NOTICE OF REQUEST FOR SEALED BIDS

The Kankakee Fire Department hereby gives Public Notice of the request for sealed bids for the purchase of one (1) Class A Pumper apparatus and auxiliary equipment per the specifications described on the attached pages.

Each proposal shall be received in a sealed envelope and clearly labeled "Fire Engine Bid". Any proposal not received by the posted date and time shall be rejected.

The City of Kankakee reserves the right to reject any or all bids and waive all informalities.

Sealed proposals are to be received by **3:00 pm CST on the 7th day of September, 2023.**

Sealed proposals shall be publicly opened on the 8th day of September, 2023 at 10:00 AM CST in the Clerk's Office (or related meeting/conference room) for the City of Kankakee located at 304 S. Indiana Ave. No award will be considered until the Kankakee Fire Department has had sufficient time to review proposal.

Copies of the bid proposal can be obtained by emailing bidopenings@citykankakee-il.gov or by requesting a copy from the City Clerk's office (815) 933-0480 or from the City of Kankakee's website www.citykankakee-il.gov

Contact person:
Any questions pertaining to the published specifications shall be directed to Chief Bryan LaRoche at the following contact information:

Fire Station Telephone: 815-933-0452
Cellular Telephone: 779-225-4635
Email: bslaroche@citykankakee-il.gov

To submit sealed bid proposal:
Sealed proposals to be mailed to or delivered in person at:
Kankakee City Clerk's Office
304 S. Indiana Ave.
Kankakee, IL 60901

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CONTENTS

SPECIFICATIONS FOR A TRIPLE COMBINATION PUMPER 14
INTENT OF SPECIFICATIONS 14
INSTRUCTIONS TO BIDDERS 14
EXCEPTIONS 15
GENERAL DESIGN AND CONSTRUCTION 16
QUALITY AND WORKMANSHIP 16
DELIVERY 16
MANUALS AND SERVICE INFORMATION 17
SAFETY VIDEO 17
PERFORMANCE TESTS AND REQUIREMENTS 17
FAILURE TO MEET TEST 17
SERVICE AND WARRANTY SUPPORT (DEALERSHIP) 18
SERVICE AND WARRANTY SUPPORT (MANUFACTURER) 18
LIABILITY 19
INSURANCE PROVIDED BY BIDDER 19
COMMERCIAL GENERAL LIABILITY INSURANCE 19
COMMERCIAL AUTOMOBILE LIABILITY INSURANCE 19
UMBRELLA/EXCESS LIABILITY INSURANCE 19
INSURANCE PROVIDED BY MANUFACTURER 20
PRODUCT LIABILITY INSURANCE 20
UMBRELLA/EXCESS LIABILITY INSURANCE 20
SINGLE SOURCE MANUFACTURER 21
NFPA 2016 STANDARDS 21
NFPA COMPLIANCY 22
PUMP TEST 22
GENERATOR TEST 22
BREATHING AIR TEST 22
VEHICLE INSPECTION PROGRAM CERTIFICATION 22
BID BOND 22
PERFORMANCE BOND, 1 YEAR 23
APPROVAL DRAWING 24

ELECTRICAL WIRING DIAGRAMS 24
CHASSIS 24
MAXIMUM OVERALL HEIGHT 24
MAXIMUM OVERALL LENGTH 24
WHEELBASE 24
GVW RATING 24
FRAME 24
FRONT NON DRIVE AXLE 25
FRONT SUSPENSION 25
FRONT SHOCK ABSORBERS 26
FRONT OIL SEALS 26
FRONT TIRES 26
REAR AXLE 26
TOP SPEED OF VEHICLE 26
REAR SUSPENSION 26
REAR OIL SEALS 27
REAR TIRES 27
TIRE BALANCE 27
TIRE PRESSURE MANAGEMENT 27
CHROME LUG NUT COVERS 27
MUD FLAPS 27
WHEEL CHOCKS 27
Wheel Chock Brackets 27
ANTI-LOCK BRAKE SYSTEM 28
BRAKES 28
AIR COMPRESSOR, BRAKE SYSTEM 28
BRAKE SYSTEM 28
BRAKE SYSTEM AIR DRYER 29
BRAKE LINES 29
AIR INLET WITH AUTOMATIC EJECT 29
ENGINE 29
HIGH IDLE 29
ENGINE BRAKE 30

CLUTCH FAN 30
ENGINE AIR INTAKE 30
EXHAUST SYSTEM 30
RADIATOR 30
COOLANT LINES 31
FUEL TANK 31
DIESEL EXHAUST FLUID TANK 32
FUEL SHUTOFF 32
TRANSMISSION 32
TRANSMISSION SHIFTER 32
TRANSMISSION COOLER 33
DRIVELINE 33
STEERING 33
STEERING WHEEL 33
LOGO AND CUSTOMER DESIGNATION ON DASH 33
BUMPER 34
TOW EYES 34
BUMPER TRAY 34
BUMPER HOSE RESTRAINT 34
FRONT BUMPER UL-LX COATING 35
PROTECTIVE COATING ON BUMPER GRAVEL PAN 35
CAB 35
CAB ROOF DRIP RAIL 36
INTERIOR CAB INSULATION 36
FENDER LINERS 36
PANORAMIC WINDSHIELD 36
WINDSHIELD WIPERS 37
ENGINE TUNNEL 37
CAB REAR WALL EXTERIOR COVERING 37
CAB LIFT 37
Cab Lift Interlock 38
GRILLE 38
SIDE OF CAB MOLDING 38

MIRRORS 38
DOORS 38
Door Panels 39
MANUAL CAB DOOR WINDOWS 39
CAB STEPS 39
CAB EXTERIOR HANDRAILS 39
STIRRUP STEPS 39
STEP LIGHTS 40
FENDER CROWNS 40
STORAGE COMPARTMENTS 40
Compartment Lights 40
RECESSED POCKET WITH ELASTIC COVER 40
PIKE POLE STORAGE 41
CAB DASH 41
MOUNTING PLATE ON ENGINE TUNNEL 41
AIR BOTTLE HOLDER(S) 41
CAB INTERIOR 41
CAB INTERIOR UPHOLSTERY 42
CAB INTERIOR PAINT 42
CAB FLOOR 42
DEFROST/AIR CONDITIONING SYSTEM 42
Cab Defroster 42
Cab/Crew Auxiliary Heater 43
Air Conditioning 43
Climate Control 43
Gravity Drain Tubes 44
SUN VISORS 44
GRAB HANDLES 44
ENGINE COMPARTMENT LIGHTS 44
ACCESS TO ENGINE DIPSTICKS 44
STORAGE BOX 44
MAP BOX 45
SEATING CAPACITY 45

DRIVER SEAT 45
OFFICER SEAT 45
RADIO COMPARTMENT 45
REAR FACING LEFT SIDE CABINET 46
Cabinet Light 46
REAR FACING RIGHT SIDE CABINET 46
Cabinet Light 46
FORWARD FACING CENTER SEATS 46
Center Seat Riser 47
SEAT UPHOLSTERY 47
AIR BOTTLE HOLDERS 47
SEAT BELTS 47
HELMET STORAGE PROVIDED BY FIRE DEPARTMENT 48
CAB DOME LIGHTS 48
HAND HELD LIGHT 48
CAB INSTRUMENTATION 48
Gauges 49
Indicator Lamps 49
Alarms 50
Indicator Lamp and Alarm Prove-Out 50
Control Switches 50
Custom Switch Panels 52
Diagnostic Panel 52
AIR RESTRICTION INDICATOR 52
"DO NOT MOVE APPARATUS" INDICATOR 52
SWITCH PANELS 53
WIPER CONTROL 53
SPARE CIRCUIT 53
SPARE CIRCUIT 53
SPARE CIRCUIT 53
INFORMATION CENTER 54
VEHICLE DATA RECORDER 54
Seat Belt Monitoring System 55

INTERCOM SYSTEM 55
RADIO / INTERCOM INTERFACE CABLE 55
OVER THE HEAD, RADIO TRANSMIT HEADSET 55
OVER THE HEAD, INTERCOM ONLY HEADSET 56
HEADSET HANGERS 56
RADIO ANTENNA MOUNT 56
RADIO ANTENNA MOUNT 56
ELECTRICAL POWER CONTROL SYSTEM 56
Voltage Monitor System 57
Power and Ground Studs 57
EMI/RFI Protection 57
ELECTRICAL 58
BATTERY SYSTEM 58
BATTERY SYSTEM 59
MASTER BATTERY SWITCH 59
BATTERY COMPARTMENTS 59
JUMPER STUDS 59
BATTERY CHARGER 60
REMOTE CONTROL PANEL - BATTERY CHARGER 60
AUTO EJECT FOR SHORELINE 60
12 VOLT AUTO SHUT OFF TIMER 60
ALTERNATOR 60
ELECTRONIC LOAD MANAGEMENT 61
HEADLIGHTS 61
DIRECTIONAL LIGHTS 61
INTERMEDIATE LIGHT 61
CAB CLEARANCE/MARKER/ID LIGHTS 61
FRONT CAB SIDE DIRECTIONAL LIGHTS 62
REAR CLEARANCE/MARKER/ID LIGHTING 62
REAR FMVSS LIGHTING 63
LICENSE PLATE BRACKET 63
LIGHTING BEZEL 63
BACK-UP ALARM 63

CAB PERIMETER SCENE LIGHTS 63
PUMP HOUSE PERIMETER LIGHTS 64
BODY PERIMETER SCENE LIGHTS 64
STEP LIGHTS 64
12 VOLT LIGHTING 64
12 VOLT LIGHTING 65
12 VOLT LIGHTING 65
HOSE BED LIGHTS 65
REAR SCENE LIGHTS 65
WALKING SURFACE LIGHT 66
WATER TANK 66
TANK CRADLE 67
WATER TANK RESTRAINT 67
HOSE BED 67
HOSE BED DIVIDER 68
HOSEBED HOSE RESTRAINT 68
RUNNING BOARDS 68
TAILBOARD 68
REAR WALL, SMOOTH ALUMINUM/BODY MATERIAL 69
REAR TOW EYES 69
REAR TOW BAR 69
RUNNING BOARD HOSE RESTRAINT 69
HOSE TRAY 69
COMPARTMENTATION 69
UNDERBODY SUPPORT SYSTEM 70
AGGRESSIVE WALKING SURFACE 71
LOUVERS 71
TESTING OF BODY DESIGN 71
LEFT SIDE COMPARTMENTATION 71
RIGHT SIDE COMPARTMENTATION 72
SIDE COMPARTMENT DOORS 73
REAR COMPARTMENTATION 73
REAR COMPARTMENT DOORS 74

SCUFFPLATE 74
REVERSE HINGED DOOR 74
COMPARTMENT LIGHTING 74
MOUNTING TRACKS 75
ADJUSTABLE SHELVES 75
PEGBOARD 75
PEGBOARD 75
STRAP 75
RUB RAIL 75
BODY FENDER CROWNS 76
BODY FENDER LINER 76
HARD SUCTION HOSE PROVIDED BY DEALER 76
HOSE TROUGH 76
HARD SUCTION HOSE TROUGHS, ADDITIONAL 76
HANDRAILS 76
HANDRAILS 76
AIR BOTTLE STORAGE (Triple) 77
AIR BOTTLE COMPARTMENT STRAP 77
EXTENSION LADDERS PROVIDED BY DEALER 77
ROOF LADDER PROVIDED BY DEALER 77
LADDER BRACKETS 77
FOLDING LADDER PROVIDED BY DEALER 77
FOLDING LADDER STORAGE 77
BACKBOARD STORAGE 78
PIKE POLE STORAGE 78
WEB STRAP 78
FOLDING STEPS FRONT OF BODY 78
REAR FOLDING STEPS 78
PUMP COMPARTMENT 79
PUMP MOUNTING 79
PUMP CONTROL PANELS (Side Control) 79
PUMP 80
PUMP TRANSMISSION 80

PUMPING MODE 81
AIR PUMP SHIFT 81
TRANSMISSION LOCK-UP 81
AUXILIARY COOLING SYSTEM 81
INTAKE RELIEF VALVE 81
PRESSURE CONTROLLER 81
PRIMING PUMP 82
PUMP MANUALS 82
PLUMBING, STAINLESS STEEL AND HOSE 82
MAIN PUMP INLETS 82
SHORT SUCTION TUBE(S) 83
MAIN PUMP INLET CAP 83
VALVES 83
INLET CONTROL 83
LEFT SIDE INLET 83
RIGHT SIDE INLET 83
INLET BLEEDER VALVE 83
TANK TO PUMP 84
TANK REFILL 84
DISCHARGE OUTLET CONTROLS 84
LEFT SIDE DISCHARGE OUTLETS 84
LEFT SIDE OUTLET ELBOWS 84
RIGHT SIDE DISCHARGE OUTLETS 84
RIGHT SIDE OUTLET ELBOWS 84
LARGE DIAMETER DISCHARGE OUTLET 85
LARGE DIAMETER OUTLET ELBOWS 85
REAR DISCHARGE OUTLET 85
REAR OUTLET ELBOWS 85
DISCHARGE OUTLET (Rear) 85
ADDITIONAL REAR OUTLET ELBOWS 85
DISCHARGE CAPS/ INLET PLUGS 86
OUTLET BLEEDER VALVE 86
DELUGE RISER 86

DELUGE OUTLET SPECIAL INSTRUCTIONS 86
MONITOR 86
NOZZLE, DELUGE 86
CROSSLAY HOSE BEDS 87
CROSSLAY HOSE RESTRAINT 87
CROSSLAY COVER 87
CROSSLAY 9.00" LOWER THAN STD 87
CROSSLAYS 88
FOAM SYSTEM 88
PUMP PANEL CONFIGURATION 88
PUMP AND GAUGE PANEL 88
PUMP ACCESS 88
Right Side Panel 88
Panel Fastener 88
PUMP COMPARTMENT LIGHT 88
THROTTLE READY GREEN INDICATOR LIGHT 88
OK TO PUMP INDICATOR LIGHT 88
AIR HORN BUTTON 89
ALUMINUM HEAT ENCLOSURE 89
ELECTRIC GAUGE HEATER 89
PUMP COMPARTMENT HEATER 89
RUBBER BOOT 89
VACUUM AND PRESSURE GAUGES 89
PRESSURE GAUGES 90
WATER LEVEL GAUGE 90
LIGHT SHIELD 90
AIR HORN SYSTEM 91
Air Horn Location 91
Air Horn Control 91
ELECTRONIC SIREN 91
SPEAKER 91
WIRING & MOUNTING ONLY for MECHANICAL SIREN, (Auxiliary) 91
MECHANICAL SIREN CONTROL 92

ACTIVATION FOR WARNING LIGHTS INTENSITY 92
ROOF WARNING LIGHTS 92
POWER SUPPLY, STROBE 93
FRONT ZONE LOWER LIGHTS 94
HEADLIGHT FLASHER 94
SIDE ZONE LOWER LIGHTING 94
SIDE WARNING LIGHTS 94
REAR ZONE LOWER LIGHTING 95
REAR BODY WARNING LIGHTS 95
REAR OF HOSE BED WARNING LIGHTS 95
TRAFFIC DIRECTING LIGHT 96
120 VOLT RECEPTACLE 96
120 VOLT RECEPTACLE 96
LOOSE EQUIPMENT 97
NFPA REQUIRED LOOSE EQUIPMENT PROVIDED BY FIRE DEPARTMENT 97
SOFT SUCTION HOSE 98
STRAINER PROVIDED BY DEALER 98
DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT 98
WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT 98
FLATHEAD AXE PROVIDED BY FIRE DEPARTMENT 98
PICKHEAD AXE PROVIDED BY FIRE DEPARTMENT 99
PAINT PROCESS 99
Environmental Impact 100
CAB PAINT 101
BODY PAINT 101
GALVANIZED CHASSIS FRAME ASSEMBLY 101
PAINT, FRONT WHEELS 101
PAINT, REAR WHEELS 101
AXLE HUB PAINT 101
PAINTED RUB RAIL 101
COMPARTMENT INTERIOR PAINT 101
REFLECTIVE STRIPES 101
REAR CHEVRON STRIPING 102

REFLECTIVE STRIPE OUTLINE 102
CHEVRON STRIPING ON REAR LAP COMPARTMENT 102
CAB DOOR REFLECTIVE STRIPE 102
LETTERING 102
LETTERING 102
LETTERING 102
LETTERING 102
LETTERING 103
EMBLEM 103
UNDERCOATING, CAB & BODY 103
FIRE APPARATUS PARTS MANUAL 103
Service Parts Internet Site 104
CHASSIS SERVICE MANUALS 104
CHASSIS OPERATION MANUAL 104
ONE (1) YEAR MATERIAL AND WORKMANSHIP 104
ENGINE WARRANTY 105
STEERING GEAR WARRANTY 105
FIFTY (50) YEAR STRUCTURAL INTEGRITY 105
FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY 105
REAR AXLE WARRANTY 105
ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY 105
TEN (10) YEAR STRUCTURAL INTEGRITY 105
TEN (10) YEAR PRO-RATED PAINT AND CORROSION 105
COMPARTMENT LIGHT WARRANTY 106
TRANSMISSION WARRANTY 106
TRANSMISSION COOLER WARRANTY 106
WATER TANK WARRANTY 106
TEN (10) YEAR STRUCTURAL INTEGRITY 106
ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY 106
PUMP WARRANTY 106
TEN (10) YEAR PUMP PLUMBING WARRANTY 107
TEN (10) YEAR PRO-RATED PAINT AND CORROSION 107

THREE (3) YEAR MATERIAL AND WORKMANSHIP 107
VEHICLE STABILITY CERTIFICATION 107
ENGINE INSTALLATION CERTIFICATION 107
POWER STEERING CERTIFICATION 107
CAB INTEGRITY CERTIFICATION 107
Side Impact 108
Frontal Impact 108
Additional Frontal Impact 108
Roof Crush 108
Additional Roof Crush 108
CAB DOOR DURABILITY CERTIFICATION 108
WINDSHIELD WIPER DURABILITY CERTIFICATION 109
SEAT BELT ANCHOR STRENGTH 109
SEAT MOUNTING STRENGTH 109
PERFORMANCE CERTIFICATIONS 109
Cab Air Conditioning 109
Cab Defroster 109
Cab Auxiliary Heater 109
AMP DRAW REPORT 110

Bidder Complies	
Yes	No

SPECIFICATIONS FOR A TRIPLE COMBINATION PUMPER

Sealed bids will be received by Kankakee 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.

INTENT OF SPECIFICATIONS

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

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.

INSTRUCTIONS TO BIDDERS

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

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

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

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

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

Each bid shall be accompanied by a set of manufacturer's set of specifications consisting of a detailed description of the apparatus, construction methods, and equipment proposed to which the apparatus furnished under contract shall conform. These specifications shall indicate size, type, model and make of all components parts and equipment, providing proof of compliance with each and every item in the departments advertised specifications. A letter only, even

	Bidder Complies	
	Yes	No

though written on company letterhead, shall not be sufficient. **An exception to this requirement shall not be acceptable.**

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

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

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

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

EXCEPTIONS

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

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

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

Exceptions shall be allowed if they are equal to or superior to that specified and provided they are listed and fully explained on a separate page. All deviations, no matter how slight, shall be clearly explained on a separate sheet, 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.

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

	Bidder Complies	
	Yes	No

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

GENERAL DESIGN AND CONSTRUCTION

The cab, chassis, pump module, and body are to be entirely designed, assembled and painted by the prime vehicle manufacturer, which minimizes third party involvement on engineering, design, service and warranty issues.

All bidders shall provide a list of the company, manufacturing location, and engineering source for each individual major component, including but not limited to the welded cab assembly, the pumphouse module assembly, the chassis assembly, body and electrical system. Apparatus using any subcontracted cab, chassis, pump module, electrical system or body will not be acceptable.

The apparatus shall be designed with due consideration to distribution of load between the front and rear axles. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association.

The bidder shall make accurate statements as to the apparatus weight and dimensions.

QUALITY AND WORKMANSHIP

All steel welding shall follow American welding Society D1.1-2004 recommendations for structural steel welding. All aluminum welding shall follow American welding Society and ANSI D1.2-2003 requirements for structural welding of aluminum. All sheet metal welding shall follow American Welding Society B2.1-2000 requirements for structural welding of sheet metal. Flux core arc welding to use alloy rods, type 7000, American welding Society standards A5.20-E70T1. Employees classified as welders are tested and certified to meet the American Welding Society codes upon hire and every three (3) years thereafter. The manufacturer shall be required to have an American welding Society certified welding inspector in plant during working hours to monitor weld quality.

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.

To demonstrate the quality of the product and service, each bidder shall provide a list of at least twenty (20) 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.**

DELIVERY

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

	Bidder Complies	
	Yes	No

instruct personnel in proper operation, care and maintenance of the equipment delivered. Delivery shall be within 650 days from execution of the contract and any delay shall refund $100 per day back to the City of Kankakee. Delivery date can be extended based on conditional agreement with City of Kankakee and the vendor.

MANUALS AND SERVICE INFORMATION

The manufacturer shall supply at time of delivery, complete operation and maintenance manuals covering the complete apparatus as delivered. A permanent plate shall be mounted in the drivers compartment which specifies the quantity and type of fluid required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.

SAFETY VIDEO

Since video is much more effective than written documentation and can be replayed for new personnel and as a refresher for existing personnel, an apparatus safety video, in DVD format shall be provided at time of delivery. This video shall address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus. Safety procedures for the following shall be included on the video: vehicle pre trip inspection, chassis operation, pump operation and maintenance.

PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be conducted with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axle shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. Vehicle shall adhere to the following parameters:

A) The apparatus, when fully equipped and loaded, shall have not less than 25 percent nor more than 50 percent of the weight on the front axle, and not less than 50 percent nor more than 75 percent on the rear axle.

B) The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed rpm of the engine.

C) The service brakes shall be capable of stopping a fully loaded vehicle in 35 feet at 20 mph on a level concrete highway. The air brake system shall conform to Federal Motor vehicle Safety Standards (FMVSS) 121.

D) The apparatus, fully loaded, shall be capable of obtaining a speed of 50 mph on a level concrete highway with the engine not exceeding the governed rpm (full load).

FAILURE TO MEET TEST

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, second trials may be made at the option of the bidder within 30 days of the date of the first trial. Such trials shall be final and conclusive and failure to comply with these requirements

	Bidder Complies	
	Yes	No

shall be cause for rejection. failure to comply with changes to conform to any clause of the specifications, within 30 days after notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not constitute acceptance.

SERVICE AND WARRANTY SUPPORT (DEALERSHIP)

TO INSURE FULL SERVICE AFTER DELIVERY, THE SELLING BIDDER/DEALERSHIP MUST BE CAPABLE OF PROVIDING SERVICE WHEN REQUIRED.

The bidder/dealership shall show that the company is in position to render prompt service and to furnish replacement parts.

Each bidder/dealership must be able to display that they are actively in the fire apparatus service business by operating in conjunction with a factory authorized service center and parts repository capable of satisfying the warranty service requirements and parts requirements of the vehicle(s) being purchased.

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.

SERVICE AND WARRANTY SUPPORT (MANUFACTURER)

To provide an additional layer of service support, the successful manufacturer must also own a least two separate service facilities, one located in the northern portion of the US to service both Canada and the northern US states and one in the south to service the southern states.

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.

Parts identification shall be provided to both the dealer and the Fire Department through an on line web based application for the specific truck reflected in this specification. Access will be granted using the specific VIN number of the vehicle. The online web application will provide the ability to view complete bills of materials, digital photographs, parts drawings, assembly drawings, and access to all current operation, maintenance and service publications.

The manufacturer must also maintain a 24 hour/ 7 day a week, toll free emergency hot line.

The manufacturer shall employ a staff of adequate size (a minimum of 30 personnel) specifically dedicated to providing customer support and parts for the fielded fleet of vehicles it has produced.

	Bidder Complies	
	Yes	No

The manufacturer must be capable of providing both in-house and on-site service for the apparatus.

The manufacturer shall offer regional factory hands-on repair and maintenance training classes.

The manufacturer shall employ a minimum of four certified EVT technicians on staff, not only providing technical expertise in the repair of fire apparatus, but also demonstrating the commitment to service after the sale.

LIABILITY

The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

INSURANCE PROVIDED BY BIDDER

COMMERCIAL GENERAL LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance:

Each Occurrence$1,000,000

Products/Completed Operations Aggregate$1,000,000

Personal and Advertising Injury$1,000,000

General Aggregate$2,000,000

Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form and shall include Contractual Liability coverage for bodily injury and property damage subject to the terms and conditions of the policy. The policy shall include Owner as an additional insured when required by written contract.

COMMERCIAL AUTOMOBILE LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract, keep in force at least the following minimum limits of commercial automobile liability insurance and coverage shall be written on a Commercial Automobile liability form:

Each Accident Combined Single Limit:$1,000,000

UMBRELLA/EXCESS LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:

Aggregate:$3,000,000

	Bidder Complies	
	Yes	No

Each Occurrence:$3,000,000

The umbrella policy shall be written on an occurrence basis and at a minimum provide excess to the bidder's General Liability and Automobile Liability policies.

The required limits can be provided by one (1) or more policies provided all other insurance requirements are met.

Coverage shall be provided by a carrier(s) rated A- or better by A.M. Best.

All policies shall provide a 30-day notice of cancellation to the named insured. The Certificate of Insurance shall provide the following cancellation clause: Should any of the above described polices be cancelled before the expiration date thereof, notice shall be delivered in accordance with the policy provisions.

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.

INSURANCE PROVIDED BY MANUFACTURER

PRODUCT LIABILITY INSURANCE

The manufacturer shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of Product Liability insurance:

Each Occurrence$1,000,000

Products/Completed Operations Aggregate$1,000,000

Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form. The manufacturer's policy shall include the owner as additional insured when required by written contract between the Owner and a Pierce authorized dealer.

UMBRELLA/EXCESS LIABILITY INSURANCE

The manufacturer shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:

Each Occurrence:$25,000,000

Aggregate:$25,000,000

The umbrella policy shall be written on an occurrence basis and provide excess to the manufacturer's General Liability/Products policies.

	Bidder Complies	
	Yes	No

The required limits can be provided by one (1) or more policies provided all other insurance requirements are met.

Coverage shall be provided by a carrier(s) rated A- or better by A.M. Best.

All policies shall provide a 30-day notice of cancellation to the named insured. The Certificate of Insurance shall provide the following cancellation clause: Should any of the above described polices be cancelled before the expiration date thereof, notice shall be delivered in accordance with the policy provisions.

Manufacturer agrees to furnish owner with a current Certificate of Insurance with the coverages listed above along with the bid. The certificate shall show the purchaser as the certificate holder.

SINGLE SOURCE MANUFACTURER

Bids shall only be accepted from a single source apparatus manufacturer. The definition of single source is a manufacturer that designs and manufactures their products using an integrated approach, including the chassis, cab weldment, cab, pumphouse (including the sheet metal enclosure, valve controls, piping and operators panel) and body being designed, fabricated and assembled on the bidder's premises. The electrical system (hardwire or multiplex) shall be both designed and integrated by the same apparatus manufacturer. The warranties relative to these major components (excluding component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body, pumphouse, cab weldment and chassis). The bidder shall provide evidence that they comply with this requirement.

The bidder shall state the location of the factory where the apparatus is to be built.

NFPA 2016 STANDARDS

This unit shall comply with the NFPA standards effective January 1, 2016, except for fire department specifications that differ from NFPA specifications. These exceptions shall be set forth in the Statement of Exceptions.

Certification of slip resistance of all stepping, standing and walking surfaces shall be supplied with delivery of the apparatus.

All horizontal surfaces designated as a standing or walking surface that are greater than 48.00" above the ground must be defined by a 1.00" wide line along its outside perimeter. Perimeter markings and designated access paths to destination points shall be identified on the customer approval print and are shown as approximate. Actual location(s) shall be determined based on materials used and actual conditions at final build. Access paths may pass through hose storage areas and opening or removal of covers or restraints may be required. Access paths may require the operation of devices and equipment such as the aerial device or ladder rack.

	Bidder Complies	
	Yes	No

A plate that is highly visible to the driver while seated shall be provided. This plate shall show the overall height, length, and gross vehicle weight rating.

The manufacturer shall have programs in place for training, proficiency testing and performance for any staff involved with certifications.

An official of the company shall designate, in writing, who is qualified to witness and certify test results.

NFPA COMPLIANCY

Apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications shall be indicated in the proposal as "non-NFPA".

PUMP TEST

The pump shall be tested, approved, and certified by Underwriter's Laboratory at the manufacturer's expense. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the manufacturer's record of pump construction details shall be forwarded to the Fire Department.

GENERATOR TEST

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

BREATHING AIR TEST

If the unit has breathing air, the apparatus manufacturer shall draw an air sample from the air system and certify that the air quality meets the requirements of NFPA 1989, *Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection.*

VEHICLE INSPECTION PROGRAM CERTIFICATION

To assure the vehicle is built to current NFPA 1901 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. 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).

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.

BID BOND

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.

	Bidder Complies	
	Yes	No

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.

Proposals received from bidders who do not manufacture the chassis shall provide a warranty that shall be issued jointly and severally by, and signed by, both the bidder and the chassis manufacturer.

If the successful bidder does not manufacture the chassis, the bidder shall supply a warranty bond, in addition to their performance bond, along with their signed contract. This warranty bond shall guarantee all terms and conditions of the Basic One (1) Year Limited Warranty and names both the bidder and chassis manufacturer as co-principals. This warranty bond shall be issued for the contract amount and shall remain in force for a term which is consistent with the term of the Basic One (1) Year Limited Warranty.

Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle shall apply only to the Basic One (1) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle shall not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any) of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision shall prevail.

PERFORMANCE BOND, 1 YEAR

The successful bidder shall furnish a Performance and Payment bond (Bond) equal to 100 percent of the total contract amount within 30 days of the notice of award. Such Bond shall be in a form acceptable to the Owner and issued by a surety company included within the Department of Treasury's Listing of Approved Sureties (Department Circular 570) with a minimum A.M. Best Financial Strength Rating of A and Size Category of XV. In the event of a bond issued by a surety of a lesser Size Category, a minimum Financial Strength rating of A+ is required.

Bidder and Bidder's surety agree that the Bond issued hereunder, whether expressly stated or not, also includes the surety's guarantee of the vehicle manufacturer's Basic One (1) Year Limited Warranty period included within this proposal. Owner agrees that the penal amount of this bond shall be simultaneously amended to 25 percent of the total contract amount upon satisfactory acceptance and delivery of the vehicle(s) included herein. Notwithstanding anything contained within this contract to the contrary, the surety's liability for any warranties of any type shall not exceed one (1) year from the date of such satisfactory acceptance and delivery, or the actual Basic One (1) Year Limited Warranty period, whichever is shorter.

	Bidder Complies	
	Yes	No

Due to global supply chain constraints, any delivery date contained herein is a good faith estimate as of the date of this order/contract, and merely an approximation based on current information. Delivery updates shall be made available, and a final firm delivery date shall be provided as soon as possible.

APPROVAL DRAWING

A drawing of the proposed apparatus shall be provided for approval before construction begins. The sales representative shall also have a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus shall be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing.

ELECTRICAL WIRING DIAGRAMS

Two (2) electrical wiring diagrams, prepared for the model of chassis and body, shall be provided.

CHASSIS

Chassis provided shall be a new, tilt-type custom fire apparatus. The chassis shall be manufactured in the apparatus body builder's facility eliminating any split responsibility. The chassis shall be designed and manufactured for heavy-duty service, with adequate strength and capacity for the intended load to be sustained and the type of service required.

MAXIMUM OVERALL HEIGHT

The maximum overall height of the apparatus shall be 9' 2".

MAXIMUM OVERALL LENGTH

The maximum overall length of the apparatus shall be 31' 11".

WHEELBASE

The wheelbase of the vehicle shall be no greater than 187.50.

GVW RATING

The gross vehicle weight rating shall be a minimum of 49,800.

FRAME

The chassis frame shall be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus.

The side rails shall 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.

	Bidder Complies	
	Yes	No

Each rail shall 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 shall be constructed of 120,000 psi yield strength heat-treated 0.38" thick steel with 3.50" wide flanges.

FRONT NON DRIVE AXLE

The front axle shall be of the independent suspension design with a ground rating of 22,800 lb.

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.

The center cross members and side plates shall be constructed out of 80,000-psi yield strength steel.

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.

There shall be nine (9) grease fittings supplied, one (1) on each control arm pivot and one (1) on the steering gear extension.

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.

Camber at load shall be zero degrees for optimum tire life.

The ball joint bearing shall be of low friction design and be maintenance free.

Toe links that are adjustable for alignment of the wheel to the center of the chassis shall be provided.

The wheel ends must have little to no bump steer when the chassis encounters a hole or obstacle.

The steering linkage shall provide proper steering angles for the inside and outside wheel, based on the vehicle wheelbase.

The axle shall have a turning angle of up to 45 degrees.

FRONT SUSPENSION

Front independent suspension shall be provided with a minimum ground rating of 22,800 lb.

	Bidder Complies	
	Yes	No

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.

Each wheel shall have torsion bar type spring. In addition, each front wheel end shall also have energy absorbing jounce bumpers to prevent bottoming of the suspension.

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.

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.

The independent suspension shall be put through a durability test that has simulated a minimum of 140,000 miles of inner city driving.

FRONT SHOCK ABSORBERS
KONI heavy-duty telescoping shock absorbers shall be provided on the front suspension.

FRONT OIL SEALS
Oil seals with viewing window shall be provided on the front axle.

FRONT TIRES
Front tires shall be Goodyear 425/65R22.50 radials, 20 ply Armor Max MSA, rated for 22,800 lb maximum axle load and 68 mph maximum speed.

The tires shall be mounted on Accuride® 22.50" x 12.25" steel disc type wheels with a ten (10) stud, 11.25" bolt circle.

REAR AXLE
The rear axle shall be a Dana, Model S26-190, with a capacity of 27,000 lb.

TOP SPEED OF VEHICLE
A rear axle ratio shall be furnished to allow the vehicle to reach a top speed of 68 mph / 109 kph.

REAR SUSPENSION
The rear suspension shall be Standens, semi-elliptical, 3.00" wide x 53.00" long, 12-leaf pack with a ground rating of 27,000 lb. The spring hangers shall be castings.

The two (2) top leaves shall wrap the forward spring hanger pin, and the rear of the spring shall be a slipper style end that shall ride in a rear slipper hanger. To reduce bending stress due to acceleration and braking, the front eye shall be a berlin eye that shall place the front spring pin in the horizontal plane within the main leaf.

	Bidder Complies	
	Yes	No

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.

REAR OIL SEALS
Oil seals shall be provided on the rear axle(s).

REAR TIRES
The rear tires shall be four (4) Goodyear Armor Max MSD, 12R22.50 radials, load range H, rated for 27,120 lb maximum axle load and 68 mph maximum speed.

The tires shall be mounted on Accuride® 22.50" x 8.25" steel disc type wheels with a ten (10) stud, 11.25" bolt circle.

TIRE BALANCE
All tires shall be balanced with Counteract balancing beads. The beads shall be inserted into the tire and eliminate the need for wheel weights.

TIRE PRESSURE MANAGEMENT
There shall be a RealWheels LED AirSecure™ tire alert pressure management system provided, that shall monitor each tire's pressure. A sensor shall be provided on the valve stem of each tire for a total of six (6) tires.

The sensor shall calibrate to the tire pressure when installed on the valve stem for pressures between 10 and 200 psi. The sensor shall activate an integral battery operated LED when the pressure of that tire drops 5 to 8 psi.

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

CHROME LUG NUT COVERS
Chrome lug nut covers shall be supplied on front and rear wheels.

MUD FLAPS
Mud flaps shall be installed behind the front and rear wheels of the apparatus.

WHEEL CHOCKS
There shall be one (1) pair of folding Ziamatic, Model SAC-44-E, aluminum alloy, Quick-Choc wheel blocks with easy-grip handle provided.

Wheel Chock Brackets
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.

	Bidder Complies	
	Yes	No

ANTI-LOCK BRAKE SYSTEM

The vehicle shall be equipped with a Meritor WABCO 4S4M, anti-lock braking system. The ABS shall provide a 4-channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology shall control the anti-lock braking system. Each wheel shall be monitored by the system. When any particular wheel begins to lockup, a signal shall be sent to the control unit. This control unit shall then reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system shall eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

BRAKES

The service brake system shall be full air type.

The front brakes shall be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.

The brake system shall be certified, third party inspected, for improved stopping distance.

The rear brakes shall be Bendix™ 16.50" x 8.63" cam operated with automatic slack adjusters.

AIR COMPRESSOR, BRAKE SYSTEM

The air compressor shall be a Wabco single piston compressor with a 26.8 CI displacement.

BRAKE SYSTEM

The brake system shall include:

- Brake treadle valve
- Heated automatic moisture ejector on air dryer
- Total air system minimum capacity of 4,272 cubic inches
- Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi
- Spring set parking brake system
- Parking brake operated by a push-pull style control valve
- A parking "brake on" indicator light on instrument panel
- Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, with an automatic spring brake application at 40 psi
- A pressure protection valve to prevent all air operated accessories from drawing air from the air system when the system pressure drops below 80 psi (550 kPa)
- 1/4 turn drain valves on each air tank

The air tank shall be primed and painted to meet a minimum 750 hour salt spray test.

To reduce the effects of corrosion, the air tank shall be mounted with stainless steel brackets (no exception).

Bidder Complies	
Yes	No

BRAKE SYSTEM AIR DRYER
The air dryer shall be a WABCO System Saver 1200 IWT, with internal wet tank, spin-on coalescing filter cartridge and 100 watt heater.

BRAKE LINES
Color-coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom where necessary in the chassis.

AIR INLET WITH AUTOMATIC EJECT
One (1) air inlet with Kussmaul Air Eject shall be provided. 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 located in the driver's side cab step area. 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.

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

Make:	Paccar
Model:	MX13
Power:	510 hp at 1600rpm
Torque:	1850 lb-ft at 1000rpm
Governed Speed:	1900 rpm
Emissions Certification:	EPA 2024
Fuel:	Diesel
Cylinders:	Six (6)
Displacement:	12.9L
Starter:	DP60
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.

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

	Bidder Complies	
	Yes	No

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

ENGINE BRAKE

The compression release brake option is a fully integrated MX engine braking system. It utilizes the turbocharger and backpressure valve, but adds in a hydraulically operated compression brake to increase overall retarding power.

To maximize the effectiveness of the compression brake the MX engine brake system works in conjunction with the turbocharger and back pressure valve.

The driver shall be able to turn the engine brake system on/off and have a high, medium and low setting

CLUTCH FAN

A fan clutch shall be provided. The fan clutch shall be automatic when the pump transmission is in "Road" position, and constantly engaged when in "Pump" position.

ENGINE AIR INTAKE

The engine air intake shall be located above the engine cooling package. It shall draw fresh air from the front of the apparatus through the radiator grille.

A stainless steel metal screen shall be installed at the inlet of the air intake system that shall meet NFPA 1901 requirements.

The air cleaner and stainless steel screen shall be easily accessible by tilting the cab.

EXHAUST SYSTEM

The exhaust system shall include a Single Module™ aftertreatment device to meet current EPA standards. The exhaust system shall be stainless steel from the turbo to the inlet of the aftertreatment device, and shall be 5.00" in diameter. An insulation wrap shall be provided on all exhaust pipes between the turbo and aftertreatment device to minimize the heat loss to the aftertreatment device. The exhaust shall terminate horizontally ahead of the right side rear wheels. A tailpipe diffuser shall be provided to reduce the temperature of the exhaust as it exits. Heat deflector shields shall be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

RADIATOR

The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system standards.

For maximum corrosion resistance and cooling performance, the entire radiator core shall be constructed using long life aluminum alloy. The radiator core shall consist of aluminum fins,

	Bidder Complies	
	Yes	No

having a serpentine design, brazed to aluminum tubes. No solder joints or leaded material of any kind shall be acceptable in the core assembly.

The radiator core shall have a minimum front area of 1060 square inches.

Supply tank shall be made of heavy duty glass-reinforced nylon and the return tank shall be mode of aluminum. Both tanks shall be crimped onto the core assembly using header tabs and a compression gasket to complete the radiator core assembly. There shall be a full steel frame around the inserts to enhance cooling system durability and reliability.

The radiator shall be compatible with commercial antifreeze solutions.

The radiator assembly shall be isolated from the chassis frame rails with rubber isolators to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven terrain.

The radiator shall include a de-aeration/expansion tank. For visual coolant level inspection, the radiator shall have a built-in sight glass. The radiator shall be equipped with a 15 psi pressure relief cap.

A drain port shall be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

Shields or baffles shall be provided to prevent recirculation of hot air to the inlet side of the radiator.

COOLANT LINES

Gates, or Goodyear, rubber hose shall be used for all engine coolant lines installed by the chassis manufacturer.

Hose clamps shall be stainless steel constant torque type to prevent coolant leakage. They shall react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose.

FUEL TANK

A 65 gallon fuel tank shall be provided and mounted at the rear of the chassis. The tank shall be constructed of aluminum with the exterior unfinished. It shall be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank shall be mounted with stainless steel straps. (no exception).

A .75" drain plug shall be provided in a low point of the tank for drainage.

A fill inlet shall be located on the left hand side of the body and be covered with a hinged, spring loaded, stainless steel door that is marked "Ultra Low Sulfur - Diesel Fuel Only."

A .50" diameter vent shall be provided running from top of tank to just below fuel fill inlet.

	Bidder Complies	
	Yes	No

The tank shall meet all FHWA 393.67 requirements, including a fill capacity of 95 percent of tank volume.

All fuel lines shall be provided as recommended by the engine manufacturer.

DIESEL EXHAUST FLUID TANK

A 6.0 gallon diesel exhaust fluid (DEF) tank shall be provided and mounted in the driver's side body rearward of the rear axle.

A fill inlet shall be provided and marked "Diesel Exhaust Fluid Only". The fill inlet shall be located adjacent to the engine fuel inlet behind a common hinged, spring loaded, painted door on the driver side of the vehicle.

The selector flap within the common area for the fuel and DEF fills shall have SouthCo C2 black raised trigger lever latch. The latch shall be provided so that the selector flap will be latched when the flap is in the position over the DEF fill.

The tank shall meet the engine manufacturers requirement for 10 percent expansion space in the event of tank freezing.

The tank shall include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

FUEL SHUTOFF

Two (2) shutoff valves shall be installed in the fuel lines at the bulkhead junctions above the transmission.

TRANSMISSION

An Allison 6th generation, Model EVS 4000P, electronic, torque converting, automatic transmission shall be provided.

The transmission shall be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display shall indicate when service is due.

Two (2) PTO openings shall be located on left side and top of converter housing (positions 8 o'clock and 1 o'clock).

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

TRANSMISSION SHIFTER

A six (6)-speed push button shift module shall be mounted to right of driver on console. Shift position indicator shall be indirectly lit for after dark operation.

The transmission ratio shall be:

Bidder Complies	
Yes	No

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

TRANSMISSION COOLER

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

DRIVELINE

Drivelines shall be a heavy-duty metal tube and be equipped with Spicer® 1810 universal joints.

The shafts shall be dynamically balanced before installation.

A splined slip joint shall be provided in each driveshaft where the driveline design requires it. The slip joint shall be coated with Glidecoat® or equivalent.

STEERING

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 Paccar hydraulic pump with integral pressure and flow control. All power steering lines shall have wire braded lines with crimped fittings.

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

STEERING WHEEL

The steering wheel shall be 18.00" in diameter, have tilting and telescoping capabilities, and a 2-spoke design.

LOGO AND CUSTOMER DESIGNATION ON DASH

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

The first row of text shall be: CITY OF

The second row of text shall be: KANKAKEE

The third row of text shall be: FIRE DEPT.

	Bidder Complies	
	Yes	No

BUMPER

A one (1)-piece bumper manufactured from .25" formed steel with a .38" bend radius shall be provided. The bumper shall be a minimum of 10.00" high with a 1.50" top and bottom flange. The bumper shall be 95.28" wide with 45 degree corners. The bumper shall be metal finished and painted to match the apparatus.

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

The bumper extension frame shall be fabricated using .38" gussets welded to 2.00" x 5.00" steel tubing running front to back with .50" front and rear plates mounted to the chassis frame. Fabricated "U" shaped channel supports the weight of the bumper and provides the main strength in frontal crash. .25" steel is formed into "C" shaped backing plates for mounting of the bumper and providing protection to the cab.

The bumper extension's cross section is considered expendable, and a crush zone. The bumper is not intended for pushing other vehicles or objects.

Tow hooks/eyes located under the bumper extension are for straight pull only.

TOW EYES

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

The inner and outer edges of the tow eyes shall have a .25" radius.

The tow eyes shall be painted black.

BUMPER TRAY

A 3/4 width bumper tray, constructed of smooth aluminum, shall be located in the bumper extension.

The tray shall be a bolted modular design, 8.25" deep.The tray shall have capacity for 50' of 5" Nitrile covered hose with storz couplings .

Black rubber grating shall be provided at the bottom of the tray. Drain holes are also provided.

BUMPER HOSE RESTRAINT

There shall be one (1) pair hose tray restraint straps located center.

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

	Bidder Complies	
	Yes	No

FRONT BUMPER UL-LX COATING

Protective black UL-LX® coating shall be provided on the outside exterior of the top front bumper flange. It shall not be sprayed on the underside of the flange.

The lining shall be properly installed by an authorized UL-LX dealer.

PROTECTIVE COATING ON BUMPER GRAVEL PAN

A protective UL-LX® spray-on polyurethane/polyurea coating shall be applied to top surface of the bumper gravel pan.

The coating shall be black in color.

The coating shall be properly installed by an authorized UL-LX dealer.

CAB

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

The cab shall be built by the apparatus manufacturer in a facility located on the manufacturer's premises (no exception).

For reasons of structural integrity and enhanced occupant protection, the cab shall be a heavy duty design, constructed to the following minimal standards.

The cab shall have 12 main vertical structural members located in the A-pillar (front cab corner posts), B-pillar (side center posts), C-pillar (rear corner posts), and rear wall areas. The A-pillar shall be constructed of solid A356-T5 aluminum castings. The B-pillar and C-pillar shall be constructed from 0.13" wall extrusions. The rear wall shall be constructed of two (2) 2.00" x 2.00" outer aluminum extrusions and two (2) 2.00" x 1.00" inner aluminum extrusions. All main vertical structural members shall run from the floor to 4.625" x 3.864" x 0.090" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a 0.25" thick corner casting at each of the front corners of the roof assembly.

The front of the cab shall be constructed of a 0.13" firewall plate, covered with a 0.090" front skin (for a total thickness of 0.22"), and reinforced with a full width x 0.50" thick cross-cab support located just below the windshield and fully welded to the engine tunnel. The cross-cab support shall run the full width of the cab and weld to each A-pillar, the 0.13" firewall plate, and the front skin.

The cab floors shall be constructed of 0.125" thick aluminum plate and reinforced at the firewall with an additional 0.25" thick cross-floor support providing a total thickness of 0.375" of structural material at the front floor area. The front floor area shall also be supported with two (2) triangular 0.30" wall extrusions that also provides the mounting point for the cab lift. This tubing shall run from the floor wireway of the cab to the engine tunnel side plates, creating the structure to support the forces created when lifting the cab.

	Bidder Complies	
	Yes	No

The cab shall be 96.00" wide (outside door skin to outside door skin) to maintain maximum maneuverability (no exception).

The overall height (from the cab roof to the ground) of approximately 99.00". The overall height listed shall be calculated based on a truck configuration with the lowest suspension weight rating, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension shall increase the overall height listed.

The floor to ceiling height inside the crew cab shall be 54.50" in the center and outboard positions.

The crew cab floor shall measure 46.00" from the rear wall to the back side of the rear facing seat risers.

The medium block engine tunnel, at the rearward highest point (knee level), shall measure 61.50" to the rear wall. The big block engine tunnel shall measure 51.50" to the rear wall.

The crew cab shall be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants.

The cab shall be a full tilt cab style.

A 3-point cab mount system with rubber isolators shall improve ride quality by isolating chassis vibrations from the cab.

CAB ROOF DRIP RAIL

For enhanced protection from inclement weather, a drip rail shall be furnished on the sides of the cab. The drip rail shall be painted to match the cab roof, and bonded to the sides of the cab. The drip rail shall extend the full length of the cab roof.

INTERIOR CAB INSULATION

The cab shall include 1.00" insulation in the ceiling, 1.50" insulation in the side walls, and 2.00" insulation in the rear wall to maximize acoustic absorption and thermal insulation.

FENDER LINERS

Full circular inner fender liners in the wheel wells shall be provided.

PANORAMIC WINDSHIELD

A 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

	Bidder Complies	
	Yes	No

custom frit pattern shall be applied on the outside perimeter of the windshield for a finished automotive appearance.

WINDSHIELD WIPERS
Three (3) electric windshield wipers with washer shall be provided that meet FMVSS and SAE requirements.

The washer reservoir shall be able to be filled without raising the cab.

ENGINE TUNNEL
Engine hood side walls shall be constructed of 0.375" aluminum. The top shall be constructed of 0.125" aluminum and shall be tapered at the top to allow for more driver and passenger elbow room.

The engine hood shall be insulated for protection from heat and sound. The noise insulation keeps the dBA level within the limits stated in the current NFPA 1901 standards.

The engine tunnel shall be no higher than 17.00" off the crew cab floor (no exception).

CAB REAR WALL EXTERIOR COVERING
The exterior surface of the rear wall of the cab shall be overlaid with bright aluminum treadplate except for areas that are not typically visible when the cab is lowered.

CAB LIFT
A hydraulic cab lift system shall be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves.

Lift controls shall be located on the right side pump panel or front area of the body in a convenient location.

The cab shall be capable of tilting 43 degrees to accommodate engine maintenance and removal.

The cab shall be locked down by a 2-point normally closed spring loaded hook type latch that fully engages after the cab has been lowered. The system shall be hydraulically actuated to release the normally closed locks when the cab lift control is in the raised position and cab lift system is under pressure. When the cab is completely lowered and system pressure has been relieved, the spring loaded latch mechanisms shall return to the normally closed and locked position.

The hydraulic cylinders shall be equipped with a velocity fuse that protects the cab from accidentally descending when the control is located in the tilt position.

For increased safety, a redundant mechanical stay arm shall be provided that must be manually put in place on the left side between the chassis and cab frame when the cab is in the raised

	Bidder Complies	
	Yes	No

position. This device shall be manually stowed to its original position before the cab can be lowered.

Cab Lift Interlock
The cab lift system shall be interlocked to the parking brake. The cab tilt mechanism shall be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism shall be disabled.

GRILLE
A bright finished aluminum mesh grille screen, inserted behind a bright finished grille surround, shall be provided on the front center of the cab.

SIDE OF CAB MOLDING
Chrome molding shall be provided on both sides of cab.

MIRRORS
A Retrac, 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.

DOORS
To enhance entry and egress to the cab, the forward cab door openings shall be a minimum of 37.50" wide x 63.37" high. The crew cab doors shall be located on the sides of the cab and shall be constructed in the same manner as the forward cab doors. The crew cab door openings shall be a minimum of 34.30" wide x 63.37" high.

The forward cab and crew cab doors shall be constructed of extruded aluminum with a nominal material thickness of 0.093". The exterior door skins shall be constructed from 0.090" aluminum.

A customized, vertical, pull-down type door handle shall be provided on the exterior of each cab door. The finish of the door handle shall be chrome/black. The exterior handle shall be designed specifically for the fire service to prevent accidental activation, and shall provide 4.00" wide x 2.00" deep hand clearance for ease of use with heavy gloved hands.

Each door shall also be provided with an interior flush, open style paddle handle that shall be readily operable from fore and aft positions, and be designed to prevent accidental activation. The interior handles shall provide 4.00" wide x 1.25" deep hand clearance for ease of use with heavy gloved hands.

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.

	Bidder Complies	
	Yes	No

A full length, heavy duty, stainless steel, piano-type hinge with a 0.38" pin and 11 gauge leaf shall be provided on all cab doors. There shall be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit.

A chrome handle shall be provided on the inside of each cab door for ease of entry.

A red webbed grab handle shall be installed on the crew cab door stop strap. The grab handles shall be securely mounted.

The bottom cab step at each cab door location shall be located below the cab doors and shall be exposed to the exterior of the cab.

Door Panels
The inner cab door panels shall be constructed out of brushed stainless steel.

MANUAL CAB DOOR WINDOWS
All cab entry doors shall contain a conventional roll down window.

CAB STEPS
The forward cab and crew cab access steps shall be a full size two (2) step design to provide largest possible stepping surfaces for safe ingress and egress. The bottom steps shall be designed with a grip pattern punched into bright aluminum treadplate material to provide support, slip resistance, and drainage. The bottom steps shall be a bolt-in design to minimize repair costs should they need to be replaced. The forward cab steps shall be a minimum 25.00" wide, and the crew cab steps shall be 21.65" wide with an 8.00" minimum depth. The inside cab steps shall not exceed 16.50" in height.

The vertical surfaces of the step well shall be aluminum treadplate.

CAB EXTERIOR HANDRAILS
A 1.25" diameter slip-resistant, knurled aluminum handrail shall be provided adjacent to each cab and crew cab door opening to assist during cab ingress and egress.

STIRRUP STEPS
A stirrup step shall be provided below each cab and crew cab door. The steps shall be designed with a grip strut tread material providing support, slip resistance, and drainage. The steps shall be a bolt-on design and provide a 16.19" wide x 5.00" deep stepping surface. Each step shall provide a step height of 9.25" from the top of the stirrup step to the first step of the cab.

The stirrup step shall be lit by a white 12 volt DC LED light provided on the step.

The step light shall be activated automatically when the battery switch is on and the exit doors are opened or by the same means as the body step lights.

Bidder Complies	
Yes	No

STEP LIGHTS

There shall be six (6) white LED step lights with chrome housing installed for cab and crew cab access steps.

- One (1) light for the left access steps.
- Two (2) lights for the left side crew cab access steps.
- Two (2) lights for the right side crew cab access steps.
- One (1) light for the right side access step.

In order to ensure exceptional illumination, each light shall provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

The lights shall be activated when the battery switch is on and the adjacent door is opened.

FENDER CROWNS

Rubber fender crowns shall be provided around the cab wheel openings.

Crowns shall be black.

STORAGE COMPARTMENTS

Provided on each side of the cab, to the rear of the crew cab access doors, shall be a storage compartment. The compartments shall be 13.75" wide x 38.00" high x 15.00" deep. The usable depth shall be 13.00" deep due to the double pan door.

There shall be two (2) reverse hinged double pan doors painted to match the cab exterior with a non-locking D-Ring latch, one (1) on each side of the cab. A rubber bumper for each exterior door shall be used as a door stop. Each clear door opening shall be 10.50" wide x 36.25" high.

The compartment interior shall be painted to match the cab interior.

Compartment Lights

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.

RECESSED POCKET WITH ELASTIC COVER

To provide organized storage (clutter control) in the cab for miscellaneous equipment, the cab interior shall be provided with recessed storage pockets. The pockets shall be approximately 6.00" wide x 2.12" high x 6.00" deep and shall be constructed of aluminum. The pockets shall be provided with a perforated elastic material cover to secure the equipment in the pocket. There shall be two (2) pockets installed over head panel A and location 5 . Pockets shall only be installed in overhead locations where there is available depth behind the panel.

	Bidder Complies	
	Yes	No

PIKE POLE STORAGE

There shall be two (2) set(s) of holders for mounting of pike pole(s). The holders shall be mounted vertically (1) each side rear of cab. The middle of the pole shall be held in place with a Handlelok, P/N 1004, adjustable mounting bracket. The top of the pole shall be held in place with a Flexmount, P/N 1002S-HD-*, short locking mount with black adjustable strap and the bottom of the pole shall be located in a cup holder.

CAB DASH

The driver side dash, switch panel located to the right of the driver, and center console shall be an easily removable high impact resistant polymer cover.

The instrument gauge cluster shall be surrounded with a high impact ABS plastic contoured to the same shape of the instrument gauge cluster.

The officer side dash shall be a flat top design with an upper beveled edge to provide easy maintenance and shall be constructed out of aluminum and painted to match the cab interior.

MOUNTING PLATE ON ENGINE TUNNEL

Equipment installation provisions shall be installed on the engine tunnel.

A 0.188" smooth aluminum plate shall be bolted to the top surface of the engine tunnel. The plate shall follow the contour of the engine tunnel and shall run the entire length of the engine tunnel. The plate shall be spaced off the engine tunnel .75" to allow for wire routing below the plate.

The mounting surface shall be painted to match the cab interior.

AIR BOTTLE HOLDER(S)

There shall be one (1) Ziamatic, Model ULLH, SCBA holder(s) with a LLS, collision restraint holding strap, provided in the crew cab. The bracket shall be a one (1) size fits all style and shall accommodate SCBA cylinders from the high pressure 30-minute to the high pressure 60-minute.

The bracket(s) shall be located DS rear wall of crew cab outboard position.

CAB INTERIOR

The cab interior shall be constructed of primarily metal (painted aluminum) to withstand the severe duty cycles of the fire service.

The engine tunnel shall be painted aluminum to match the cab interior.

For durability and ease of maintenance, the cab interior side walls shall be painted aluminum. The rear wall shall be painted aluminum.

	Bidder Complies	
	Yes	No

Headliner shall be installed in both forward and rear cab sections. Headliner material shall be vinyl. A sound barrier shall be part of its composition. Material shall be installed on aluminum sheet and securely fastened to interior cab ceiling.

Forward portion of cab headliner shall permit easy access for service of electrical wiring or other maintenance needs.

All wiring shall be placed in metal raceways. Routing through holes in tubing shall not be accepted due to chaffing that installation shall cause.

CAB INTERIOR UPHOLSTERY

The cab interior upholstery shall be 36 oz dark silver gray vinyl.

CAB INTERIOR PAINT

The cab interior metal surfaces, excluding the rear heater panels, shall be painted fire smoke gray, vinyl texture paint.

The rear heater panels shall be painted black, vinyl textured paint.

CAB FLOOR

The cab and crew cab floor areas shall be covered with Polydamp™ acoustical floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler.

The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has a 0.25" thick closed cell foam (no water absorption) which offers a sound dampening material for reducing sound levels.

DEFROST/AIR CONDITIONING SYSTEM

A ceiling mounted combination heater, defroster and air conditioning system shall be installed in the cab above the engine tunnel area.

Cab Defroster

A 54,000 BTU heater-defroster unit with 690 SCFM of air flow shall be provided inside the cab. The heater-defrost shall be installed in the forward portion of the cab ceiling. Air outlets shall be strategically located in the cab header extrusion per the following:

- One (1) adjustable shall be directed towards the left side cab window
- One (1) adjustable shall be directed towards the right side cab window
- Six (6) fixed outlets shall be directed at the windshield

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.

	Bidder Complies	
	Yes	No

Cab/Crew Auxiliary Heater

There shall be one (1) 31,000 BTU auxiliary heater with 560 SCFM of air flow provided in each outboard rear facing seat risers with a dual scroll blower. An aluminum plenum incorporated into the cab structure used to transfer heat to the forward positions.

Air Conditioning

A condenser shall be a 59,644 BTU output that meets and exceeds the performance specification shall be mounted on the radiator. Mounting the condenser below the cab or body would reduce the performance of the system and shall not be acceptable.

The air conditioning system shall be capable of cooling the average cab temperature from 100 degrees Fahrenheit to 75 degrees Fahrenheit at 50 percent relative humidity within 30 minutes. 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.

The evaporator unit shall be installed in the rear portion of the cab ceiling over the engine tunnel. The evaporator shall include one (1) high performance heating core, one (1) high performance cooling core with (1) plenum directed to the front and one (1) plenum directed to the rear of the cab. The rear plenum shall be covered with a formed plastic cover.

The evaporator unit shall have a 52,000 BTU at 690 SCFM rating that meets and exceeds the performance specifications.

Adjustable air outlets shall be strategically located on the forward plenum cover per the following:

- Four (4) shall be directed towards the seating position on the left side of the cab
- Four (4) shall be directed towards the seating position on the right side of the cab

Adjustable air outlets shall be strategically located on the rear plenum cover per the following:

- Minimum of five (5) shall be directed towards crew cab area

A high efficiency particulate air (HEPA) filter shall be included for the system. Access to the filter cover shall be secured with four (4) screws.

The air conditioner refrigerant shall be R-134A and shall be installed by a certified technician.

Climate Control

An automotive style controller shall be provided to control the heat and air conditioning system within the cab. The controller shall have three (3) functional knobs for fan speed, temperature, and air flow distribution (front to rear) control.

The system shall control the temperature of the cab and crew cab automatically by pushing the center of the fan speed control knob. Rotate the center temperature control knob to set the cab and crew cab temperature.

	Bidder Complies	
	Yes	No

The AC system shall be manually activated by pushing the center of the temperature control knob. Pushing the center of the air flow distribution knob shall engage the AC for max defrost, setting the fan speeds to 100 percent and directing all air flow to the overhead forward position.

The system controller shall be located within panel position #12.

Gravity Drain Tubes

Two (2) condensate drain tubes shall be provided for the air conditioning evaporator. The drip pan shall have two (2) drain tubes plumbed separately to allow for the condensate to exit the drip pan. No pumps shall be provided.

SUN VISORS

Two (2) smoked Lexan™ sun visors shall be provided. The sun visors shall be located above the windshield with one (1) mounted on each side of the cab.

There shall be a black plastic thumb latch provided to help secure each sun visor in the stowed position.

GRAB HANDLES

A black rubber covered grab handle shall be mounted on the door post of the driver and officer's side cab door to assist in entering the cab. The grab handles shall be securely mounted to the post area between the door and windshield.

ENGINE COMPARTMENT LIGHTS

There shall be one (1) Whelen, Model 3SC0CDCR, 12 volt DC, 3.00" white LED light(s) with Whelen, Model 3FLANGEC, chrome flange kit(s) installed under the cab to be used as engine compartment illumination.

These light(s) shall be activated automatically when the cab is raised.

ACCESS TO ENGINE DIPSTICKS

For access to the engine oil and transmission fluid dipsticks, there shall be a door on the engine tunnel, inside the crew cab. The door shall be on the rear wall of the engine tunnel, on the vertical surface.

The engine oil dipstick shall allow for checking only. The transmission dipstick shall allow for both checking and filling.

The door shall have a rubber seal for thermal and acoustic insulation. One (1) flush lift and turn latch shall be provided on the access door.

STORAGE BOX

There shall be four (4) storage box(es) designed to hold and dispense boxes of latex gloves provided.

	Bidder Complies	
	Yes	No

Each box shall be constructed of aluminum and located locations for access by driver, officer and crew cab seats .

Each storage box shall be 10.00" wide x 5.00" high x 3.50" deep and painted to match the cab interior. A slot shall be provided on the top of each box to dispense the gloves.

MAP BOX

A map box with four (4) bins, open at top, shall be installed within reach of driver and officer. The map box shall be divided into two (2) bins x two (2) bins. Each bin shall be 9.25" wide x 4.00" deep x 12.00" high. The map box shall be constructed of .125" aluminum and shall be painted to match the cab interior.

SEATING CAPACITY

The seating capacity of the vehicle (including tiller cab and belted seat positions in the rescue body) shall be four (4).

DRIVER SEAT

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).

The seat shall be furnished with a 3-point, shoulder type seat belt.

OFFICER SEAT

A seat shall be provided in the cab for the passenger. The seat shall be a fixed type with no suspension. For optimal comfort, the seat shall be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

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.

The seat shall be furnished with a 3-point, shoulder type seat belt.

RADIO COMPARTMENT

A radio compartment shall be provided under the officer's seat.

The inside compartment dimensions shall be 16.00" wide x 7.50" high x 15.00" deep, with the back of the compartment angled up to match the cab structure.

A drop-down door with one (1) flush lift and turn latch shall be provided for access.

	Bidder Complies	
	Yes	No

The compartment shall be constructed of smooth aluminum and painted to match the cab interior.

REAR FACING LEFT SIDE CABINET

A rear facing cabinet shall be provided in the crew cab at the left side outboard position.

The cabinet shall be 23.00" wide x 34.00" high x 26.75" 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 bottom 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 31.00" high.

The cabinet shall include one (1) infinitely adjustable shelf with a 0.75" flanged down lippainted to match the cab interior.

The cabinet shall include no louvers.

The cabinet shall be constructed of smooth aluminum and painted to match the cab interior.

Cabinet Light

There shall be one (1) white LED strip light installed on the left side of the interior cabinet door opening. The lights shall be controlled by a rocker switch on the cabinet exterior.

REAR FACING RIGHT SIDE CABINET

A rear facing cabinet shall be provided in the crew cab at the right side outboard position.

The cabinet shall be 22.00" wide x 34.00" high x 26.75" 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 bottom 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 19.50" wide x 31.00" high.

The cabinet shall include one (1) infinitely adjustable shelf with a 0.75" flanged down lippainted to match the cab interior.

The cabinet shall include no louvers.

The cabinet shall be constructed of smooth aluminum and painted to match the cab interior.

Cabinet Light

There shall be one (1) white LED strip light installed on the right side of the interior cabinet door opening. The lighting shall be controlled by a rocker switch on the front of the cabinet.

FORWARD FACING CENTER SEATS

There shall be two (2) forward facing seats provided at the center position in the crew cab. For optimal comfort, the seats shall be provided with 15.00" deep foam cushions designed with EVC

	Bidder Complies	
	Yes	No

(elastomeric vibration control). The seats shall be spaced an additional 11.00" apart to provide more room for each occupant.

The seat back 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.

The seats shall be furnished with a 3-point, shoulder type seat belt.

Center Seat Riser

A seat riser compartment shall be provided in the center forward facing position.

There shall be an access door provided on the front of the forward facing seat riser. The door shall be web netting. The netting shall be made with 1.00" wide nylon material with 2.00" openings. The nylon webbing shall be permanently fastened at the bottom of the riser and have spring clip and hook fasteners on the opposite side to secure it.

SEAT UPHOLSTERY

All seat upholstery shall be leather grain 36 oz black vinyl resistant to oil, grease and mildew. The cab shall have four (4) seating positions.

AIR BOTTLE HOLDERS

All SCBA type seats in the cab shall have a "Hands-Free" auto clamp style bracket in its backrest. For efficiency and convenience, the bracket shall include an automatic spring clamp that allows the occupant to store the SCBA bottle by simply pushing it into the seat back. For protection of all occupants in the cab, in the event of an accident, the inertial components within the clamp shall constrain the SCBA bottle in the seat and shall exceed the NFPA standard of 9G. Bracket designs with manual restraints (belts, straps, buckles) that could be inadvertently left unlocked and allow the SCBA to move freely within the cab during an accident, shall not be acceptable.

There shall be a quantity of three (3) SCBA brackets.

SEAT BELTS

All cab and tiller cab (if applicable) seating positions shall have red seat belts. To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length shall meet or exceed the current edition of NFPA 1901 and CAN/ULC - S515 standards.

The 3-point shoulder type 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.

	Bidder Complies	
	Yes	No

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.

Any flip up seats shall include a 3-point shoulder type belts only.

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.

HELMET STORAGE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 14.1.7.4.1 requires a location for helmet storage be provided.

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

CAB DOME LIGHTS

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

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

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

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

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

HAND HELD LIGHT

There shall be four (4) Streamlight, Fire Vulcan, Model #44451, hand lights provided with a vehicle mount with 12VDC direct wire charging rack and quick release buckle strap mounted on the engine tunnel area and mount at pickup.

Each light housing shall be orange in color and be provided with a C4, LED and two (2) "ultra bright blue tail light LEDs". The tail light LEDs shall have a dual mode of blinking or steady.

CAB INSTRUMENTATION

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

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

Indicator Lamps

To promote safety, the following telltale indicator lamps shall be located on the instrument panel in clear view of the driver. The indicator lamps shall be "dead-front" design that is only visible when active. The colored indicator lights shall have descriptive text or symbols.

The following amber telltale lamps shall be present:

- Low coolant
- Trac cntl (traction control) (where applicable)
- Check engine

	Bidder Complies	
	Yes	No

- Check trans (check transmission)
- Air rest (air restriction)
- DPF (engine diesel particulate filter regeneration)
- HET (engine high exhaust temperature) (where applicable)
- ABS (antilock brake system)
- MIL (engine emissions system malfunction indicator lamp) (where applicable)
- Regen inhibit (engine emissions regeneration inhibit) (where applicable)
- Side roll fault (where applicable)
- Front air bag fault (where applicable)
- Aux brake overheat (auxiliary brake overheat) (where applicable)
- The following red telltale lamps shall be present:
- Ladder rack down
- Parking brake
- Stop engine
- The following green telltale lamps shall be present:
- Left turn
- Right turn
- Battery on
- Ignition
- Aux brake (auxiliary brake engaged) (where applicable)
- The following blue telltale lamps shall be present:
- High beam

Alarms

Audible steady tone warning alarm: A steady audible tone alarm shall be provided whenever a warning condition is active.

Indicator Lamp and Alarm Prove-Out

A system shall be provided which automatically tests telltale indicator lights and alarms located on the cab instrument panel. Telltale indicators and alarms shall perform prove-out for 3 to 5 seconds when the ignition switch is moved to the on position with the battery switch on.

Control Switches

For ease of use, the following controls shall be provided immediately adjacent to the cab instrument panel within easy reach of the driver. All switches shall have backlit labels for low light applications.

Headlight/Parking light switch: A three (3)-position maintained rocker switch shall be provided. The first switch position shall deactivate all parking and headlights. The second switch position shall activate the parking lights. The third switch shall activate the headlights.

Panel back lighting intensity control switch: A three (3)-position momentary rocker switch shall be provided. Pressing the top half of the switch, "Panel Up" increases the panel back lighting

	Bidder Complies	
	Yes	No
intensity and pressing the bottom half of the switch, "Panel Down" decreases the panel back lighting intensity. Pressing the half or bottom half of the switch several times shall allow back lighting intensity to be gradually varied from minimum to maximum intensity level for ease of use. Ignition switch: A three (3)-position maintained/momentary rocker switch shall be provided. The first switch position shall turn off and deactivate vehicle ignition. The second switch position shall activate vehicle ignition and shall perform prove-out on the telltale indicators and alarms for 3 to 5 seconds after the switch is turned on. A green indicator lamp is activated with vehicle ignition. The third momentary position shall temporarily silence all active cab alarms. An alarm "chirp" may continue as long as alarm condition exists. Switching ignition to off position shall terminate the alarm silence feature and reset function of cab alarm system. Engine start switch: A two (2)-position momentary rocker switch shall be provided. The first switch position is the default switch position. The second switch position shall activate the vehicle's engine. The switch actuator is designed to prevent accidental activation. Hazard switch shall be provided on the instrument panel or on the steering column. Heater, defrost, and air conditioning control panel. Turn signal arm: A self-canceling turn signal with high beam headlight controls. Windshield wiper control shall have high, low, and intermittent modes. Parking brake control: An air actuated push/pull park brake control. Chassis horn control: Activation of the chassis horn control shall be provided through the center of the steering wheel. High idle engagement switch: A maintained rocker switch with integral indicator lamp shall be provided. The switch shall activate and deactivate the high idle function. The "OK To Engage High Idle" indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch shall indicate when the high idle function is engaged. "OK To Engage High Idle" indicator lamp: A green indicator light shall be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement. Emergency switching shall be controlled by multiple individual warning light switches for various groups or areas of emergency warning lights. An Emergency Master switch provided on the instrument panel that enables or disables all individual warning light switches is included.		

Bidder Complies	
Yes	No

An additional "Emergency Master" button shall be provided on the lower left hand corner of the gauge panel to allow convenient control of the "Emergency Master" system from inside the driver's door when standing on the ground.

Custom Switch Panels

The design of cab instrumentation shall allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There shall be positions for up to four (4) switch panels in the lower instrument console and up to six (6) switch panels in the overhead visor console. All switches have backlit labels for low light conditions.

Diagnostic Panel

A diagnostic panel shall be provided and accessible while standing on the ground. The panel shall be located inside the driver's side door left of the steering column. The diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches shall allow ABS systems to provide blink codes should a problem exist.

The diagnostic panel shall include the following:

- ENGINE/TRANSMISSION/ABS J1939 Diagnostic Port
- ABS Diagnostic Switch and Indicator - The switch and amber indicator shall allow access to diagnostic mode and display of standard ABS system fault blink codes that may be generated by the ABS system
- DPF REGEN (Diesel Particulate Filter Regeneration Switch) (where applicable) shall be provided to request regeneration of the engine emission system. An amber indicator shall be provided on top of the switch that shall illuminate in a "CHECK ENGINE" condition
- REGEN INHIBIT (Diesel Particulate Filter Regeneration Inhibit Switch) (where applicable) shall be provided that shall request that regeneration be temporarily prevented. A green indicator shall be provided on top of the Regen Inhibit switch that shall illuminate when the Regen Inhibit feature is active. Regen Inhibit shall be disabled upon cycling of the ignition switch to the off state.

AIR RESTRICTION INDICATOR

A high air restriction warning indicator light (electronic) shall be provided.

"DO NOT MOVE APPARATUS" INDICATOR

A flashing red indicator light, located in the driving compartment, shall be illuminated automatically per the current NFPA requirements. The light shall be labeled "Do Not Move Apparatus If Light Is On."

The same circuit that activates the Do Not Move Apparatus indicator shall activate a pulsing alarm when the parking brake is released.

	Bidder Complies	
	Yes	No

SWITCH PANELS
The built-in switch panels shall be located in the lower console or overhead console of the cab. Switches shall be rocker type with an indicator light, of which is an integral part of the switch.

WIPER CONTROL
Wiper control shall consist of a two (2)-speed windshield wiper control with intermittent feature and windshield washer controls. The control shall be located on the left side of the center instrument panel.

SPARE CIRCUIT
There shall be one (1) dual USB fast charge socket mounts installed on the apparatus.

The above wires shall have the following features:

- The positive wire shall be connected directly to the battery power.
- The negative wire shall be connected to ground.
- Wires shall be protected to 4.8 amps at 12 volts DC.
- The USB socket mount shall be officer side dash by 132 location.
- Termination shall be a Blue Sea Systems part number 1045 dual USB charger socket.
- Wires shall be sized to 125% of the protection.

This circuit(s) may be load managed when the parking brake is applied.

SPARE CIRCUIT
There shall be four (4) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires shall have the following features:

- The positive wire shall be connected directly to the battery power.
- The negative wire shall be connected to ground.
- Wires shall be protected to 15 amps at 12 volts DC.
- Power and ground shall terminate run wire under mounting plate on engine tunnel and leave enough coil to mount equipment anywhere on the plate. Dealer will install 4 gas monitor, TIC camera, Portable radio charges after delivery. .
- Termination shall be with heat shrinkable butt splicing.
- Wires shall be sized to 125 percent of the protection.

This circuit(s) may be load managed when the parking brake is set.

SPARE CIRCUIT
There shall be two (2) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires shall have the following features:

	Bidder Complies	
	Yes	No

- The positive wire shall be connected directly to the battery power
- The negative wire shall be connected to ground
- Wires shall be protected to 15 amps at 12 volts DC
- Power and ground shall terminate officer side dash area
- Termination shall be with heat shrinkable butt splicing
- Wires shall be sized to 125 percent of the protection

The circuit(s) may be load managed when the parking brake is set.

INFORMATION CENTER

There shall be a LCD display integral to the cab gauge panel provided that shall display the following information:

- Total distance
- Trip distance
- Total hours
- Trip hours
- PTO "A" hours
- PTO "B" hours

VEHICLE DATA RECORDER

There shall be a vehicle data recorder (VDR) capable of reading and storing vehicle information provided.

The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A USB cable can be used to connect the VDR to a laptop to retrieve required information. The program to download the information from the VDR will be available to download on-line.

The vehicle data recorder shall be capable of recording the following data via hardwired and/or CAN inputs:

- Vehicle Speed - MPH
- Acceleration - MPH/sec
- Deceleration - MPH/sec
- Engine Speed - RPM
- Engine Throttle Position - % of Full Throttle
- ABS Event - On/Off
- Seat Occupied Status - Yes/No by Position
- Seat Belt Buckled Status - Yes/No by Position
- Master Optical Warning Device Switch - On/Off
- Time - 24 Hour Time
- Date - Year/Month/Day

	Bidder Complies	
	Yes	No

Seat Belt Monitoring System

A seat belt monitoring system (SBMS) shall be provided. The SBMS shall be capable of monitoring up to 10 seating positions indicating the status of each seat position per the following:

- Seat Occupied & Buckled = Green LED indicator illuminated
- Seat Occupied & Unbuckled = Red LED indicator with audible alarm
- No Occupant & Buckled = Red LED indicator with audible alarm
- No Occupant & Unbuckled = No indicator and no alarm

The SBMS shall include an audible alarm that shall warn that an unbuckled occupant condition exists and the parking brake is released, or the transmission is not in park.

INTERCOM SYSTEM

There shall be digital, single radio interface, intercom located down low on front face of RS EMS cabinet behind officer seat. in the cab. The front panel shall have master volume, and squelch controls with illuminated indicators, allowing for independent level setting of radio and auxiliary audio devices.

There shall be one (1) radio listen only / transmit control with select, monitor, receive, and transmit indicators. There shall be one (1) auxiliary audio input with select, and receive indicators.

Headset jacks shall be provided for the driver, officer, and two (2) crew positions located at both forward facing seats .

The following Firecom components shall be provided:

- One (1) 5100D Intercom
- Four (4) HM-10 Interior headset jacks
- All necessary power and station cabling

RADIO / INTERCOM INTERFACE CABLE

The apparatus manufacturer shall supply and install one (1) radio interface cable before delivery of the vehicle.

The radio equipment to be used by the customer shall be:

- Motorola Mid Power , Model number Motorola, Model XTL-5000,.

OVER THE HEAD, RADIO TRANSMIT HEADSET

There shall be two (2) single ear cup, over the head, radio transmit headset(s) provided driver's seat and officer seat.

Each Firecom, Model FH-51S headset shall feature:

Bidder Complies	
Yes	No

- Coiled cord with rugged angled plug
- Noise cancelling electric microphone
- Flex boom rotates for left or right dress
- Adjustable volume control
- ComLeather ear seal
- Radio Push To Transmit button. Mic is always live for intercom communication

OVER THE HEAD, INTERCOM ONLY HEADSET

There shall be two (2) over head, intercom only headset(s) provided driver's side inboard forward facing seat and passenger's side inboard forward facing seat.

Each Firecom, Model FH-52 headset shall feature:

- Coiled cord with rugged angled plug
- Noise cancelling electric microphone
- Flex boom rotates for left or right dress
- Adjustable volume control
- ComLeather ear seals with 24 dB noise reduction
- Intercom Push To Talk button

HEADSET HANGERS

There shall be four (4) headset hanger(s) installed driver's seat, officer's seat, driver's side outboard rear facing seat and passenger's side outboard rear facing seat. The hanger(s) shall meet NFPA 1901, Section 14.1.11, requirement for equipment mounting.

RADIO ANTENNA MOUNT

There shall be one (1) standard 1.125", 18 thread antenna-mounting base(s) installed best location on the cab roof with high efficiency, low loss, coaxial cable(s) routed to the overhead switch area. A weatherproof cap shall be installed on the mount.

RADIO ANTENNA MOUNT

There shall be one (1) Larson, model NMOKHFUDTHK, 0-6000MHz NMO style antenna mounting base(s) with weatherproof cap(s) and 17 feet of RG58A/U dual shield coax located on the cab roof center cab roof. The cable(s) shall be routed Overhead panel location #5.

ELECTRICAL POWER CONTROL SYSTEM

A compartment shall be provided in or under the cab to house the vehicle's electrical power and signal circuit protection and control components. The power and signal protection and control compartment shall contain circuit protection devices and power control devices. Power and signal protection and control components shall be protected against corrosion, excessive heat, excessive vibration, physical damage and water spray.

Serviceable components shall be readily accessible.

	Bidder Complies	
	Yes	No

Circuit protection devices, which conform to SAE standard, shall be utilized to protect each circuit. All circuit protection devices shall be sized to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers shall be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258. When required, automotive type fuses conforming to SAE J554, J1284, J1888 or J2077 shall be utilized to protect electronic equipment.

Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the maximum current for which the circuit is protected.

Visual status indicators shall be supplied to identify control safety interlocks and vehicle status. In addition to visual status indicators, audible alarms designed to provide early warning of problems before they become critical shall be used.

Voltage Monitor System

A voltage monitor system shall be provided to indicate the status of each battery system connected to the vehicle's electrical load. The monitor system shall provide visual and audio warning when the system voltage is below optimum levels.

Power and Ground Studs

Spare circuits shall be provided in the primary distribution center for two-way radio equipment.

The spare circuits shall consist of the following:

- One (1) 12-volt DC, 30 amp battery direct spare
- One (1) 12-volt DC ground and un-fused switched battery stud located in or adjacent to the power distribution center

EMI/RFI Protection

The electrical system proposed shall include means to control undesired electromagnetic and radio frequency emissions. State of the art electrical system design and components shall be used to ensure radiated and conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions are suppressed at their source.

The apparatus proposed shall have the ability to operate in the electromagnetic environment typically found in fire ground operations. The contractor shall be able to demonstrate the EMI and RFI testing has been done on similar apparatus and certifies that the vehicle proposed meets SAE J551 requirements.

EMI/RFI susceptibility shall be controlled by applying immune circuit designs, shielding, twisted pair wiring and filtering. The electrical system shall be designed for full compatibility with low level control signals and high powered two-way radio communication systems. Harness and cable routing shall be given careful attention to minimize the potential for conducting and radiated EMI-RFI susceptibility.

	Bidder Complies	
	Yes	No

ELECTRICAL

All 12-volt electrical equipment installed by the apparatus manufacturer shall conform to modern automotive practices. All wiring shall be high temperature crosslink type. Wiring shall be run, in loom or conduit, where exposed and have grommets where wire passes through sheet metal. Automatic reset circuit breakers shall be provided which conform to SAE Standards. Wiring shall be color, function and number coded. Function and number codes shall be continuously imprinted on all wiring harness conductors at 2.00" intervals. Exterior exposed wire connectors shall be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids.

Electrical wiring and equipment shall be installed utilizing the following guidelines:

1. All holes made in the roof shall be caulked with silicon, rope caulk is not acceptable. Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.
2. Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in it. Exposed area shall be defined as any location outside of the cab or body.
3. Electrical components designed to be removed for maintenance shall not be fastened with nuts and bolts. Metal screws shall be used in mounting these devices. Also a coil of wire shall be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.
4. Corrosion preventative compound shall be applied to all terminal plugs located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation (of the plug).
5. All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.
6. All electrical terminals in exposed areas shall have silicon applied completely over the metal portion of the terminal.

All lights and reflectors, required to comply with Federal Motor Vehicle Safety Standard #108, shall be furnished. Rear identification lights shall be recessed mounted for protection. Lights and wiring mounted in the rear bulkheads shall be protected from damage by installing a false bulkhead inside the rear compartments.

An operational test shall be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

The results of the tests shall be recorded and provided to the purchaser at time of delivery.

BATTERY SYSTEM

There shall be four (4) 12 volt Stryten/Exide®, Model 31S950X5W, batteries that include the following features shall be provided:

	Bidder Complies	
	Yes	No

- 950 CCA, cold cranking amps
- 190 amp reserve capacity
- High cycle
- Group 31
- Rating of 3800 CCA at 0 degrees Fahrenheit
- 760 minutes of reserve capacity
- Threaded stainless steel studs

Each battery case shall be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover shall be manifold vented with a central venting location to allow a 45 degree tilt capacity.

The inside of each battery shall consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

BATTERY SYSTEM

There shall be a single starting system with an ignition switch and starter button provided and located on the cab instrument panel.

MASTER BATTERY SWITCH

There shall be a master battery switch provided within the cab within easy reach of the driver to activate the battery system.

An indicator light shall be provided on the instrument panel to notify the driver of the status of the battery system.

BATTERY COMPARTMENTS

Batteries shall be placed on non-corrosive mats and be stored in well ventilated compartments located under the cab and bolted directly to the chassis frame. The battery boxes shall have reinforced sides. The battery compartments shall be constructed of 0.188" steel plate and be designed to accommodate a maximum of three (3) group 31 batteries in each compartment. The battery hold-downs shall be of a non-corrosive material. All bolts and nuts shall be stainless steel.

Heavy-duty battery cables shall be used to provide maximum power to the electrical system. Cables shall be color coded.

Battery terminal connections shall be coated with anti-corrosion compound. Battery solenoid terminal connections shall be encapsulated with semi-permanent rubberized compound.

JUMPER STUDS

One (1) set of battery jumper studs with plastic color-coded covers shall be included on the battery compartments.

	Bidder Complies	
	Yes	No

BATTERY CHARGER
There shall be an IOTA, Model DLS-75, 75 amp battery charger with IQ4 controller provided.

The battery charger shall be wired to the AC shoreline inlet through an AC receptacle adjacent to this battery charger.

The battery charger shall be located in the cab behind the driver seat.

REMOTE CONTROL PANEL - BATTERY CHARGER
There shall be a Kussmaul™, Model 091-189-12-3.5D universal display panel included.

The battery charger indicator shall be located behind the driver's door on the outside of the cab.

AUTO EJECT FOR SHORELINE
There shall be one (1) Kussmaul™, Model 091-55-20-120, 20 amp 120 volt AC shoreline inlet(s) provided to operate the dedicated 120 volt AC circuits on the apparatus.

The shoreline inlet(s) shall include red weatherproof flip up cover(s).

There shall be a release solenoid wired to the vehicle's starter to eject the AC connector when the engine is starting.

The shoreline(s) shall be connected to the battery charger.

There shall be a mating connector body supplied with the loose equipment.

There shall be a label installed near the inlet(s) that state the following:

- Line Voltage
- Current Ratting (amps)
- Phase
- Frequency

The shoreline receptacle shall be located in the driver side lower step well of cab.

12 VOLT AUTO SHUT OFF TIMER
There shall be a Havis, Model CG-X Chargeguard, automatic 12Vdc shut off timer located front face of RS EMS cabinet behind officer seat to protect Battery Charger, TIC, portable radio charger and other devices connected to the battery charger .

The timer shall provide 18Vdc high and 11Vdc low voltage disconnect and an adjustable shut down delay timer with a load current rating of 30 amps..

ALTERNATOR
A Leece-Neville, Model BLP4004H, alternator shall be provided. It shall have a rated output current of 350 amp as measured by SAE method J56. The alternator shall feature an integral,

	Bidder Complies	
	Yes	No

self diagnostic regulator and rectifier. The alternator shall be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

ELECTRONIC LOAD MANAGEMENT

An electronic load management (ELM) system that monitors the vehicles 12-volt electrical system, and automatically reduces the electrical load in the event of a low voltage condition and by doing so, ensures the integrity of the electrical system.

The ELM shall monitor the vehicle's voltage while at the scene (parking brake applied). It shall sequentially shut down individual electrical loads when the system voltage drops below a preset value. Two (2) separate electrical loads shall be controlled by the load manager. The ELM shall sequentially re-energize electrical loads as the system voltage recovers.

HEADLIGHTS

There shall be four (4) JW Speaker®, Model 8800, 4" x 6" rectangular LED lights mounted in the front quad style, chrome housing on each side of the cab grille:

- the outside light on each side shall contain a part number 055***1 low beam module
- the inside light on each side shall contain a part number 055***1 high beam module
- the headlights to include chrome bezels

The low beam lights shall be activated when the headlight switch is on.

The high beam and low beam lights shall be activated when the headlight switch and the high beam switch is activated.

DIRECTIONAL LIGHTS

There shall be two (2) Whelen 600 series, amber LED combination directional/marker lights provided. The lights shall be located on the outside cab corners, next to the warning lights.

The lens color(s) to be the same as the LEDs.

INTERMEDIATE LIGHT

There shall be two (2) Weldon, Model 9186-8580-29, amber LED turn signal marker lights furnished, one (1) each side, in the rear fender panel. The light shall double as a turn signal and marker light.

CAB CLEARANCE/MARKER/ID LIGHTS

There shall be seven (7) amber LED lights provided per the following:

- Three (3) amber LED identification lights shall be installed in the center of the cab above the windshield.
- Two (2) amber LED clearance lights shall be installed, one (1) on each outboard side of the cab above the windshield as close to the outside of the apparatus as practical.

	Bidder Complies	
	Yes	No

- Two (2) amber LED clearance lights shall be installed, one (1) on each side of the cab as high and far forward as practical.

The lights shall be installed with stainless steel guards.

FRONT CAB SIDE DIRECTIONAL LIGHTS

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.

REAR CLEARANCE/MARKER/ID LIGHTING

There shall be a three (3) LED light bar used as identification lights located at the rear of the apparatus per the following:

- As close as practical to the vertical centerline
- Centers spaced not less than 6.00" or more than 12.00" apart
- Red in color
- All at the same height

There shall be two (2) LED lights installed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following:

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

There shall be two (2) LED lights installed on the side of the apparatus used as marker lights as close to the rear as practical per the following:

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

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

	Bidder Complies	
	Yes	No

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

Per FMVSS 108 and CMVSS 108 requirements.

REAR FMVSS LIGHTING

The rear stop/tail and directional lighting included in the rear tail light housing shall include the following:

- Two (2) Whelen®, Model M62BTT, 4.30" high x 6.70" wide x 1.40" deep brake/tail lights with red LEDs
- Two (2) Whelen, Model M62T, 4.30" high x 6.70" wide x 1.40" deep directional lights with amber LEDs. The directional lights shall be set to Steady On (Arrow) flash pattern.
- The lens color(s) to be the same as the LEDs.

There shall be two (2) Whelen Model M62BU, LED backup lights provided in the tail light housing.

LICENSE PLATE BRACKET

There shall be one (1) license plate bracket located below the tailboard on a removable bolt-on bracket located Left Side.

A white LED light shall illuminate the license plate. A stainless steel light shield shall be provided over the light that shall direct illumination downward, preventing white light to the rear.

LIGHTING BEZEL

There shall be two (2) Whelen, Model M6FCV4P, four (4) place chromed ABS housings with Pierce logos provided for the rear M6 series stop/tail, directional, back up, scene lights or warning lights.

BACK-UP ALARM

A PRECO, Model 1040, solid-state electronic audible back-up alarm that actuates when the truck is shifted into reverse shall be provided. The device shall sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum ten (10) dBA above surrounding environmental noise levels.

CAB PERIMETER SCENE LIGHTS

There shall be four (4) Amdor, Model AY-LB-12HW020, 350 lumens each, 20.00" white LED strip lights provided, one (1) for each cab door.

These lights shall be activated automatically when the battery switch is on and the exit doors are opened or by the same means as the body perimeter scene lights.

	Bidder Complies	
	Yes	No

PUMP HOUSE PERIMETER LIGHTS

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.

If the combination of options in the vehicle does not permit clearance for a 20.00" light, a 12.00" version of the Amdor light shall be installed.

The lights shall be controlled by the same means as the body perimeter lights.

BODY PERIMETER SCENE LIGHTS

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.

The perimeter scene lights shall be activated when the parking brake is applied.

STEP LIGHTS

Four (4) white LED step lights shall be provided. One (1) step light shall be provided on each side, on the front compartment face and two (2) step lights at the rear to illuminate the tailboard.

In order to ensure exceptional illumination, each light shall provide a minimum of 25 foot-candles (fc) covering an entire 15.00" x 15.00" square placed 10.00" below the light and a minimum of 1.5 fc covering an entire 30.00" x 30.00" square at the same 10.00" distance below the light.

These step lights shall be actuated with the pump panel light switch.

All other steps on the apparatus shall be illuminated per the current edition of NFPA 1901.

12 VOLT LIGHTING

There shall be one (1) HiViz Model FT-B-46-*-*, 2.56" high x 46.00" long x 2.45" deep 13,306 effective lumens 12 volt DC light with white LEDs provided as far forward as possible on the front cab roof centered. The LEDs shall be configured with a combination of flood and spot optics.

The painted parts of the light housing and brackets to be black.

The scene LEDs shall be activated by a switch in a center console switch panel between the driver and officer.

The white LEDs may be load managed when the parking brake is applied.

	Bidder Complies	
	Yes	No

12 VOLT LIGHTING

There shall be two (2) HiViz®, Model FT-MB-24-*-*, 2.06" high x 31.11" long x 2.45" deep, 12,672 raw lumens, 12 volt DC light(s) with white LEDs flood optics and Model FT-MBKIT-LPX-*, end brackets installed on the cab Over drivers side and passenger side crewcab door.

The painted parts of the light housing and brackets to be black.

The light(s) shall be activated by the same switching that has been selected for the other side scene light(s) on the apparatus and by a switch in a center console switch panel between the driver and officer.

The light(s) may be load managed when the parking brake is applied.

12 VOLT LIGHTING

There shall two (2) HiViz Model FT-B-46-*-*, 13,306 lumens 2.56" high x 46.00" long x 2.45" deep 12 volt DC light(s) with white LEDs and with a combination of spot, and flood optics installed on the apparatus located, (1) each side on the outboard side of the hard suction trough.

The painted parts of the light housing and brackets to be black.

The light(s) shall be controlled by a switch at the left side pump panel and by the same switching that has been selected for the other side scene light(s) on the apparatus.

The light(s) may be load managed when the parking brake is applied.

HOSE BED LIGHTS

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.

- Light strip(s) shall be installed along the upper edge of the left side of the hose bed.
- 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.

REAR SCENE LIGHTS

There shall be one (1) HiViz Model FT-GESM, 8.50" high x 10.51" long x 2.75" deep 20,500 equivalent lumens light with white LEDs and trim installed at the rear of the apparatus, upper rear body bulkhead on the drivers side.

The lights shall be controlled by a cup switch at the driver's side rear bulkhead.

	Bidder Complies	
	Yes	No

WALKING SURFACE LIGHT

There shall be Model FRP, 4" round black 12 volt DC LED floodlight(s) with bolt mount provided to illuminate the entire designated walking surface on top of the body.

The light(s) shall be activated when the body step lights are on.

WATER TANK

Booster tank shall have a capacity of 750 gallons and be constructed of polypropylene plastic by United Plastic Fabricating, Incorporated.

The tank shall be stepped in design to allow for a low hosebed.

Tank joints and seams shall be nitrogen welded inside and out.

Tank shall be baffled in accordance with NFPA Bulletin 1901 requirements.

Baffles shall have vent openings at both the top and bottom to permit movement of air and water between compartments.

Longitudinal partitions shall be constructed of .38" polypropylene plastic and shall extend from the bottom of the tank through the top cover to allow for positive welding.

Transverse partitions shall extend from 4.00" off the bottom of the tank to the underside of the top cover.

All partitions shall interlock and shall be welded to the tank bottom and sides.

Tank top shall be constructed of .50" polypropylene. It shall be recessed .38" and shall be welded to the tank sides and the longitudinal partitions.

Tank top shall be sufficiently supported to keep it rigid during fast filling conditions.

Construction shall include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions. Two (2) of the dowels shall be drilled and tapped (.50" diameter, 13.00" deep) to accommodate lifting eyes.

A sump that will be sized dependent on the tank to pump plumbing shall be provided at the bottom of the water tank.

Sump shall include a drain plug and the tank outlet.

Tank shall be installed in a fabricated cradle assembly constructed of structural steel.

Sufficient crossmembers shall be provided to properly support bottom of tank. Crossmembers shall be constructed of steel bar channel or rectangular tubing.

	Bidder Complies	
	Yes	No

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 shall 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.

TANK CRADLE

The water tank shall be installed in a fabricated cradle assembly constructed of stainless steel.

Sufficient crossmembers shall be provided to properly support bottom of tank. Crossmembers shall be constructed of stainless steel bar channel or rectangular tubing.

WATER TANK RESTRAINT

A heavy-duty water tank restraint shall be provided.

HOSE BED

The hose bed shall be fabricated of 0.125"-5052 aluminum with a nominal 38,000 psi tensile strength.

The hose bed shall be as low as practical.

Upper and rear edges of side panels shall have a double break for rigidity, a split tube finish shall not be acceptable.

The upper inside area of the beavertails shall be covered with brushed stainless steel to prevent damage to painted surface when hose is removed.

Flooring of the hose bed shall be removable aluminum grating with the top surface corrugated to aid in hose aeration. The grating slats shall be a minimum of 0.50" x 4.50" with spacing between slats for hose ventilation.

A cross divider shall be provided at the front of the hose bed before the tank transitions from the lower section to the upper section. The divider shall run from the top of the side sheet down below the hose bed grating.

	Bidder Complies	
	Yes	No

The hose bed interior walls shall be painted to match the lower body color.

Hose bed shall accommodate (1) 1000' of 5" locking storz , (2) 400' of 3" DJ fire hose static lay, (3) 600' of 2.50" DJ with a 100' of 1.75" DJ static lay on top, (4) 600' of 2.50" DJ with a 100' of 1.75" DJ static lay on top.

HOSE BED DIVIDER

Three (3) hosebed dividers shall be furnished for separating hose.

Each divider shall be constructed of a .125" brushed aluminum sheet fitted and fastened into a slotted, 1.50" diameter radiused extrusion along the top, bottom, and rear edge.

Divider shall be fully adjustable by sliding in tracks, located at the front and rear of the hose bed.

Divider shall be held in place by tightening bolts, at each end.

Acorn nuts shall be installed on all bolts in the hose bed which have exposed threads.

HOSEBED HOSE RESTRAINT

A red hosebed cover shall be furnished with awning rail (aluminum retainer) fasteners at the front and bungee cord and hook fasteners on the sides.

At the rear of the vinyl top cover shall be 2.00" black nylon webbing with a 1.50" x 4.00" box pattern. Web straps shall loop through the footman loops located on the rear body sheet below the hosebed. The straps shall be connected at the bottom with seat belt buckle fasteners.

RUNNING BOARDS

Running boards shall be fabricated of .125" bright aluminum treadplate.

Each running board shall be supported by a welded 2.00" square tubing and channel assembly, which shall be bolted to the pump compartment substructure.

Running boards shall be 14.75" deep and spaced .50" away from the pump panel. The front and rear outside corner of the running board shall be finished with a 45 degree corner where it lines up with the body.

A splash guard shall be provided above the running board treadplate.

TAILBOARD

The tailboard shall also be constructed of .125" bright aluminum treadplate and spaced .50" from the body, as well as supported by a structural steel assembly.

The tailboard area shall be 16.00" deep and full width of the body. The outboard sides of the tailboard shall be angled at 45 degrees beginning at the point where the body meets the tailboard at the outboard edge angling rearward to the rear edge of the tailboard.

The exterior side shall be flanged down and in for increased rigidity of tailboard structure.

	Bidder Complies	
	Yes	No

REAR WALL, SMOOTH ALUMINUM/BODY MATERIAL

The rear facing surfaces of the center rear wall shall be smooth aluminum.

The bulkheads, the surface to the rear of the side body compartments, shall be smooth and the same material as the body.

The rear wall shall be flush.

REAR TOW EYES

Two (2) tow eyes, which are an integral part of the body mounting substructure, shall be installed below the rear of the truck.

The tow eyes shall be of adequate strength to allow the truck to be pulled from the eyes.

REAR TOW BAR

One (1) tow bar shall be installed under the tailboard.

The 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.

The tow bar design shall have been tested and evaluated using finite element analysis techniques.

RUNNING BOARD HOSE RESTRAINT

A pair of 2.00" wide black nylon straps with Velcro fasteners 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.

HOSE TRAY

Two (2) hose trays shall be made free floating one (1) in each side running board.

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).

Capacity of the tray shall be 50' of 5" LDH each side.

Rubber matting shall be installed on the floor of the tray to provide proper ventilation. Drain holes shall be provided.

COMPARTMENTATION

Body and compartments shall be fabricated of 0.125", 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.

	Bidder Complies	
	Yes	No

Side compartment flooring shall be of the sweep out design with the floor higher than the compartment door lip.

The side compartment door opening shall be framed by flanging the edges in 1.75" and bending out again 0.75" 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.

UNDERBODY SUPPORT SYSTEM

Due to the severe loading requirements of this pumper a method of body and compartment support suitable for the intended load shall be provided.

The backbone of the support system shall be the chassis frame rails which is the strongest component of the chassis and is designed for sustaining maximum loads.

Forward to the rear axle, the support system shall include "L"-shaped support members bolted to the chassis frame rails. These welded support members shall include vertical formed channels, horizontal structural channels, and support gussets. These parts extend from the chassis frame outward underneath the body.

Rearward to the rear axle, the body support system shall include two rearward facing "L"-shaped support members bolted to the chassis frame rails. These support members shall be connected to the two body supporting crossmembers forming a boxed foundation for the rear body support system.

Steel upper platform decks shall be mounted on the top of these support members to create a floating substructure which shall result in a 500 lb equipment support rating per lower compartment.

All structural components of this system shall be made from high strength 50K steel plate material or structural steel componentry. The steel frames as well as the steel vertical angles shall be treated with an epoxy E-coat to provide resistance to corrosion and chemicals as standard.

	Bidder Complies	
	Yes	No

The floating substructure shall be separated from the horizontal members with neoprene elastomer isolators. These isolators shall reduce the natural flex stress of the chassis from being transmitted to the body.

Isolators shall have a broad load range, proven viability in vehicular applications, be of a fail-safe design and allow for all necessary movement in three (3) transitional and rotational modes.

The neoprene isolators shall be installed in a pattern which assimilates a three (3)-point mounting pattern to reduce the natural flex of the chassis being transmitted to the body.

A design with body compartments hanging on the chassis in an unsupported fashion shall not be acceptable.

AGGRESSIVE WALKING SURFACE

All exterior surfaces designated as stepping, standing, and walking areas shall comply with the required average slip resistance of the current NFPA standards.

LOUVERS

Louvers shall be stamped into compartment walls to provide the proper airflow inside the body compartments and to prevent water from dripping into the compartment. Where these louvers are provided, they shall be formed into the metal and not added to the compartment as a separate plate.

TESTING OF BODY DESIGN

Body structural analysis shall be fully tested. Proven engineering and test techniques such as finite element analysis, strain gauging, and model analysis shall be performed with special attention given to fatigue, life and structural integrity of the body and substructure.

Body shall be tested while loaded to its greatest in-service weight.

The criteria used during the testing procedure shall include:

- Raising opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb.
- Making a 90 degree turn, while driving at 20 mph to simulate aggressive driving conditions.
- Driving the vehicle at 35 mph on a washboard road.
- Driving the vehicle at 55 mph on a smooth road.
- Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement.

Evidence of actual testing techniques shall be made available upon request.

LEFT SIDE COMPARTMENTATION

The left side compartmentation shall consist of three lap door compartments.

	Bidder Complies	
	Yes	No

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.

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.

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 25.88" deep in the lower 26.00" of the compartment and 12.00" deep in the remaining upper portion. The clear door opening shall be a minimum of 43.50" wide x 62.88" high.

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.

Closing of the doors shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

The vertically hinged doors shall be furnished with a positive door holder.

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°.

RIGHT SIDE COMPARTMENTATION

The right side compartmentation shall consist of two lap door compartments.

A 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 32.63" 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 27.88" high.

A vertically hinged, double door compartment behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 47.75" wide x 33.63" high x 25.88" deep in the lower 26.00" of the compartment and 12.00" deep in the remaining upper portion. The clear door opening shall be a minimum of 43.50" wide x 28.88" high.

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.

	Bidder Complies	
	Yes	No

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand. A positive door holder shall be furnished with this compartment.

SIDE COMPARTMENT DOORS

All hinged compartment doors shall be lap style with double panel construction and shall be a minimum of 1.50" thick. The doors shall be made out of the same material as the body. To provide additional door strength a "C" section reinforcement shall be installed between the outer and interior panels.

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.

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.)

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.

Doors shall be latched with recessed, polished stainless steel "D" ring handles and FMVSS approved door locking mechanisms.

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.

REAR COMPARTMENTATION

A vertically hinged, double door compartment above the rear tailboard shall be provided.

The interior dimensions of this compartment shall be 40.00" wide x 33.63" high x 25.88" deep. 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.

A louvered, removable access panel shall be furnished on the back wall of the compartment.

The rear compartment shall be open into the rear side compartments.

The clear door opening of this compartment shall be 32.00" wide x 28.88" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

Each of the vertically hinged compartment doors shall be provided with a positive door holder.

	Bidder Complies	
	Yes	No

REAR COMPARTMENT DOORS

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.

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.

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.) A strip of dielectric isolation tape shall be provided between the hinge and door jamb.

All door lock mechanisms shall be fully enclosed within the door panels to prevent fouling of the lock in the event equipment inside shifts into the lock area.

Doors shall be latched with recessed, polished stainless steel "D" ring handles and Eberhard 106 locks.

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.

SCUFFPLATE

There shall be four (4)brushed stainless steel scuffplate(s) provided and mounted (2) on the drivers side and (2) on the passenger side upper body side sheet to protect the body from hard suction to protect the paint finish. Each to be as large as possilbe in size.

REVERSE HINGED DOOR

The one (1) compartment door, located Compartment LS 3 , shall have the hinge at the rear of the door.

COMPARTMENT LIGHTING

There shall be seven (7) compartment(s) with two (2) white 12 volt DC LED compartment light strips. The dual light strips shall be centered vertically along each side of the door framing. There shall be two (2) light strips per compartment. The dual light strips shall be in all body compartment(s).

Any remaining compartments without light strips shall have a 6.00" diameter Truck-Lite, Model: 79384 light. Each light shall have a number 1076 one filament, two wire bulb.

Opening the compartment door shall automatically turn the compartment lighting on.

	Bidder Complies	
	Yes	No

MOUNTING TRACKS
There shall be five (5) sets of tracks for mounting shelf(s) in LS1, LS2, LS3, RS2 and B1. These tracks shall be installed vertically to support the adjustable shelf(s). The tracks shall be painted to match the compartment interior.

ADJUSTABLE SHELVES
There shall be five (5) shelves with a capacity of 500 lb provided. The shelf construction shall consist of .188" aluminum with 2.00" sides. Each shelf shall be painted spatter gray. Each shelf shall be infinitely adjustable by means of a threaded fastener, which slides in a track.

The shelves shall be held in place by .12" thick stamped plated brackets and bolts.

The location shall be (1) in LS3 at transition, (1) in LS2 Centered, B1 Centered, (1)RS1and (1) RS2.

PEGBOARD
There shall be 3/16" thick aluminum pegboard spatter gray painted shall be installed on the back wall of two (2) compartments. It shall be mounted using two (2) horizontal tracks. Retainers shall be used to mount the pegboard to the tracks. The pegboard(s) installed shall be on the upper standard depth section of the compartment. The holes shall be .203" diameter, punched 1.00" on center. Pegboard shall be provided in the following compartments: LS1 and LS3.

PEGBOARD
There shall be 3/16" thick aluminum pegboard installed on the two (2) side wall(s) of compartments LS1 On the front and rear side walls . The pegboard shall be mounted using two (2) horizontal tracks.Retainers shall be used to mount the pegboard to the tracks. The holes shall be .203" diameter, punched 1.00" on center. The pegboard shall be spatter gray painted.The pegboard shall be mounted vertical on each side in the lower half within the compartment(s).

STRAP
There shall be three (3) black 2.00" wide nylon strap(s) that shall provide positive restraint by hooking through a footman loop, similar to what is used with a hose bed flap. The strap(s) shall be located On top of low side compartments (3) straps for 100' of 1.75" single jacket rubber covered hose and nozzle. The strap(s) shall have a Velcro® fastener.

RUB RAIL
Bottom edge of the side compartments shall be trimmed with a bright aluminum extruded rub rail.

Trim shall be 2.12" high with 1.38" flanges turned outward for rigidity.

The rub rails shall not be an integral part of the body construction, which allows replacement in the event of damage.

	Bidder Complies	
	Yes	No

BODY FENDER CROWNS
Black rubber fender crowns shall be provided around the rear wheel openings.

BODY FENDER LINER
A unpainted brushed stainless fender liner shall be provided. The liners shall be removable to aid in the maintenance of rear suspension components.

HARD SUCTION HOSE PROVIDED BY DEALER
NFPA 1901, 2016 edition, section 5.8.2 requires a minimum of 20 ft of suction hose or 15 ft of supply hose.

Hose is not on the apparatus as manufactured. The dealer shall provide suction or supply hose.

There shall be Two (2) lengths of 10' sections long x 6.00" diameter hose provided and equipped with a LH Female & RL Male NH Thread couplings provided on the ends. The brand shall be Snap-Tite Maxi-Flex.

HOSE TROUGH
A quantity of one (1) hard suction hose trough(s) shall be compartment top mounted on a bracket, located on the left side.

Trough(s) shall be constructed of aluminum painted job color.

The hose(s) shall be held in place by chrome plated, quarter turn, spring loaded clamps.

A tray with Velcro® strap shall be provided at the rear of the trough for storage of a Kochek strainer.

HARD SUCTION HOSE TROUGHS, ADDITIONAL
An additional hose trough shall be provided and installed on the right side above the ladders.

HANDRAILS
The handrails shall be 1.25" diameter knurled aluminum to provide a positive gripping surface.

Chrome plated end stanchions shall support the handrail. Plastic gaskets shall be used between end stanchions and any painted surfaces.

Drain holes shall be provided in the bottom of all vertically mounted handrails.

Handrails shall be provided to meet NFPA 1901 section 15.8 requirements. The handrails shall be installed as noted on the sales drawing.

HANDRAILS
One (1) vertical handrail shall be located on each rear beavertail.

	Bidder Complies	
	Yes	No

AIR BOTTLE STORAGE (TRIPLE)
A quantity of three (3) air bottle compartments designed to hold (3) air bottles up to 7.25" in diameter x 26.00" deep shall be provided on the left side forward of the rear wheels, on the right side forward of the rear wheels and on the right side rearward of the rear wheels. A painted stainless steel door with a Southco raised trigger C2 black lever latch shall be provided to contain the air bottle. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal.

Inside the compartment, black rubber matting shall be provided.

AIR BOTTLE COMPARTMENT STRAP
A strap shall be provided in the air bottle compartment(s) to help contain the air bottles when the vehicle is parked on an incline. The strap shall wrap around the neck and attach to the wall of the compartment.

EXTENSION LADDERS PROVIDED BY DEALER
NFPA 1901, 2016 edition, section 5.8.1.2 requires an extension ladder.

The extension ladder is not on the apparatus as manufactured. There shall be one (1) extension ladder(s) provided and installed by the dealer. The ladder(s) shall be a 28' Duo-Safety 1200-A, two (2)-section.

ROOF LADDER PROVIDED BY DEALER
NFPA 1901, 2016 edition, section 5.8.1.2 requires a minimum of one roof ladder.

The roof ladder is not on the apparatus as manufactured. There shall be one (1) roof ladder(s) provided and installed by the dealer. The ladder(s) shall be a 16' Duo-Safety 875-A.

LADDER BRACKETS
The ladders shall be installed on the right side of the hose body in lined brackets and held in place by chrome plated, quarter-turn spring loaded clamps. The clamps shall be such that when the roof ladder is removed, the clamps can be moved a half turn to hold the extension ladder in place. The ladder brackets shall be adjustable up and down.

FOLDING LADDER PROVIDED BY DEALER
NFPA 1901, 2016 edition, section 5.8.1.2 requires a folding ladder.

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 dealer. The ladder shall be installed in a stainless steel trough mounted below the ladders on the ladder brackets.

FOLDING LADDER STORAGE
One (1) folding ladder shall be stored behind the ladders on the side sheet, in a stainless steel box-shaped trough.

	Bidder Complies	
	Yes	No

One (1) strap shall be provided at the rear of the trough to secure the folding ladder in the trough.

BACKBOARD STORAGE

A transverse area over the pump and rearward of the crosslays shall hold one (1) storage trough.

A blister shall be supplied at each side to enclose the backboards due to their length.

The backboards shall be accessible from either side of the vehicle through the aluminum treadplate door(s) with a pair of Southco C2 black powder coated flush latches. The door(s) shall be hinged along the rearward edge.

The size of the backboard(s) to be stored shall be 72.00" long x 16.00" wide x 3.00" high.

PIKE POLE STORAGE

Aluminum tubing shall be used for the storage of three (3) pike poles and shall be located Behind the ladders on the right side of the body. If the head of a pike pole can come in contact with a painted surface, a stainless steel scuffplate shall be provided. The pike pole tube shall be notched to allow a New York style pike pole to fit into the tube.

WEB STRAP

Web strap(s) with Velcro™ fastener shall be installed On top of the right side compartment below the ladders. (3) Velcro nylon straps. with 2 footmans loops spaced equally apart on the top to accommodate double rows of flap packed 1.75" rubber hose . .

A total of three (3) web strap(s) shall be provided.

FOLDING STEPS FRONT OF BODY

Folding steps shall be provided full height on the left side body compartments to provide access to the cargo bed. Steps shall be spaced evenly on the sales drawing. Actual quantity may vary due to pump panel interferences but shall meet the NFPA required maximum stepping height.

The Trident steps shall be bright finished, non-skid with a black tread coating on the stepping surface.

The steps 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.

REAR FOLDING STEPS

Bright finished, non-skid folding steps with a black tread coating on the stepping surface 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.

	Bidder Complies	
	Yes	No

An 8.00" deep bright aluminum treadplate step shall be provided at the rear of the body above the rear compartment.

PUMP COMPARTMENT

The pump compartment shall be separate from the hose body and compartments so that each may flex independently of the other. It shall be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards.

The pump compartment shall be mounted on the chassis frame rails with rubber biscuits in a four point pattern to allow for chassis frame twist.

Pump compartment, pump, plumbing and gauge panels shall be removable from the chassis in a single assembly.

PUMP MOUNTING

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.

PUMP CONTROL PANELS (SIDE CONTROL)

All pump controls and gauges shall be located at the left side of the apparatus and properly marked.

The control panels shall be 48.00" wide.

Polished stainless steel trim collars shall be installed around all inlets and outlets.

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.

The identification tag for each valve control shall be recessed in the face of the tee handle.

All discharge outlets shall have color coded identification tags, with each discharge having its own unique color. Color coding shall include the labeling of the outlet and the drain for each corresponding discharge.

All line pressure gauges shall be mounted 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.

	Bidder Complies	
	Yes	No

PUMP

Fire pump shall be a Waterous CXC20, 1500 gpm, single (1) stage centrifugal type. The pump shall be an end suction, pedestal mount, single inlet type.

Pump shall be the class "A" type.

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

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

Pump body shall be close-grained gray iron, bronze fitted.

Impeller shaft shall be stainless steel, accurately ground to size. It shall be supported by oil or grease lubricated, anti-friction ball bearings for rigid precise support.

Bearings shall be protected from water and sediment by suitable stuffing boxes, slinger rings, and oil seals. No special or sleeve type bearings shall be used.

Pump shall be equipped with a self-adjusting, maintenance-free, mechanical shaft seal.

The mechanical seal shall consist of a flat, highly polished, spring fed carbon ring that rotates with the impeller shaft. The carbon ring shall press against a highly polished stainless steel stationary ring that is sealed within the pump body.

In addition, a throttling ring shall be pressed into the steel chamber cover, providing a very small clearance around the rotating shaft in the event of a mechanical seal failure. The pump performance shall not deteriorate, nor shall the pump lose prime, while drafting if the seal fails during pump operation.

Wear rings shall be bronze and easily replaceable to restore original pump efficiency and eliminate the need to replace the entire pump casing due to wear.

PUMP TRANSMISSION

The pump transmission shall be made of a three (3) piece, aluminum, horizontally split casing. Power transfer to pump shall be through a high strength Morse HY-VO silent drive chain. By the use of a chain rather than gears, 50% of the sprocket shall be accepting or transmitting torque, compared to two (2) or three (3) teeth doing all the work.

Drive shafts shall be 2.35" diameter hardened and ground alloy steel and supported by ball bearings. The case shall be designed to eliminate the need for water cooling.

	Bidder Complies	
	Yes	No

PUMPING MODE
An interlock system shall be provided to ensure that the pump drive system components are properly engaged so that the apparatus can be safely operated. The interlock system shall be designed to allow stationary pumping only.

AIR PUMP SHIFT
Pump shift engagement shall be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab. A manual back-up shift control shall also be located on the left side pump panel.

Two (2) indicator lights shall be provided adjacent to the pump shift inside the cab. One (1) green light shall indicate the pump shift has been completed and be labeled "pump engaged". The second green light shall indicate when the pump has been engaged, and that the chassis transmission is in pump gear. This indicator light shall be labeled "OK to pump".

The pump shift shall be interlocked to prevent the pump from being shifted out of gear when the chassis transmission is in gear to meet NFPA requirements.

The pump shift control in the cab shall be illuminated to meet NFPA requirements.

TRANSMISSION LOCK-UP
The direct gear transmission lock-up for the fire pump operation shall engage automatically when the pump shift control in the cab is activated.

AUXILIARY COOLING SYSTEM
A supplementary heat exchange cooling system shall be provided to allow the use of water from the discharge side of the pump for cooling the engine water. The heat exchanger 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. The exchanger shall be plumbed to the master drain valve.

INTAKE RELIEF VALVE
One (1) Trident Air Max intake relief valve(s) shall be installed on the suction side of the pump preset at 125 psig.

The relief valve shall have a working range of 50 PSI to 350 PSI.

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.

One (1) adjustable air regulator and pressure indicating gauge shall be located on a common bezel behind the right side pump panel with a stainless steel access door to control the intake valve(s).

PRESSURE CONTROLLER
A Pierce Pump Boss Model PBA300 pressure governor shall be provided.

	Bidder Complies	
	Yes	No

A pressure transducer shall be installed in the water discharge manifold on the pump.

The display panel shall be located at the pump operator's panel.

PRIMING PUMP

The priming pump shall be a Trident Emergency Products compressed air powered, high efficiency, multistage venturi based AirPrime System, conforming to standards outlined in the current edition of NFPA 1901.

All wetted metallic parts of the priming system are to be of brass and stainless steel construction.

One (1) priming control shall open the priming valve and start the pump primer.

PUMP MANUALS

There shall be a total of two (2) pump manuals provided by the pump manufacturer and furnished with the apparatus. The manuals shall be provided by the pump manufacturer in the form of two (2) electronic copies. Each manual shall cover pump operation, maintenance, and parts.

PLUMBING, STAINLESS STEEL AND HOSE

All inlet and outlet lines shall be plumbed with either stainless steel pipe, flexible polypropylene tubing or synthetic rubber hose reinforced with hi-tensile polyester braid. All hose's shall be equipped with brass or stainless steel couplings. All stainless steel hard plumbing shall be a minimum of a schedule 10 wall thickness.

Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping shall be equipped with victaulic or rubber couplings.

Plumbing manifold bodies shall be ductile cast iron or stainless steel.

All piping lines are to be drained through a master drain valve or shall be equipped with individual drain valves. All drain lines shall be extended with a hose to drain below the chassis frame.

All water carrying gauge lines shall be of flexible polypropylene tubing.

All piping, hose and fittings shall have a minimum of a 500 PSI hydrodynamic pressure rating.

MAIN PUMP INLETS

A 6.00" pump manifold inlet shall be provided on each side of the vehicle. The suction inlets shall include removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

	Bidder Complies	
	Yes	No

SHORT SUCTION TUBE(S)
The suction tube(s) on the water pump shall have short suction tube(s) installed to allow for installation of adapters, elbows or intake valves without excessive overhang.

MAIN PUMP INLET CAP
The main pump inlets shall have National Standard Threads with a long handle chrome cap.

The cap shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

VALVES
All ball valves shall be Akron® Brass in-line valves. The Akron valves shall be the 8000 series heavy-duty style with a stainless steel ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve.

Valves shall have a **ten (10) year** warranty.

Inlet valve location shall be outside of the pump panel.

INLET CONTROL
The side auxiliary inlet(s) shall incorporate a quarter-turn ball valve with the control located at the inlet valve. The valve operating mechanism shall indicate the position of the valve.

LEFT SIDE INLET
There shall be one (1) auxiliary inlet with a 2.50" valve at the left side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter.

The auxiliary inlet shall be provided with a strainer, chrome swivel and plug.

RIGHT SIDE INLET
There shall be one (1) auxiliary inlet with a 2.50" valve at the right side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter.

The auxiliary inlet shall be provided with a strainer, chrome swivel and plug.

INLET BLEEDER VALVE
A 0.75" bleeder valve shall be provided for each side gated inlet.

The valves shall be located behind the panel with a "T" 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.

	Bidder Complies	
	Yes	No

TANK TO PUMP

The booster tank shall be connected to the intake side of the pump with stainless steel piping and a quarter turn 3.00" full flow line valve with the control remotely located at the operator's panel. Tank to pump line shall run straight (no elbows) from the pump into the front face of the water tank and angle down into the tank sump. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing.

A check valve shall be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.

TANK REFILL

A 1.50" combination tank refill and pump re-circulation line shall be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel.

DISCHARGE OUTLET CONTROLS

The discharge outlets shall incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism shall indicate the position of the valve.

If a handwheel control valve is used, the control shall be a minimum of a 3.9" diameter stainless steel handwheel with a dial position indicator built in to the center of the handwheel.

Any 3.00 inch or larger discharge valve shall be a slow-operating valve in accordance with NFPA 16.7.5.3.

LEFT SIDE DISCHARGE OUTLETS

There shall be Two (2) discharge outlets with a 2.50" valve on the left side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

LEFT SIDE OUTLET ELBOWS

The 2.50" discharge outlets located on the left side pump panel shall be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

RIGHT SIDE DISCHARGE OUTLETS

There shall be One (1) discharge outlet with a 2.50" valve on the right side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

RIGHT SIDE OUTLET ELBOWS

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.

	Bidder Complies	
	Yes	No

The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

LARGE DIAMETER DISCHARGE OUTLET

There shall be a 4.00" discharge outlet with a 4.00" Akron valve installed on the right side of the apparatus, terminating with a 4.00" (M) National Standard hose thread adapter. This discharge outlet shall be actuated with a handwheel control at the pump operator's control panel.

An indicator shall be provided to show when the valve is in the closed position.

LARGE DIAMETER OUTLET ELBOWS

The 4.00" outlet(s) shall be furnished with one (1) 4.00" (F) National Standard hose thread x 5.00" Storz elbow adapter with Storz cap.

REAR DISCHARGE OUTLET

There shall be Two (2) discharge outlets piped to the rear of the hose bed, one (1) each side, installed so proper clearance is provided for spanner wrenches or adapters. Plumbing shall consist of 2.50" piping along with a 2.50" full flow ball valve with the control from the pump operator's panel.

REAR OUTLET ELBOWS

The 2.50" discharge outlets located at the rear of the apparatus shall be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

DISCHARGE OUTLET (REAR)

There shall be One (1) discharge outlet piped to the rear of the hose bed. to the inside of the DS 2.50" rear discharge Proper clearance shall be 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 One (1) discharge outlet shall terminate with a 2.50" male National Standard hose thread male adapter.

ADDITIONAL REAR OUTLET ELBOWS

The 2.50" discharge outlets, located at the rear of the apparatus, shall be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread chrome plated, 45 degree elbow.

The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

	Bidder Complies	
	Yes	No

DISCHARGE CAPS/ INLET PLUGS

Chrome plated, rocker lug, caps with chain shall be furnished for all discharge outlets 1.00" thru 3.00" in size, besides the pre-connected hose outlets.

Chrome plated, rocker lug, plugs with chain shall be furnished for all auxiliary inlets 1.00" thru 3.00" in size.

The caps and plugs shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

OUTLET BLEEDER VALVE

A 0.75" bleeder valve shall be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.

The valves shall be located behind the panel with a T 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 T 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.

DELUGE RISER

A 3.00" deluge riser shall be installed above the pump in such a manner that a monitor can be mounted and used effectively. Piping shall be installed securely so no movement develops when the line is charged. The riser shall be gated and controlled at the pump operator's panel.

Any 3.00 inch or larger discharge valve shall be a slow-operating valve in accordance with NFPA 16.7.5.3.

DELUGE OUTLET SPECIAL INSTRUCTIONS

The deluge gun outlet shall be located deluge pipe height to be extended and discussed at pre construction.

MONITOR

An Akron Model 3426 monitor shall be properly installed on the deluge riser.

The monitor shall be painted to match the body.

NOZZLE, DELUGE

Akron model #2499 Quad Stacked pyrolite deluge tips shall be provided.

	Bidder Complies	
	Yes	No

The tip sizes shall be 1.375", 1.50", 1.75", and 2.00".

This shall include an Akron 3488 pyrolite stream shaper.

The deluge riser shall have a 3.00" four (4)-bolt flange for mounting the monitor.

CROSSLAY HOSE BEDS

Two (2) crosslays with 1.50" outlets shall be provided. Each bed to be capable of carrying 200' of 1.75" double jacketed hose and shall be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve.

Outlets to be equipped with a 1.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

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

The center crosslay dividers shall be fabricated of 0.25" aluminum and shall provide adjustment from side to side. The divider shall be unpainted with a brushed finish.

Vertical scuffplates,constructed of stainless steel shall be provided at the front and rear ends of the bed on each side of vehicle.

Crosslay bed flooring shall consist of removable perforated brushed aluminum.

CROSSLAY HOSE RESTRAINT

A 2.00" black nylon webbing design restraint shall be provided at each of the ends of two (2) crosslay(s) to secure the hose during travel. The webbing assembly is to be attached at the bottom of the crosslays, with footman loops and a permanent attachment, while the top outside corners are attached with seat belt buckles, and a small piece of hinge, keeping the buckles beneath the height of the crosslays and avoiding a tripping hazard. The female end of the seat buckle shall be permanently attached at the top, inboard forward and rearward, corners of the opening facing outboard. A nylon strap shall be attached to the female seat belt buckles to allow a center pull for releasing the buckles on the webbing.

CROSSLAY COVER

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.

The cover shall be provided with rubber latch hold open device.

The hinge shall be to the front of the hose beds.

CROSSLAY 9.00" LOWER THAN STD

The crosslays shall be lowered 9.00" from standard.

	Bidder Complies	
	Yes	No

CROSSLAYS
The clear opening size of each crosslay bed shall be Each crosslay bed shall be 7:75" wide including the divider. Backboard slot will go to the rear of the crosslays .

FOAM SYSTEM
A foam system shall not be required on this apparatus.

PUMP PANEL CONFIGURATION
The pump panel configuration shall be neat and orderly.

PUMP AND GAUGE PANEL
The pump and gauge panels shall be constructed of aluminum with a black vinyl finish. A polished aluminum trim molding shall be provided around each panel.

PUMP ACCESS

Right Side Panel
The right side upper pump panel shall be removable.

Panel Fastener
The removable panels shall be secured with black raised trigger latch .

The left side pump panels shall be attached with screws.

The right side lower pump panel (drain bank) shall be attached with screws.

PUMP COMPARTMENT LIGHT
There shall be one (1) Whelen®, Model 3SC0CDCR, 3.00" white 12 volt DC LED light(s) with Whelen, Model 3FLANGEC, flange(s) installed in the pump compartment.

Engine monitoring graduated LED indicators shall be incorporated with the pressure controller.

Also provided at the pump panel shall be the following:

- Master Pump Drain Control

THROTTLE READY GREEN INDICATOR LIGHT
There shall be a green indicator light integrated with the pressure governor and/or engine throttle installed on the pump operators panel that is activated when the pump is in throttle ready mode.

OK TO PUMP INDICATOR LIGHT
There shall be a green indicator light installed on the pump operators panel that is activated when the pump is in Ok To Pump mode.

	Bidder Complies	
	Yes	No

AIR HORN BUTTON
An air horn control button shall be provided at the pump operator's control panel. This button shall be properly labeled and put within easy reach of the operator.

ALUMINUM HEAT ENCLOSURE
A heat enclosure shall be installed, trapping hot air radiated from the engine exhaust system, which shall warm the fire pump. The enclosure shall consist of an aluminum understructure, with easily removable aluminum panels. Also a covering above the pump shall be provided, so warm air cannot escape freely.

ELECTRIC GAUGE HEATER
A 12v electric gauge heater shall be provided for all water carrying gauges.

PUMP COMPARTMENT HEATER
A hot water heater shall be installed in the pump compartment.

Controls for the heater shall be located at the pump operator's panel.

RUBBER BOOT
The front and rear of the pump house shall be enclosed to contain the heat. The rear shall have openings for the plumbing only. A rubber boot shall be supplied around the swing controls and plumbing, at the front, sides and rear of the pump house, the boot shall allow the plumbing to flex and keep cold air out.

VACUUM AND PRESSURE GAUGES
The pump vacuum and pressure gauges shall be liquid filled and manufactured by Class 1 Incorporated ©.

The gauges shall be a minimum of 4.00" in diameter and shall have white faces with black lettering, with a pressure range of 30.00"-0-600#.

Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

The pump pressure and vacuum gauges shall be installed adjacent to each other at the pump operator's control panel.

Test port connections shall be provided at the pump operator's panel. One (1) shall be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They shall have 0.25 in. standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They shall be marked with a label.

This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

	Bidder Complies	
	Yes	No

PRESSURE GAUGES

The individual "line" pressure gauges for the discharges shall be interlube filled and manufactured by Class 1©.

They shall be a minimum of 2.00" in diameter and shall have white faces with black lettering.

Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

Gauges shall have a pressure range of 30"-0-400#.

The individual pressure gauge shall be installed as close to the outlet control as practical.

This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

WATER LEVEL GAUGE

There shall be an electronic water level gauge provided on the operator's panel that registers water level by means of five (5) colored LED lights. The lights shall be durable, ultra-bright five (5) LED design viewable through 180 degrees. The water level indicators shall be as follows:

- 100 percent = Green
- 75 percent = Yellow
- 50 percent = Yellow
- 25 percent = Yellow
- Refill = Red

The light shall flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights shall flash sequentially when the water tank is empty.

The level measurement shall be based on the sensing of head pressure of the fluid in the tank.

The display shall be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components. The encapsulated design shall provide complete protection from water and environmental elements. An industrial pressure transducer shall be mounted to the outside of the tank. The field calibratable display measures head pressure to accurately show the tank level.

LIGHT SHIELD

There shall be a polished, 16 gauge stainless steel light shield installed over the pump operator's panel.

- There shall be 12 volt DC white LED lights installed under the stainless steel light shield to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights shall be activated by the

	Bidder Complies	
	Yes	No

pump panel light switch. Additional lights shall be included every 18.00" depending on the size of the pump house.

- One (1) pump panel light shall come on when the pump is in ok to pump mode.

There shall be a light activated above the pump panel light switch when the parking brake is set. This is to afford the operator some illumination when first approaching the control panel.

AIR HORN SYSTEM

Two (2) Hadley, rectangular bell air horns shall be provided . The horns shall be mounted low through the lower bumper flange. 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 the loss of air in the air brake system.

Air Horn Location

The air horns shall be located on each side of the bumper, just outside of the frame rails.

Air Horn Control

The air horn(s) shall be activated by the following:

- Left side lanyard. The lanyard to be a nylon rope.
- Right side lanyard. The lanyard to be a nylon rope.

ELECTRONIC SIREN

A Whelen®, Model 295SLSA1, electronic siren with noise canceling microphone shall be provided.

This siren to be active when the battery switch is on and that emergency master switch is on.

Electronic siren head shall be recessed in the driver side center switch panel.

The electronic siren shall be controlled on the siren head only. No horn button or foot switches shall be required.

SPEAKER

There shall be one (1) Whelen, Model SA315P, black nylon composite, 100-watt, speaker with through bumper mounting brackets and painted grille provided. The speaker shall be connected to the siren amplifier.

The speaker shall be recessed in the left side of the front bumper, towards the outside.

WIRING & MOUNTING ONLY FOR MECHANICAL SIREN, (AUXILIARY)

Provisions for mounting and wiring a mechanical siren shall be provided. All required 12 volt power cables and brackets/reinforcement shall be provided.

The control solenoid shall be powered up after the emergency master switch is activated.

	Bidder Complies	
	Yes	No

The mechanical siren shall be recessed in the front bumper on the right side. The siren shall be supported by the bumper framework. The backside of the siren shall be protected with a fabricated enclosure.

MECHANICAL SIREN CONTROL

The mechanical siren shall be activated by the following:

- Right side push button switch.
- Left side foot switch.
- Steering wheel horn ring with horn/siren selector switch.

A momentary chrome push button switch shall be included in the right side dash panel to activate the siren brake.

ACTIVATION FOR WARNING LIGHTS INTENSITY

When parking brake is set, the designated Whelen® warning lights on the cab and the warning lights on the body shall transition to a low power intensity by default.

In order for the activation of low power mode of the warning lights, the battery switch, the ignition switch, the emergency master switch, must be on, and the parking brake set.

The low power intensity mode shall be reset when any of the above conditions are not met.

A switch shall be provided to over ride the low power intensity mode and allow for full power intensity when parking brake is set. The over ride switch shall be disabled and reset with release of parking brake

ROOF WARNING LIGHTS

There shall be a 72.00" Whelen® Freedom™ IV LED lightbar mounted on the cab roof.

The lightbar shall include the following:

- One (1) red flashing LED module in the left side rear corner position.
- One (1) red flashing LED module in the left side end position.
- One (1) red flashing LED module in the left side front corner position.
- One (1) red flashing LED module in the left side first front position.
- One (1) red flashing LED module in the left side second front position.
- One (1) white flashing LED module in the left side third front position.
- One (1) red flashing LED module in the left side fourth front position.
- One (1) red flashing LED module in the left side fifth front position.
- One (1) strobe traffic light controller in the center position.
- One (1) red flashing LED module in the right side fifth front position.
- One (1) red flashing LED module in the right side fourth front position.
- One (1) white flashing LED module in the right side third front position.
- One (1) red flashing LED module in the right side second front position.

	Bidder Complies	
	Yes	No

- One (1) red flashing LED module in the right side first front position.
- One (1) red flashing LED module in the right side front corner position.
- One (1) red flashing LED module in the right side end position.
- One (1) red flashing LED module in the right side rear corner position.

There shall be clear lenses included on the lightbar.

The light bar shall have the low intensity mode wires connected to the controlling circuit.

The following switches may be installed in the cab on the switch panel to control the lightbar:

- a switch to control the flashing LED modules

The white flashing LEDs shall be disabled when the parking brake is applied.

The four (4) red flashing LED modules in the front positions and the red flashing LED modules in the end positions may be load managed when the parking brake is applied.

POWER SUPPLY, STROBE

There shall be one (1) Whelen®, Model PE215 strobe power supply set to national standard high priority provided in the apparatus to power the traffic light controller strobe tube.

The power supply shall be controlled by a cab switch with emergency master control.

There shall be no momentary switch to activate the traffic light controller.

Power to this power supply shall be deactivated when the parking brake is applied.

SIDE WARNING LIGHTS

There shall be two (2) 21.50" Whelen® Freedom™ IV lightbars mounted on the roof, one (1) on each side parallel to the sides of the cab, over the crew cab doors.

Each lightbar shall include the following:

- One (1) red flashing LED module in the outside rear corner position.
- One (1) white flashing LED module in the outside rear position.
- One (1) red flashing LED module in the outside front position.
- One (1) white flashing LED module in the outside front corner position.

There shall be clear lenses included on the lightbar.

There shall be a switch in the cab on the switch panel to control the lightbars.

The white flashing warning lights shall be disabled when the parking brake is applied.

The red flashing warning lights may be load managed when the parking brake is applied.

	Bidder Complies	
	Yes	No

FRONT ZONE LOWER LIGHTS

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.

- The driver's side front outside warning light to be red
- The driver's side front inside warning light to be red
- The passenger's side front inside light to be green
- The passenger's side front outside warning light to be red
- The color of the lenses shall be clear

There shall be a switch located in the cab on the switch panel to control the lights.

Each light shall have the low intensity mode wire connected to the controlling circuit.

HEADLIGHT FLASHER

The high beam headlights shall flash alternately between the left and right side.

There shall be a switch installed in the cab on the switch panel to control the high beam flash. This switch shall be live when the battery switch and the emergency master switches are on.

The flashing shall automatically cancel when the hi-beam headlight switch is activated or when the parking brake is set.

SIDE ZONE LOWER LIGHTING

There shall be four (4) Whelen® flashing LED warning lights with chrome trim provided per the following:

- Two (2) Model M9*C, 6.50" high x 10.37" wide x 1.37" deep lights, one (1) each side on the bumper extension. The left side, side front light to include red warning LEDs and the right side, side front light to include red warning LEDs.
- Two (2) Model M6*C, 4.31" high x 6.75" wide x 1.37" deep lights, body fender panels. The left side, side rear light to include red warning LEDs and the right side, side rear light to include red warning LEDs.
- The lights shall include clear lenses.

There shall be a switch in the cab on the switch panel to control the lights.

Each light shall have the low intensity mode wire connected to the controlling circuit.

SIDE WARNING LIGHTS

There shall be two (2) Whelen®, Model M6* LED flashing warning light(s) with chrome trim provided above the cab wheel well on each side.

The color of the lights shall be red.

The lens color(s) to be clear.

	Bidder Complies	
	Yes	No

These lights shall be activated with the Side Zone Lower warning lights.

The light(s) shall have the low intensity mode wire connected to the controlling circuit.

REAR ZONE LOWER LIGHTING

There shall be two (2) Whelen®, Model M6*C, LED flashing warning lights located at the rear of the apparatus.

- The driver's side rear light to be red
- The passenger's side rear light to be red

Both lights lens color(s) to be clear.

There shall be a switch located in the cab on the switch panel to control the lights.

Each light shall have the low intensity mode wire connected to the controlling circuit.

REAR BODY WARNING LIGHTS

There shall be two (2) Whelen®, Model M9#, split color LED flashing warning light(s) with trim shall be chrome provided rear wall each side above tail lights.

The rear light to be red to the outside and blue to the inside.

These light(s) shall be controlled with the rear upper warning switch.

These light(s) shall include a lens that is clear.

REAR OF HOSE BED WARNING LIGHTS

There shall be two (2) Whelen®, Model L31H*F, 4.00" high x 7.18" in diameter LED warning beacons provided at the rear of the truck.

- The left side beacon to include red LEDs.
- The right side beacon to include red LEDs.
- The warning light lens color(s) to be clear.

There shall be one (1) switch located in the cab on the switch panel that controls the beacons when the battery switch is on.

The violet wire of the beacons shall be connected to the low intensity control. The beacons shall remain at 100% light output intensity but shall activate with the "DVI" (Dynamic Variable Intensity) flash pattern.

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.

	Bidder Complies	
	Yes	No

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.

TRAFFIC DIRECTING LIGHT

There shall be one (1) Whelen Model DTA8A, 30.36" long x 1.74" high x 2.17" deep, amber LED traffic directing light installed at the rear of the apparatus.

The Whelen Model TADCTL1 control head shall be included with this installation.

This traffic directing light shall be mounted over the hosebed, between the body side sheets, on a cross tube at the rear of the apparatus.

The traffic directing light controller shall be located within the switch panel on the center console. The controller shall be within easy reach of the driver.

120 VOLT RECEPTACLE

There shall be one (1), 15/20 amp 120 volt AC three (3) wire straight blade duplex receptacle(s) with interior stainless steel wall plate(s), installed (1 in PS EMS cabinet . The NEMA configuration for the receptacle(s) shall be 5-20R.

The receptacle(s) shall be powered from the shoreline inlet.

There shall be a label installed near the receptacle(s) that state the following:

- Line Voltage
- Current Ratting (amps)
- Phase
- Frequency

120 VOLT RECEPTACLE

There shall be two (2), 15/20 amp 120 volt AC three (3) wire straight blade duplex receptacle(s) with interior stainless steel wall plate(s), installed (2) B1 (1) on each upper rear wall up high. The NEMA configuration for the receptacle(s) shall be 5-20R.

The receptacle(s) shall be powered from the shoreline inlet.

There shall be a label installed near the receptacle(s) that state the following:

- Line Voltage
- Current Ratting (amps)
- Phase
- Frequency

	Bidder Complies	
	Yes	No

LOOSE EQUIPMENT

The following equipment shall be furnished with the completed unit:

- One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit

NFPA REQUIRED LOOSE EQUIPMENT PROVIDED BY FIRE DEPARTMENT

The following loose equipment as outlined in NFPA 1901, 2016 edition, section 5.9.3 and 5.9.4 shall be provided by the fire department.

- 800 ft (60 m) of 2.50" (65 mm) or larger fire hose.
- 400 ft (120 m) of 1.50" (38 mm), 1.75" (45 mm), or 2.00" (52 mm) fire hose.
- One (1) handline nozzle, 200 gpm (750 L/min) minimum.
- Two (2) handline nozzles, 95 gpm (360 L/min) minimum.
- One (1) smoothbore of combination nozzle with 2.50" shutoff that flows a minimum of 250 gpm.
- One (1) SCBA complying with NFPA 1981 for each assigned seating position, but not fewer than four (4), mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer.
- One (1) spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s).
- One (1) first aid kit.
- Four (4) combination spanner wrenches.
- Two (2) hydrant wrenches.
- One (1) double female 2.50" (65 mm) adapter with National Hose threads.
- One (1) double male 2.50" (65 mm) adapter with National Hose threads.
- One (1) rubber mallet, for use on suction hose connections.
- Two (2) salvage covers each a minimum size of 12 ft x 14 ft (3.7 m x 4.3 m).
- One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two (2) at the shoulders, two (2) at the sides, and one (1) at the front.
- Five (5) fluorescent orange traffic cones not less than 28.00" (711 mm) in height, each equipped with a 6.00" (152 mm) retro-reflective white band no more than 4.00" (152 mm) from the top of the cone, and an additional 4.00" (102 mm) retro-reflective white band 2.00" (51 mm) below the 6.00" (152 mm) band.
- Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities.
- One (1) automatic external defibrillator (AED).
- Four (4) ladder belts meeting the requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components* (if equipped with an aerial device).

	Bidder Complies	
	Yes	No

- If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, shall be carried mounted in brackets fastened to the apparatus.
- If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3.00" (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.
- If the apparatus does not have a 2.50" National Hose (NH) intake, an adapter from 2.50" NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.
- If the supply hose carried has other than 2.50" National Hose (NH) threads, adapters shall be carried to allow feeding the supply hose from a 2.50" NH thread male discharge and to allow the hose to connect to a 2.50" NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

SOFT SUCTION HOSE

There shall be no soft suction hose provided.

STRAINER PROVIDED BY DEALER

NFPA 1901, 2016 edition, section 5.8.2.1.1 requires a suction strainer when suction hose is provided.

The strainer is not on the apparatus as manufactured. The dealer shall provide the suction strainer.

DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 5.9.4 requires one (1) approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher.

WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 5.9.4 requires one (1) 2.5 gallon or larger water extinguisher mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher.

FLATHEAD AXE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, Section 5.9.4 requires one (1) flathead axe mounted in a bracket fastened to the apparatus.

	Bidder Complies	
	Yes	No

The axe is not on the apparatus as manufactured. The fire department shall provide and mount the axe.

PICKHEAD AXE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, Section 5.9.4 requires one (1) pickhead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department shall provide and mount the axe.

PAINT PROCESS

The exterior custom cab and body painting procedure shall consist of a seven (7) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the custom cab and body shall be thoroughly cleaned and prepared for painting. Imperfections on the exterior surfaces shall be removed and sanded to a smooth finish. Exterior seams shall be sealed before painting. Exterior surfaces that shall not be painted include; chrome plating, polished stainless steel, anodized aluminum and bright aluminum treadplate.
2. Chemical Cleaning and Pretreatment - All surfaces shall be chemically cleaned to remove dirt, oil, grease, and metal oxides to ensure the subsequent coatings bond well. The aluminum surfaces shall be properly cleaned and treated using a high pressure, high temperature 4 step Acid Etch process. The steel and stainless surfaces shall be properly cleaned and treated using a high temperature 3 step process specifically designed for steel or stainless. The chemical treatment converts the metal surface to a passive condition to help prevent corrosion.
3. Surfacer Primer - The Surfacer Primer shall be applied to a chemically treated metal surface to provide a strong corrosion protective basecoat. A minimum thickness of 2 mils of Surfacer Primer is applied to surfaces that require a Critical aesthetic finish. The Surfacer Primer is a two-component high solids urethane that has excellent sanding properties and an extra smooth finish when sanded.
4. Finish Sanding - The Surfacer Primer shall be sanded with a fine grit abrasive to achieve an ultra-smooth finish. This sanding process is critical to produce the smooth mirror like finish in the topcoat.
5. Sealer Primer - The Sealer Primer is applied prior to the Basecoat in all areas that have not been previously primed with the Surfacer Primer. The Sealer Primer is a two-component high solids urethane that goes on smooth and provides excellent gloss hold out when topcoated.
6. Basecoat Paint - 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.
7. Clear Coat - 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

	Bidder Complies	
	Yes	No

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 manufacturer.

After the cab and body are painted, the color shall be verified 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.

All removable items such as brackets, compartment doors, door hinges, and trim shall be removed and painted 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.

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.

Environmental Impact

Contractor shall meet or exceed all current state regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water and soil. Controls shall include the following conditions:

- Topcoats and primers shall be chrome and lead free.
- Metal treatment chemicals shall be chrome free. The wastewater generated in the metal treatment process shall be treated on-site to remove any other heavy metals.
- Particulate emission collection from sanding operations shall have a 99.99 percent efficiency factor.
- Particulate emissions from painting operations shall be collected by a dry filter or water wash process. If the dry filter is used, it shall have an efficiency rating of 98 percent. Water wash systems shall be 99.97 percent efficient
- Water from water wash booths shall be reused. Solids shall be removed on a continual basis to keep the water clean.
- Paint wastes are disposed of in an environmentally safe manner.
- Empty metal paint containers shall be recycled to recover the metal.
- Solvents used in clean-up operations shall be recycled on-site or sent off-site for distillation and returned for reuse.

Additionally, the finished apparatus shall not be manufactured with or contain products that have ozone depleting substances. Contractor shall, upon demand, present evidence that the

	Bidder Complies	
	Yes	No

manufacturing facility meets the above conditions and that it is in compliance with his state EPA rules and regulations.

CAB PAINT
The cab shall be painted #344 Red.

BODY PAINT
The body shall be painted to match the single cab paint color.

GALVANIZED CHASSIS FRAME ASSEMBLY
The chassis frame assembly shall be hot dip galvanized before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc.

Components that are included with the chassis frame assembly that shall be hot dip galvanized are:

- Frame rails
- Cross members
- Front frame extension

All galvanized components are inspected for compliance with ASTM specifications.

Battery boxes shall be stainless steel.

All components that are not galvanized shall be painted primer and gloss black paint.

PAINT, FRONT WHEELS
All wheel surfaces, inside and outside, shall be provided with powder coat paint #101 black.

PAINT, REAR WHEELS
All wheel surfaces, inside and outside, shall be provided with powder coat paint #101 black.

AXLE HUB PAINT
All axle hubs shall be painted black #101.

PAINTED RUB RAIL
The rub rails located at the sides of the body shall be painted black 101.

COMPARTMENT INTERIOR PAINT
The interior of all compartments shall be painted with a gray spatter type paint.

REFLECTIVE STRIPES
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.

	Bidder Complies	
	Yes	No

The reflective band provided on the cab face shall be at the headlight level.

REAR CHEVRON STRIPING
There shall be alternating chevron striping located on the rear-facing vertical surface of the apparatus. The rear surface, excluding the rear compartment door, shall be covered.

The colors shall be red and fluorescent yellow green diamond grade.

Each stripe shall be 6.00" in width.

This shall meet the requirements of the current edition of NFPA 1901, which states that 50% of the rear surface shall be covered with chevron striping.

REFLECTIVE STRIPE OUTLINE
A black outline shall be applied on the top and the bottom of the reflective band. There shall be three (3) set of outline stripes required.

CHEVRON STRIPING ON REAR LAP COMPARTMENT
There shall be alternating chevron striping located on the rear lap door.

The colors shall be red and fluorescent yellow green diamond grade.

Each stripe shall be 6.00" in width.

CAB DOOR REFLECTIVE STRIPE
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.

This stripe shall meet the NFPA 1901 requirement.

LETTERING
The lettering shall be totally encapsulated between two (2) layers of clear vinyl.

LETTERING
Forty-one (41) to sixty (60) genuine gold leaf lettering, 3.00" high, with outline and shade shall be provided.

LETTERING
There shall be reflective lettering, 9.00" high, with outline and shade provided. There shall be three (3) letters provided.

LETTERING
There shall be genuine gold leaf lettering, 7.00" high, with outline and shade provided. There shall be two (2) letters provided.

	Bidder Complies	
	Yes	No

LETTERING
There shall be reflective lettering, 3.00" high, with outline and shade provided. There shall be 14 letters provided.

EMBLEM
There shall be two (2) emblem(s), approximately 18.00" - 20.00" wide in size, installed upper cab. The emblem shall be modeled after the department submitted information (art, patch, etc).

UNDERCOATING, CAB & BODY
The apparatus shall be properly treated by an authorized Ziebart dealer.

The underside of the apparatus shall be undercoated with an asphalt petroleum based material, dark in color.

The undercoating material utilized on the apparatus shall be formulated to resist corrosion and deaden unwanted sound or road noise.

Coating texture shall appear firm, flexible, and resistant to abrasion. Minimum dry film thickness shall be in the range of 8.00 to 12.00 mils.

The material shall be applied to the following areas:

Body and cab wheel well fender liners, on the back side only.

Underside of body and cab sheet metal, and structural components.

Underside and vertical sides of all sheet metal compartmentation, including support angles.

Structural support members under running boards, rear platforms, battery boxes, walkways, etc.

Inside surfaces of the pump heat enclosure, (when installed).

FIRE APPARATUS PARTS MANUAL
There shall be one (1) custom parts manual(s) in USB flash drive format for the complete fire apparatus provided.

The manual(s) shall contain the following:

- Job number
- Part numbers with full descriptions
- Table of contents
- Parts section sorted in functional groups reflecting a major system, component, or assembly
- Parts section sorted in alphabetical order
- Instructions on how to locate parts

	Bidder Complies	
	Yes	No

Each manual shall be specifically written for the chassis and body model being purchased. It shall not be a generic manual for a multitude of different chassis and bodies.

Service Parts Internet Site
The service parts information included in these manuals are also available on the factory website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly.

CHASSIS SERVICE MANUALS
There shall be one (1) chassis service manuals on USB flash drives containing parts and service information on major components provided with the completed unit.

The manual shall contain the following sections:

- Job number
- Table of contents
- Troubleshooting
- Front Axle/Suspension
- Brakes
- Engine
- Tires
- Wheels
- Cab
- Electrical, DC
- Air Systems
- Plumbing
- Appendix

The manual shall be specifically written for the chassis model being purchased. It shall not be a generic manual for a multitude of different chassis and bodies.

CHASSIS OPERATION MANUAL
The chassis operation manual shall be provided on one (1) USB flash drive.

ONE (1) YEAR MATERIAL AND WORKMANSHIP
Each new piece of apparatus shall be provided with a minimum **one (1) year** basic apparatus material and workmanship limited warranty. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

	Bidder Complies	
	Yes	No

ENGINE WARRANTY
A Paccar five (5) year limited engine warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package.

STEERING GEAR WARRANTY
A Sheppard **three (3) year** limited steering gear warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package.

FIFTY (50) YEAR STRUCTURAL INTEGRITY
The chassis frame shall be provided with a **fifty (50) year** material and workmanship limited warranty. The warranty shall cover the chassis frame as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY
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).

REAR AXLE WARRANTY
A Eaton **five (5)-year/100,000 mile** parts and labor warranty shall be provided.

ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY
A Meritor Wabco™ ABS brake system **three (3) year** limited warranty shall be provided.

TEN (10) YEAR STRUCTURAL INTEGRITY
The new cab shall be provided with a **ten (10) year** material and workmanship limited warranty. The warranty shall cover such portions of the cab built by the manufacturer as being free from structural failures caused by defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

TEN (10) YEAR PRO-RATED PAINT AND CORROSION
Each new piece of apparatus shall be provided with a **ten (10) year** pro-rated paint and corrosion limited warranty on the apparatus cab. The warranty shall cover painted exterior surfaces of the body to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

	Bidder Complies	
	Yes	No

COMPARTMENT LIGHT WARRANTY

A ten (10) year material and workmanship limited warranty shall be provided for the Pierce 12 volt DC LED strip lights. The warranty shall cover the LED strip lights to be free from defects in material and workmanship that would arise under normal use.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

TRANSMISSION WARRANTY

The transmission shall have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty is to be provided by Allison Transmission and not the apparatus builder.

TRANSMISSION COOLER WARRANTY

The transmission cooler shall carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a collateral damage warranty shall also be in effect for the first three (3) years of the warranty coverage and shall not exceed $10,000 per occurrence. A copy of the warranty certificate shall be submitted with the bid package.

WATER TANK WARRANTY

The UPF poly water tank shall be provided with a lifetime material and workmanship limited warranty.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

TEN (10) YEAR STRUCTURAL INTEGRITY

Each new piece of apparatus shall be provided with a **ten (10) year** material and workmanship limited warranty on the apparatus body. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY

An AMDOR roll-up door limited warranty shall be provided. The roll-up door shall be warranted against manufacturing defects for a period of **ten (10) years**. A **five (5) year** limited warranty shall be provided on painted roll up doors.

A copy of the warranty certificate shall be submitted with the bid package.

PUMP WARRANTY

The Waterous pump shall be provided with a Seven (7) year material and workmanship limited warranty.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

	Bidder Complies	
	Yes	No

TEN (10) YEAR PUMP PLUMBING WARRANTY

The stainless steel plumbing components and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of **ten (10) years or 100,000 miles**. This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten years from the date of delivery.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

TEN (10) YEAR PRO-RATED PAINT AND CORROSION

Each new piece of apparatus shall be provided with a **ten (10) year** pro-rated paint and corrosion limited warranty on the apparatus body. The warranty shall cover painted exterior surfaces of the body to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

THREE (3) YEAR MATERIAL AND WORKMANSHIP

The gold leaf lamination shall be provided with a **three (3) year** material and workmanship limited warranty. The warranty shall cover the gold leaf lamination as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

VEHICLE STABILITY CERTIFICATION

The fire apparatus manufacturer shall provide a certification stating the apparatus complies with NFPA 1901, current edition, section 4.13, Vehicle Stability. The certification shall be provided at the time of bid.

ENGINE INSTALLATION CERTIFICATION

The fire apparatus manufacturer shall provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification shall be provided at the time of delivery.

POWER STEERING CERTIFICATION

The fire apparatus manufacturer shall provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification shall be provided at the time of bid.

CAB INTEGRITY CERTIFICATION

The fire apparatus manufacturer shall provide a cab crash test certification with this proposal. The certification shall state that a specimen representing the substantial structural configuration of the cab has been tested and certified by an independent third party test facility. Testing

	Bidder Complies	
	Yes	No

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:

- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.
- European Occupant Protection Standard ECE Regulation No.29.
- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks.

Side Impact
The cab shall be subjected to dynamic preload where a 14,320-lb moving barrier is slammed into the side of the cab at 5.50 mph, striking with an impact of 13,000 ft-lb of force. This test is part of the SAE J2422 test procedure and more closely represents the forces a cab shall see in a rollover incident.

Frontal Impact
The same cab shall withstand a frontal impact of 32,600 ft-lb of force using a moving barrier in accordance with SAE J2420.

Additional Frontal Impact
The same cab shall withstand a frontal impact of 65,098 ft-lb of force using a moving barrier. (Twice the force required by SAE J2420)

Roof Crush
The cab shall be subjected to a roof crush force of 22,500 lb. This value meets the ECE 29 criteria, and is equivalent to the front axle rating up to a maximum of ten (10) metric tons.

Additional Roof Crush
The same cab shall be subjected to a roof crush force of 110,000 lbs. (Four and a half times the load criteria of ECE 29)

The same cab shall withstand all tests without any measurable intrusion into the survival space of the occupant area.

There shall be no exception to any portion of the cab integrity certification. Nonconformance shall lead to immediate rejection of bid.

CAB DOOR DURABILITY CERTIFICATION
Robust cab doors help protect occupants. Cab doors shall survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder shall certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear.

	Bidder Complies	
	Yes	No

WINDSHIELD WIPER DURABILITY CERTIFICATION

Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers shall survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles.* The bidder shall certify that the wiper system design has been tested and that the wiper system has met these criteria.

SEAT BELT ANCHOR STRENGTH

Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design shall withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder shall certify that each anchor design was pull tested to the required force and met the appropriate criteria.

SEAT MOUNTING STRENGTH

Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design shall be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder shall certify, at time of delivery, that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

PERFORMANCE CERTIFICATIONS

Cab Air Conditioning

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.

Cab Defroster

Visibility during inclement weather is essential to safe apparatus performance. The defroster system shall clear the required windshield zones in accordance with SAE J381 Windshield Defrosting Systems Test Procedure And Performance Requirements - Trucks, Buses, And Multipurpose Vehicles. The bidder shall certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

Cab Auxiliary Heater

Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. An auxiliary cab heater 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.

	Bidder Complies	
	Yes	No

AMP DRAW REPORT

The bidder shall provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

The manufacturer of the apparatus shall provide the following:

- Documentation of the electrical system performance tests.
- A written load analysis, which shall include the following:
  - The nameplate rating of the alternator.
  - The alternator rating under the conditions specified per:
    - Applicable NFPA 1901 or 1906 (Current Edition).
  - The minimum continuous load of each component that is specified per:
    - Applicable NFPA 1901 or 1906 (Current Edition).
  - Additional loads that, when added to the minimum continuous load, determine the total connected load.
  - Each individual intermittent load.

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