <p>The manual shall contain the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Job number <input type="checkbox"/> Part numbers with full descriptions <input type="checkbox"/> Table of contents <input type="checkbox"/> Parts section sorted in functional groups reflecting a major system, component, or assembly <input type="checkbox"/> Parts section sorted in Alphabetical order <input type="checkbox"/> Instructions on how to locate parts <p>The manual shall be specifically written for the chassis and body model being purchased. It shall not be a generic manual for a multitude of different chassis and bodies.</p> <p>This is a multiple unit order. The customer shall receive two (2) hard copy manuals and one (1) USB flash drive total for the two (2) truck order.</p> <p><u>SERVICE PARTS INTERNET SITE</u></p> <p>The service parts information included in this manual is 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 MANUALS</u></p> <p>There shall be three (3) chassis service manuals containing parts and service information on major components provided. There shall be two (2) hard copies and one (1) USB flash drive copy provided with the completed unit.</p> <p>The manual shall contain the following sections:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Job number <input type="checkbox"/> Table of contents <input type="checkbox"/> Troubleshooting <input type="checkbox"/> Front Axle/Suspension <input type="checkbox"/> Brakes <input type="checkbox"/> Engine Tires 			

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		Yes	No
<input type="checkbox"/> Wheels			
<input type="checkbox"/> Cab			
<input type="checkbox"/> Electrical, DC			
<input type="checkbox"/> Air Systems			
<input type="checkbox"/> Plumbing			
<input type="checkbox"/> 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>This is a multiple unit order. The customer shall receive two (2) hard copies and one (1) USB flash drive total for the two (2) truck order.</p> <p><u>CHASSIS OPERATION MANUALS</u></p> <p>There shall be two (2) hard copies and one (1) USB flash drive provided that shall include all of the same information.</p> <p>This is a multiple unit order. Two (2) hard copy manuals and one (1) manual on USB flash drive total shall be supplied for the two (2) truck order.</p> <p><u>ONE (1) YEAR MATERIAL AND WORKMANSHIP</u></p> <p>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></p> <p>A Detroit Diesel 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></p> <p>A Sheppard 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></p> <p>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>			

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<p><u>FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY</u></p> <p>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 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></p> <p>A Meritor™ Axle two (2) year limited warranty shall be provided.</p> <p><u>ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY</u></p> <p>A Meritor Wabco™ ABS brake system three (3) year limited warranty shall be provided.</p> <p><u>TEN (10) YEAR STRUCTURAL INTEGRITY</u></p> <p>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></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 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>FIVE (5) YEAR MATERIAL AND WORKMANSHIP</u></p> <p>The electronic modules and display(s) shall be provided with a five (5) year material and workmanship limited warranty. The warranty shall cover electronic modules to be free from failures caused by defects in material and workmanship.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p> <p><u>CAMERA SYSTEM WARRANTY</u></p> <p>A fifty four (54) month warranty shall be provided for the camera system.</p> <p><u>COMPARTMENT LIGHT WARRANTY</u></p> <p>A ten (10) year material and workmanship limited warranty shall be provided for the 12 volt DC LED strip lights. The warranty shall cover the LED strip lights to be free from defects in material and workmanship that would arise under normal use.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (no exception).</p>		

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<p><u>TRANSMISSION WARRANTY</u></p> <p>The transmission shall have a five (5) year/unlimited mileage warranty covering 100 percent parts and labor. The warranty is to be provided by Allison Transmission and not the apparatus builder.</p> <p><u>TRANSMISSION COOLER WARRANTY</u></p> <p>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> <p><u>WATER TANK WARRANTY</u></p> <p>The UPF 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 Gortite roll-up door limited warranty shall be provided. The mechanical components of the roll-up door shall be warranted against defects in material and workmanship for the lifetime of the vehicle. A six (6) year limited warranty shall be provided on painted and satin roll up doors.</p> <p>A copy of the warranty certificate shall be submitted with the bid package.</p> <p><u>PUMP WARRANTY</u></p> <p>The Hale five (5) year limited warranty on parts and two (2) year limited warranty on labor shall be provided for the pump.</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>		

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<u>TEN (10) YEAR PRO-RATED PAINT AND CORROSION</u>			
<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>			
<u>ONE (1) YEAR MATERIAL AND WORKMANSHIP</u>			
<p>The graphic lamination shall be provided with a one (1) year material and workmanship limited warranty. The warranty shall cover the graphic lamination as being free from defects in material, workmanship, fading, and deterioration 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>			
<u>VEHICLE STABILITY CERTIFICATION</u>			
<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>			
<u>ENGINE INSTALLATION CERTIFICATION</u>			
<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>			
<u>POWER STEERING CERTIFICATION</u>			
<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>			
<u>CAB INTEGRITY CERTIFICATION</u>			
<p>The fire apparatus manufacturer shall provide a cab crash test certification with this proposal. The certification shall state that a specimen representing the substantial structural configuration of the cab has been tested and certified by an independent third party test facility. Testing events shall be documented with photographs, real-time and high-speed video, vehicle accelerometers, cart accelerometers, and a laser speed trap. The fire apparatus manufacturer shall provide a state licensed professional engineer to witness and certify all testing events. Testing shall meet or exceed the requirements below:</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. - Roof Crush 			

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<p>The cab shall be subjected to a roof crush force of 22,500 lb. This value meets the ECE 29 criteria, and is equivalent to the front axle rating up to a maximum of ten (10) metric tons.</p> <p>- Side Impact</p> <p>The same cab shall be subjected to dynamic preload where a 13,275-lb moving barrier is slammed into the side of the cab at 5.50 mph, striking with an impact of 13,000 ft-lb of force. This test is part of the SAE J2422 test procedure and more closely represents the forces a cab shall see in a rollover incident.</p> <p>- Frontal Impact</p> <p>The same cab shall withstand a frontal impact of 32,600 ft-lb of force using a moving barrier in accordance with SAE J2420.</p> <p>- Additional Frontal Impact</p> <p>The same cab shall withstand a frontal impact of 65,200 ft-lb of force using a moving barrier. (Twice the force required by SAE J2420)</p> <p>The same cab shall withstand all tests without any measurable intrusion into the survival space of the occupant area.</p> <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> <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>ELECTRIC WINDOW DURABILITY CERTIFICATION</u></p> <p>Cab window roll-up systems can cause maintenance problems if not designed for long service life. The window regulator design shall complete 30,000 complete up-down cycles and still function normally when finished. The bidder shall certify that sample doors and windows similar to those provided on the apparatus have been tested and have met these criteria without malfunction or significant component wear.</p>		

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<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> <p><u>AMP DRAW REPORT</u></p> <p>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.</p> <p>The manufacturer of the apparatus shall provide the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Documentation of the electrical system performance tests. <input type="checkbox"/> A written load analysis, which shall include the following: <ul style="list-style-type: none"> o The nameplate rating of the alternator. 		

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		Yes	No
<ul style="list-style-type: none"> o The alternator rating under the conditions specified per: <ul style="list-style-type: none"> <input type="checkbox"/> Applicable NFPA 1901 or 1906 (Current Edition). o The minimum continuous load of each component that is specified per: <ul style="list-style-type: none"> <input type="checkbox"/> Applicable NFPA 1901 or 1906 (Current Edition). o Additional loads that, when added to the minimum continuous load, determine the total connected load. o Each individual intermittent load. <p>All of the above listed items shall be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).</p>			
<p><u>OPTIONS –</u></p> <p><u>FOAM SYSTEM –</u></p> <p><u>FOAM PROPORTIONER</u></p> <p>A foam proportioning system shall be provided that is an on demand, automatic proportioning, single point, direct injection system suitable for all types of Class A and B foam concentrates, including the high viscosity (6000 cps), alcohol resistant Class B foams. Operation shall be based on direct measurement of water flow, and remain consistent within the specified flows and pressures. The system shall automatically balance and proportion foam solution at rates from .1 percent to 9.9 percent regardless of variations in water pressure and flow, up to the maximum rated capacity of the foam concentrate pump.</p> <p>The design of the system shall allow operation from draft, hydrant, or relay operation. This shall provide a versatile system to meet the demands at a fire scene.</p> <p><u>System Capacity</u></p> <p>The system shall have the ability to deliver the following minimum foam solution flow rates that meet or exceed NFPA requirements at a pump rating of 250 psi.</p> <p>200 gpm @ 6 percent</p> <p>400 gpm @ 3 percent</p> <p>1200 gpm @ 1 percent</p> <p>The foam concentrate setting may be adjusted in .1 percent increments from .1 percent to 9.9 percent. Typical settings are .3 percent, .5 percent and 1.0 percent (The maximum capacity will be limited to the plumbing and water pump capacity).</p>			

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		Yes	No
<u>Control System</u>			
<p>The system shall be equipped with a digital electronic control display located on the pump operator's panel. Push button controls shall be integrated into the panel to turn the system on/off, control the foam percentage, direct which foam to use on a multi-tank system, and to set the operation modes (automatic, manual, draft, calibration, or flush).</p> <p>The percent of injection shall have presets for Class A or Class B foam. These presets can be changed at the fire department as desired. The percent of injection shall be able to be easily changed at the scene to adjust to changing demands.</p> <p>In order to minimize the use of abbreviations and interpretations, system information shall be displayed on the panel by way of .50 tall LEDs that total 14 characters (two (2) lines of seven (7) each). System on and foam pump on indicator lights shall also be included. Information displayed shall include mode of operation (automatic, manual, draft, calibration, or flush), foam supply selected (Class A or Class B), water total, foam total, foam percentage, remaining gallons, and time remaining.</p> <p>The control display shall direct a microprocessor, which receives input from the systems water flow meter while also monitoring the position of the foam concentrate pump. The microprocessor shall compare the values of the water flow versus the position/rate of the foam pump, to ensure the proportion rate is accurate. One (1) check valve shall be installed in the plumbing to prevent foam from contaminating the water pump.</p>			
<u>Low Level Foam Tank</u>			
<p>The control head shall display a warning message when the foam tank in use is below a quarter tank.</p>			
<u>Hydraulic Drive System</u>			
<p>The foam concentrate pump shall be powered by a hydraulic drive system, which is automatically activated, whenever the vehicle water pump is engaged. A system that drives the foam pump via an electric motor shall not be acceptable. A large parasitic electric load used to power the foam pump can cause an overload of the chassis electrical system.</p> <p>Hydraulic oil cooler shall be provided to automatically prevent overheating of the hydraulic oil, which is detrimental to system components. The oil/water cooler shall be designed to allow continuous system operation without allowing hydraulic oil temperature to exceed the oil specifications.</p> <p>The hydraulic oil reservoir shall be of four (4) gallons minimum capacity and shall also be of sufficient size to minimize foaming and be located to facilitate checking oil level or adding oil without spillage or the need to remove access panels.</p>			
<u>Foam Concentrate Pump</u>			
<p>The foam concentrate pump shall be of positive displacement, self-priming; linear actuated design, driven by the hydraulic motor. The pump shall be constructed of brass body; chrome plated stainless steel shaft, with a stainless steel piston. In order to increase longevity of the pump, no aluminum shall be present in its construction.</p>			

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	Yes	No
<p>A relief system shall be provided which is designed to protect the drive system components and prevent over pressuring the foam concentrate pump</p> <p>The foam concentrate pump shall have minimum capacity for 12 gpm with all types of foam concentrates with a viscosity at or below 6000 cps including protein, fluoroprotein, AFFF, FFFP, or AR-AFFF. The system shall deliver only the amount of foam concentrate flow required, without recirculating foam back to the storage tank. Recirculating foam concentrate back to the storage tank can cause agitation and premature foaming of the concentrate, which can result in system failure. The foam concentrate pump shall be self-priming and have the ability to draw foam concentrate from external supplies such as drums or pails.</p> <p><u>External Foam Concentrate Connection</u></p> <p>An external foam pick-up shall be provided to enable use of a foam agent that is not stored on the vehicle. The external foam pick-up shall be designed to allow continued operation after the on-board foam tank is empty. The external foam pick-up shall be designed to allow use with training foam or colored water for training purposes.</p> <p><u>Panel Mounted Strainer / External Pick-Up Connection</u></p> <p>A bronze body strainer / connector unit shall be provided. The unit shall be mounted to the pump panel. The external foam pick-up shall be one (1) 1.00" male connection with chrome-plated cap integrated to a 2.00" strainer cleanout cap. A check valve shall be installed in the pick-up portion of the cleanout cap. A basket style stainless steel screen shall be installed in the body of the strainer / connector unit. Removal of the 2.00" cleanout cap shall be all that is required to gain access to and remove the stainless-steel basket screen. The strainer / connector unit shall be ahead of the foam concentrate pump inlet port to ensure that all agents reaching the foam pump has been strained.</p> <p><u>Pick-Up Hose</u></p> <p>A 1.00" flexible hose with an end for insertion into foam containers shall be provided. The hose shall be supplied with a 1.00" female swivel NST thread swivel connector. The hose shall be shipped loose.</p> <p><u>Discharges</u></p> <p>The foam system shall be plumbed to four (4) discharges. The discharges capable of dispensing foam will be one (1) right side 2.50" outlet, one (1) left side 2.50" outlet and two (2) rear 2.50: outlets.</p> <p><u>System Electrical Load</u></p> <p>The foam proportioning shall not impose an electrical load on the vehicle electrical system any greater than five (5) amps at 12VDC.</p> <p><u>Foam Supply Valve</u></p> <p>An electric valve shall be used for the foam supply valve. The foam supply valve shall be controlled at the foam system control head for ease of operation. The supply valve shall be electric, remote controlled, to eliminate air pockets in the foam tank supply hose.</p>		

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Maintenance Message

A message shall be displayed on the control head to advise when system maintenance needs to be performed. The message shall display interval for cleaning the foam strainer, cleaning for the water strainers, and changing the hydraulic oil.

Flush System

The system shall be designed such that a flush mode shall be provided to allow the system to flush all foam concentrate with clear water. The flush circuit control logic shall ensure the foam tank supply valve is closed prior to opening the flush valve. The flush valve shall be operated at the foam system control head for ease of operation. The valve shall be electrically controlled and located as close to the foam tank supply valve as possible. A manual flush drain valve shall be labeled and located under the left side running board.

SINGLE FOAM TANK REFILL

The foam system's proportioning pump will be used to fill the Class A foam tank. This will allow use of the auxiliary foam pick-up to pump the foam from pails or a drum on the ground into the foam tank. A foam shut-off switch will be installed in the fill dome of the tank to shut the system down when the tank is full. The fill operation will be controlled by a mode in the foam system controller stating TANK FILL. While the proportioner pump is filling the tank, the controller will display FILL TANK. When the tank is full, as determined by the float switch in the tank dome, the pump will stop and the controller will display TANK FULL.

FOAM TANK

The foam tank will be an integral portion of the polypropylene water tank. The cell will have a capacity of 40 gallons of foam with the intended use of Class A foam. The brand of foam stored in this tank will be Silv-ex. The foam cell will not reduce the capacity of the water tank. The foam cell will have a screen in the fill dome and a breather in the lid.

FOAM TANK DRAIN

A system of 1.00" foam tank drains will be provided, integrated into the foam systems strainer and tank to foam pump valve management system. The tank to pump hoses running from the tank(s) to the panel mounted strainer will 1.00" diameter. The foam system controller will have a mode that allows for a given foam valve to be opened at will. Flow of foam from the tank valve to the strainer will be usable as a tank drain mode.

An adaptor will be supplied, that allows the 1.00" foam intake screen to assembly to be used as a drain outlet. The standard supplied 1.00" foam pick up hose will be attached to the screen assembly by way of the adapter. The drain mode will allow the operator to open and close the tank valve as required from the control head, to drain foam and re-fill foam containers through the connected hose, without foam spillage beneath the vehicle.

Bidder Complies	
Yes	No

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Bidder Complies	
Yes	No

CHASSIS WITH BIG BLOCK ENGINE

ENGINE

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

Make:	Cummins®
Model:	X15
Power:	600 hp at 1800 rpm
Torque:	1850 lb-ft at 1200 rpm
Governed Speed:	2100 rpm
Emissions Level:	EPA 2017
Fuel:	Diesel
Cylinders:	Six (6)
Displacement:	912 cubic inches (14.9L)
Starter:	Delco 39MT™
Fuel Filters:	Spin-on style primary filter with water separator and water-in-fuel sensor. Secondary spin-on style filter.

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

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<u>CAB</u>	Bidder Complies	
	Yes	No
<p>To provide quality at the source and single source customer support, the approximately 100" wide cab will be built by the apparatus manufacturer in a facility located on the manufacturer's premises.</p> <p>For reasons of structural integrity and enhanced occupant protection, the cab will be of heavy duty design, constructed to the following minimal standards.</p> <p>The cab will 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 will be constructed of 0.25" heavy wall extrusions joined by a solid A356-T6 aluminum joint casting. The B-pillar and C-pillar will also be constructed from 0.25" heavy wall extrusions. The rear wall will be constructed of two (2) 4.00" x 2.00" outer aluminum extrusions and two (2) 3.00" x 2.00" inner aluminum extrusions. All main vertical structural members will run from the floor to 7.50" x 3.50" x 0.125" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a 0.75" thick corner casting at each of the front corners of the roof assembly.</p> <p>The front of the cab will be constructed of a 0.25" thick firewall, covered with a 0.125" front skin (for a total thickness of 0.38"), and reinforced with 24.50" wide x 10.00" deep x 0.50" thick supports on each side of the engine tunnel. The cross-cab support will be welded to the A-pillar, 0.25" firewall, and engine tunnel, on the left and right sides.</p> <p>The cab floors will be constructed of 0.1875" thick aluminum plate and reinforced at the firewall with an additional 0.25" thick cross-floor support providing a total thickness of 0.44" of structural material at the front floor area. The front floor area will also be supported with three (3) 0.50" plates bolted together that also provides the mounting point for the cab lift. This tubing will run from the front of the cab to the 0.1875" thick engine tunnel, creating the structure to support the forces created when lifting the cab.</p> <p>The cab will be a full-tilt style. A 3-point cab mount system with rubber isolators will improve ride quality by isolating chassis vibrations from the cab.</p> <p>The crew cab will be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants.</p> <p>The forward cab section will have an overall height (from the cab roof to the ground) of approximately 102.00". The crew cab section will have a 10.00" raised roof, with an overall cab height of approximately 112.00". The raised portion will start at the most forward point of the B-pillar and continue rearward to the back of the cab. The overall height listed will be calculated based on a truck configuration with the lowest suspension weight ratings, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension will increase the overall height listed.</p>		

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	Bidder Complies	
	Yes	No
<p>The cab will have an interior width of not less than 93.50". The driver and passenger seating positions will have a minimum 24.00" clear width at knee level.</p> <p>To reduce injuries to occupants in the seated positions, proper head clearance will be provided. The floor-to-ceiling height inside the forward cab will be no less than 60.25". The floor-to-ceiling height inside the crew cab will be no less than 62.95" in the center position and 68.75" in the outboard positions.</p> <p>The crew cab will measure a minimum of 57.50" from the rear wall to the backside of the engine tunnel (knee level) for optimal occupant legroom.</p> <p><u>INTERIOR CAB INSULATION</u></p> <p>The cab walls, ceiling and engine tunnel will be insulated in all strategic locations to maximize acoustic absorption and thermal insulation. The cab will be insulated with 2.00" insulation in the rear wall, 3.00" insulation in the side walls, and 1.50" insulation in the ceiling.</p> <p><u>FENDER LINERS</u></p> <p>Full-circular, aluminum, inner fender liners in the wheel wells will be provided.</p> <p><u>PANORAMIC WINDSHIELD</u></p> <p>A one (1)-piece, safety glass windshield with more than 2,802 square inches of clear viewing area will be provided. The windshield will be full width and will provide the occupants with a panoramic view. The windshield will consist of three (3) layers: the outer light, the middle safety laminate, and the inner light. The 0.114" thick outer light layer will provide superior chip resistance. The middle safety laminate layer will prevent the windshield glass pieces from detaching in the event of breakage. The inner light will provide yet another chip resistant layer. The cab windshield will be bonded to the aluminum windshield frame using a urethane adhesive. A custom frit pattern will be applied on the outside perimeter of the windshield for a finished automotive appearance.</p> <p><u>WINDSHIELD WIPERS</u></p> <p>Three (3) electric windshield wipers with a washer, in conformance with FMVSS and SAE requirements, will be provided. The wiper blades will be 21.65" long and together will clear a minimum of 1,783 square inches of the windshield for maximum visibility in inclement weather.</p> <p>The windshield washer fluid reservoir will be located at the front of the vehicle and be accessible through the access hood for simple maintenance.</p> <p><u>FAST SERVICE ACCESS FRONT TILT HOOD</u></p> <p>A full-width access hood will be provided for convenient access to engine coolant, steering fluid, wiper fluid, cab lift controls, headlight power modules, and ember separator. The hood will also provide complete access to the windshield wiper motor and components. The hood will be contoured to provide a sleek, automotive appearance. The hood will be constructed of two (2) fiberglass panels bonded together and will include</p>		

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	Yes	No
<p>reinforcing ribs for structural integrity. The hood will include air cylinders to hold the hood in open and closed positions, and a heavy duty latch system that will meet FMVSS 113 (Hood Latch System). The spring-loaded hood latch will be located at the center of the hood with a double-action release lever located behind the manufacturer's logo. The two (2)-step release requires the lever first be pulled to the driver side until the hood releases from the first latch (primary latch) then to the passenger side to fully release the hood (secondary latch).</p> <p><u>ENGINE TUNNEL</u></p> <p>To provide structural strength, the engine tunnel sidewalls will be constructed of .50" aluminum plate that is welded to both the .25" firewall and .38" heavy wall extrusion under the crew cab floor. To maximize occupant space, the top edges will be tapered.</p> <p>The engine tunnel will be insulated on both sides for thermal and acoustic absorption. The underside of the tunnel will be covered with 1.00" thick polyether foam that is reinforced with an aluminized face. Thermal rating for this insulation will be -40 degrees Fahrenheit to 300 degrees Fahrenheit. The</p> <p><u>FRAME</u></p> <p>The chassis frame will 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 will have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to 10.75" over the rear axle. Each rail will have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 in-lb over the critical regions of the frame assembly, with a section modulus of 18.96 cubic inches with an rbm of 2,275,200 in-lb over the rear axle. The frame rails will be constructed of 120,000 psi yield strength heat-treated 0.38" thick steel with 3.50" wide flanges.</p> <p><u>FRAME REINFORCEMENT</u></p> <p>In addition, a full-length mainframe internal "C" liner will be provided. The liner will be an internal "C" design that steps to a smaller internal "C" design over the rear axle. It will be heat-treated steel measuring 12.50" x 3.00" x 0.25" through the front "C" portion of the liner, stepping to 9.38" x 3.00" x 0.25" through the rear "C" portion of the liner. Each liner will have a section modulus of 13.58 cubic inches, yield strength of 110,000 psi, and rbm of 857,462 in-lb. Total rbm at wheelbase center will be 4,391,869 in-lb.</p> <p>The frame liner will be mounted inside of the chassis frame rail and extend the full length of the frame.</p> <p><u>PUMP PANEL ENCLOSURE, ROLLUP DOORS</u></p> <p>There shall be 2 installed over both sides of the operator's 48" to protect the pump inlet and outlets from the elements.</p> <p>The pump panel enclosure shall be body width.</p>		

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	Yes	No
The floor of the compartment under the pump panel shall be covered with aluminum treadplate and the interior shall be lower job color.		
The roll-up doors shall be of brushed anodized, double faced, aluminum construction, painted job color and manufactured AMDOR Inc.		
Door(s) shall be constructed using 1.00" extruded double wall aluminum slats which will feature a flat smooth interior surface to provide maximum protection against equipment hang-up. The slats shall be connected with a structural driven ball and socket hinge designed to provide maximum curtain diaphragm strength. Mounting and adjusting the curtain shall be done with a clip system that connects the curtain to the balancer drum allowing for easy tension adjustment without tools. The slats shall be mounted in reusable slat shoes with positive snap-lock securement.		
Each slat will incorporate weather tight recessed dual durometer seals. One (1) fin will be designed to locate the seal within the extrusion. The second will serve as a wiping seal which will also allow for compression to prevent water ingress.		
The doors shall be mounted in a one (1)-piece aluminum side frame with recessed side seals to minimize seal damage during equipment deployment. All seals including side frames, top gutters and bottom panel are to be manufactured utilizing non-marring materials.		
Bottom panel flange of rollup door will be equipped with two (2) cut-outs to allow for easier access with gloved hands.		
The lift bar shall be located at the bottom of door with striker latches installed at the base of the side frames. Side frame mounted door strikers will include support beneath the stainless steel lift bar to prevent door curtain bounce, improve bottom seal life expectancy and to avoid false door ajar signals.		
All injection molded rollup door wear components will be constructed of Type 6 nylon.		
Each rollup door shall have a 3.00 inch diameter balancer/tensioner drum to assist in lifting the door. A garage door style shall not acceptable.		
The header for the rollup door assembly shall not exceed 4.00".		
A heavy-duty magnetic switch shall be used for control of open compartment door warning lights.		
The enclosure shall include a drip pan below the roll of the door.		
<u>CROSSLAY HOSE BEDS</u>		
Two crosslays with 1.50" outlets shall be provided. Each bed to be capable of carrying 200' of DJ poly hose and shall be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve.		
Each outlet to be equipped with a 1.50" National Standard hose thread chrome adapter. The adapter shall be terminate below the hose bed, through the side of the body. The hose thread adapters shall be located on both sides of the pump house.		
The crosslay controls shall be at the pump operator's panel.		
A removable tray shall be provided for each crosslay hosebed. The crosslay trays shall be 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		

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Bidder Complies	
Yes	No

from the compartment. The floor of the trays shall be perforated to allow for drainage and hose drying. The bottom of the crosslay compartments shall be lined with stainless steel to allow the tray to slide with ease. Scuffplates shall be provided on both sides, at the sides and bottom of each opening to protect the paint.

CROSSLAY HOSE BED, 2.50"

One (1) crosslay with a 2.50" outlet shall be provided. The bed to be capable of 200' of DJ Poly hose and shall be plumbed with 2.50" i.d. pipe and gated with a 2.50" quarter turn ball valve.

The outlet to be equipped with a 2.50" National Standard hose thread chrome adapter located below the crosslay hosebed on the right side.

The crosslay control shall be at the pump operator's panel.

Stainless steel vertical scuffplates shall be provided at hose bed ends (each side of vehicle). Bottom of hose bed ends (each side) shall also be equipped with a stainless steel scuffplate.

Crosslay bed flooring shall consist of removable perforated brushed aluminum.

A removable tray shall be provided for each crosslay hosebed. The crosslay trays shall be 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. The bottom of the crosslay compartments shall be lined with stainless steel to allow the tray to slide with ease. Scuffplates shall be provided on both sides, at the sides and bottom of each opening to protect the paint.

QMAX-150 MIDSHIP FIRE PUMP

Midship fire pump shall be a Hale QMAX-150, 1500 gpm single (1) stage midship mounted centrifugal type.

Pump shall be the class "A" type.

Pump shall deliver the percentage of rated discharges at the pressures indicated below:

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

Entire pump and both suction and discharge passages shall be hydrostatically tested to a pressure of 500 psi.

Pump shall be fully tested at the pump manufacturer's factory to the performance requirements as outlined by the current NFPA 1901 standards and shall be free from objectionable pulsation and vibration.

Pump body and related parts shall be of fine grain, alloy cast iron with a minimum tensile strength of 30,000 psi (2041.2 bar).

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	Yes	No
All moving parts in contact with water shall be of high quality bronze or stainless steel. Pumps utilizing castings made of lower tensile strength cast iron shall not be acceptable.		
Pump body shall be horizontally split, on a single plane in two (2) sections, for easy removal of entire impeller assembly, including wear rings and bearings from beneath the pump, without disturbing pump piping or the mounting of the pump in the chassis.		
Pump shall have one (1) double suction impeller. The pump body shall have two (2) opposed discharge volute cutwaters to eliminate radial unbalance.		
Pump impeller shall be hard, fine grain bronze of the mixed flow design, accurately machined, hand-ground, and individually balanced. The vanes of the impeller intake eyes shall be hand-ground and polished to a sharp edge. They shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.		
Impeller clearance rings shall be bronze and easily renewable without replacing impeller or pump volute body. They shall be of the wrap-around double labyrinth design for maximum efficiency.		
Pump shaft shall be electric furnace heat-treated, corrosion resistant stainless steel. It shall be super-finished under packing with galvanic corrosion (zinc separators in packing) protection for longer shaft life. Pump shaft shall be sealed with double oil seal to keep road dirt and water out of drive unit.		
Pump shaft shall be rigidly supported by three (3) bearings for minimum deflection. A high lead bronze sleeve bearing shall be located immediately adjacent to the impeller (on the side opposite of the drive unit). The sleeve bearing shall be automatically oil lubricated and pressure balanced to exclude foreign material. The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and shall be splash lubricated.		
<u>SIDE COMPARTMENT ROLLUP DOOR(S)</u>		
There shall be 6 roll up doors installed on the side compartments, double faced, aluminum construction, job color and manufactured by AMDOR™ brand rollup doors.		
Door(s) shall be constructed using 1.00" extruded double wall aluminum slats which will feature a flat smooth interior surface to provide maximum protection against equipment hang-up. The slats shall be connected with a structural driven ball and socket hinge designed to provide maximum curtain diaphragm strength. Mounting and adjusting the curtain shall be done with a clip system that connects the curtain to the balancer drum allowing for easy tension adjustment without tools. The slats shall be mounted in reusable slat shoes with positive snap-lock securement.		
Each slat will incorporate weather tight recessed dual durometer seals. One (1) fin will be designed to locate the seal within the extrusion. The second will serve as a wiping seal which will also allow for compression to prevent water ingress.		
The doors shall be mounted in a one (1)-piece aluminum side frame with recessed side seals to minimize seal damage during equipment deployment. All seals including side frames, top gutters and bottom panel are to be manufactured utilizing non-marring materials.		
Bottom panel flange of rollup door will be equipped with two (2) cut-outs to allow for easier access with gloved hands.		
The lift bar shall be located at the bottom of door with striker latches installed at the base of the side frames. Side frame mounted door strikers will include support beneath the stainless steel lift		

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		Yes	No
<p>bar to prevent door curtain bounce, improve bottom seal life expectancy and to avoid false door ajar signals.</p> <p>All injection molded rollup door wear components will be constructed of Type 6 nylon.</p> <p>Each rollup door shall have a 3.00 inch diameter balancer/tensioner drum to assist in lifting the door. A garage door style shall not 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>			