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|  | Grand Council of the Crees (Eeyou/Eenou Istchee)Grand Conseil des Cris (Eeyou/Eenou Istchee)ᐄᓅ/ᐄᔨᔫ ᒋᔐᐅᒋᒫᐤCREE NATION GOVERNMENTGOVERNEMENT DE LA NATION CRIE***Capital Works and Services Department*****270 Prince Street, Suite 202****Montréal (Québec) H3C 2N3**Tel: (514) 861-5837 Fax: (514) 395-9099 www.gcc.ca |  |

**PUMPER-TANKER**

**TECHNICAL SPECIFICATIONS**

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **OBJECT:**

The purpose of this document is to clarify the main requirements to be met by the **1 100 IG CUSTOM GALLONS PUMPER-TANKER 2019 OR NEWER.** |  |  |  |
| The purpose of this specification is to define the requirements and requirements for the supply of a fire-fighting truck for the fire protection service equipped with an aluminum type body. These specifications aim to provide a unit to achieve the best results and get a truck of the best performance. These specifications reflect the minimum requirements for the type of construction and tests to which the unit must be submitted. Note: The truck must be new and in working order |  |  |  |
| **BRAND: E-ONE / PIERCE / ROSENBAUER MODEL: QUEST / IMPEL / COMMANDER YEAR: 2019 OR MOST RECENT.** |  |  |  |
| The tenderer must supply with his tender the specifications, illustrations and other explanatory documents relating to his tender |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ACCREDITATION :**

The manufacturer must provide a copy to the bid, attesting that it is certified to **ISO 9001: 2008 and FAMA standards.** |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CERTIFICATION :**

The entire fire trucks must be constructed and certified in accordance with **CAN / ULC S515** applicable in Canada and approved by an ULC inspector at the **ACCREDITED VEHICLE MANUFACTURING PLANT** **(NO EXCEPTION).** |  |  |  |
| Written proof provided by **ULC** must be included in the submission listing the fire manufacturer's registration for the manufacture of new water pumps with the appropriate accreditation body of the applicable **CAN / ULC S515 standard.** |  |  |  |
| A plate certifying compliance with the applicable CA**N / ULC S515** standard shall be affixed to the pump control panel at the fire manufacturer. This plate must mention the name, contact details, manufacturer of the fire. **(NO EXCEPTION).** |  |  |  |
| The vehicle will also have to meet, in addition, the requirements of the **National Fire Protection Association 1901, 2016 (NO EXCEPTION**). |  |  |  |
| Any contentious issues **between ULC and NFPA 1901, the current CAN / ULC S515 will prevail over NFPA 1901, 2016. (NO EXCEPTION).** |  |  |  |
| The vehicle must comply with the laws and regulations in effect in the province of Québec, and in particular with the requirements of the Highway Safety Code of the Province of Québec and with the new regulations of the CNESST on the pump / road system. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CIVIL LIABILITY INSURANCE BY THE MANUFACTURER:**

The insurance coverage, by the fire manufacturer, shall not be less **than $ 25 million per event. ($ 25,000,000.00).** |  |  |  |
| A valid certificate of insurance, based on the amount listed above, must be provided with the tender documents, without exception. |  |  |  |
| A statement that the insurer undertakes to notify the City of the change in the event of termination or modification of the insurance policy must also appear on the certificate of insurance provided. |  |  |  |
| The purchase of a product from a supplier that carries a low limit of liability insurance coverage places an entity in a position not to be able to recover sufficient sums made available to them by the supplier. This situation suggests that a requested coverage of **$ 25,000,000** is, in the current context of the call for tenders, well-considered and important to consider as receivable and unqualified. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **EQUIVALANCE:**

Any equivalent or similar product proposed by a bidder will be considered "not equivalent" until the Cree Nation government shows in writing its agreement to such equivalence. |  |  |  |
| Any proposed equivalence must be accompanied by a complete description of the product or equipment to allow the Cree Nation government and consultant Mr. Ghyslain Robert to make their own assessment. |  |  |  |
| The Tenderer shall provide technical bulletin of each proposed equivalent products and document any mention "according to our standard" if it is registered on the part of the tenderer in the comments column. |  |  |  |
| **All items must be submitted by the tenderer for the acceptance by the Cree Nation Government.** |  |  |  |
| **NOT DOCUMENTING THE PROPOSED EQUIVALENCE (OR ANY MENTION "ACCORDING TO OUR STANDARD") WILL SYSTEMATICALLY RESULT IN REJECTION OF THE BID.** |  |  |  |
| **ANY REQUEST FOR SUBSTITUTION ON THE PART OF THE BIDDER MUST INCLUDE THE FOLLOWING INFORMATION:** |  |  |  |
| * **THE REASONS FOR THE REQUEST FOR SUBSTITUTION**
 |  |  |  |
| * **THE PRICE OF THE SUBSTITUTE MATERIALS AND THE NAME OF THE MANUFACTURER**
 |  |  |  |
| * **THE PRICE OF MATERIALS SUCH AS SPECIFIED IN THE ORIGINAL QUOTE**
 |  |  |  |
| * **THE AMOUNT OF CREDIT OFFERED TO THE CREE NATION GOVERNEMENT**
 |  |  |  |
| * **THE IMPACT ON THE EQUIPEMENT**
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **MATERIALS:**

All the materials, components or accessories entering production in different parts of the equipment will be brand new, top quality and must be in the current year of submission. **(NO EXCEPTIONS)**. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **COMPLETE PRINTED MANUAL :**

The bidder shall provide with the vehicle upon delivery, one (1) complete delivery manual. This manual shall be in a notebook type binder, with reference tabs for each section of the vehicle. A companion compact disk (CD) with all of the printed material in an electronic format (Adobe Acrobat PDF) shall be provided. |  |  |  |
| Within each section shall be:* Individual component manufacturer instruction and parts manuals
 |  |  |  |
| * Warranty forms for the body
 |  |  |  |
| * Warranty forms for all major components
 |  |  |  |
| * Warranty instructions and format to be used in compliance with warranty obligations
 |  |  |  |
| * Wiring diagrams
 |  |  |  |
| * Installation instruction and drawings for major parts
 |  |  |  |
| * Visual graphics and electronic photos for the installation of major parts
 |  |  |  |
| * Necessary normal routine service forms, publications and components of the body portion of the apparatus
 |  |  |  |
| * Technical publications for training and instruction on major body components
 |  |  |  |
| * Warning and safety related notices for personnel protection
 |  |  |  |
| * Cab and chassis manuals on parts, service and maintenance shall be provided
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **OPERATION AND FAMILIARIZATION MANUAL:**

The bidder shall supply, at delivery, customized Operation & Familiarization Manual, complete with full-color photos of the actual, completed apparatus with each feature and control identified and its function explained. In print and on a USB key. |  |  |  |
| Safety, Operation, Maintenance and Troubleshooting sections will include information about each major component of the apparatus (chassis, pump, foam system, generator, electrical devices, etc.). The manual shall be specific to the apparatus (or group of apparatus) being delivered.  |  |  |  |
| All safety and warning labels shall be represented in the manual for subsequent safety inspections to ensure their continued presence on the apparatus.  |  |  |  |
| The manufacturer shall submit a sample manual with the bid proposal. Failure to do so will result in rejection of the proposal. Reference to "on delivery" or "at pre-build" submission is not an acceptable response for the bid document. |  |  |  |
| “Similar” or “Representative” manuals will not be accepted. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CHARACTERISTIC:**

The tenderer must enter the characteristics of the proposed equipment and indicate the unit's compliance for each paragraph in the appropriate column. |  |  |  |
| **Any omission of an indication of conformity for each paragraph will be considered "non-compliant" with this description (NO EXCEPTION).** |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PRELIMINARY DRAWING :**

A preliminary design of the proposed fire vehicle shall be provided at the time of submission of the bid. The design shall represent the proposed truck. A drawing of the right side, on the left side and of rear should be provided. |  |  |  |
| The final and approved design will be part of the contract documents. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DESIGN DOCUMENTS :**

In order to ensure an adequate design of the proposed fire truck, the tenderer must attach to the call for tenders the following listed documents: |  |  |  |
| * Document for calculating the vertical and horizontal center of gravity of the proposed unit;
 |  |  |  |
| * Load distribution calculation document applied to the front and rear axle as required by **NFPA**
 |  |  |  |
| * Document to calculate the total amperage load of the vehicle in accordance with the **NFPA** standard.
 |  |  |  |
| In the event that the tenderer proposes a design with a vertical center of gravity height greater than 80%, the latter must perform a stability test as required by the **NFPA** standard before delivery of the truck. This test of inclination tested to the applicable standards should be photographed to ensure that this certification procedure can be verified by the Fire Department **(NO EXCEPTIONS)**  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PRE-PRODUCTION MEETING AND INSPECTIONS:**

A pre-production meeting must be held at the dealer or manufacturer prior to the production of the proposed truck. |  |  |  |
| A final inspection at the manufacturing plant should be carried out when the truck is ready to be delivered. |  |  |  |
| The tenderer will be responsible for all transportation (airline tickets millage from postal code J0X3E0 @ .52 / km, accommodation, parking and food expenses for a representative of the Cree Nation Government, the fire chief and for Mr. Ghyslain Robert, Consultant for the pre-production meeting and the final inspection. |  |  |  |
| Mr. Ghyslain Robert, Consultant reserves the right to request photographs of the truck during construction |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **WARRANTIES:**

The guarantees will be effective as of the date of commissioning of the vehicle by the community. |  |  |  |
| The successful tenderer will be solely responsible for the application of the guarantee for all the equipment covered by this invitation to tender. |  |  |  |
| The tenderer must provide with his tender proof that the proposed truck can be repaired by guarantee from an authorized distributor of the manufacturer, with a minimum of 5 years’ experience in the proposed product, within a radius of 1000 Kilometers from the community |  |  |  |
| The successful tenderer must attach to the call for tender the names of the persons assigned to the emergency call service 24 hours a day, 7 days a week. |  |  |  |
| The tenderer undertakes to respond to a service call and to remedy the problem within a maximum of 48 hours following the call or email from the City's representative. |  |  |  |
| The cost of travel, accommodation and food of the technician for repairs on guarantees shall be borne by the successful tenderer for major repairs for maximum 3 calls in the first 2 years.1. **TRUCK PLATES:**

The bidder shall be responsible for plating at the SAAQ the fire truck. The truck shall be transphered in the community’s name |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **SERVICE CONTRACT:**

The bidder shall provide the first annual test and maintenance for the first year.  |  |  |  |
| The annual inspection and regular maintenance shall be conducted in the communities. In the event that major repairs need to be done the apparatus shall be brought to the bidder’s facilities by the Cree comunity expences. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DELIVERY:**

The fire equipment will be delivered by the bidder to the community specified in the bidding instructions. |  |  |  |
| The bidder must ensure that all technical equipment is in place before the vehicle is delivered. |  |  |  |
| The warranty on the apparatus must begin on the date of delivery of the vehicle. |  |  |  |
| The apparatus must be completely delivered no later than **425 days** after approved line drawing signature date following the receipt of the order issued by the Cree nation government. |  |  |  |
| All equipment’s shall be delivered to the communities. * Waswanipi J0Y 3C0, by way of Road
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TRAINING :**

The bidder shall provide 8 hours of training per apparatus. |  |  |  |
| The training shall be conducted in the communities. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CUSTOMER SERVICE:**

Operation Manual and Training:The tenderer undertakes to supply at the time of delivery an operating manual for the equipment and components. |  |  |  |
| In order to guarantee the quality of the after-sales service, the Cree Nation Government requires each bidder to certify that it has an establishment enabling it to offer maintenance and after-sales service in Québec, and qualified and trained personnel trained by the manufacturer. |  |  |  |
| Such facilities shall include at least the following* repair shop;
 |  |  |  |
| Staff must include at least the following persons:* A minimum of one (1) full-time, trained and certified technicians / mechanics.
 |  |  |  |
| * Certificates to be attached to the call for tender);
 |  |  |  |
| * An after-sales service manager.
 |  |  |  |
| * An mobile service unit
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ANGLE OF DEPARTURE:**

The angle of departure for the apparatus shall not be less than eight (8) degrees as specified by **NFPA 1901 2016.** |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **NEW TRUCK CHASSIS AND CAB:**

A "**CUSTOM"** type chassis and cab shall be provided, developed and designed specifically for the application of a fire vehicle. The custom truck must be new and the current year of the tender or the following year. **(NO EXCEPTION)** |  |  |  |
| The cab must be specially made for the Fire service. The location of the driver and the officer will be on each side of the dog house and in front of the front axle. The cab will be designed, designed and built specifically for the fire service industry. |  |  |  |
| The cab will be of the tilting type. |  |  |  |
| Cabin mounting shall include surface dampers to dampen cab vibration. **(NO EXCEPTIONS)** |  |  |  |
| Cab mounts shall be made of natural rubber bonded to the metal to insulate the cab from the vibrations of the frame. This system reduces noise and vibration to the cabin. The frame must allow a slight movement to control the reliability of the cabin movement. This design is superior to airbags and hydraulic shock absorbers that require maintenance and can leak. |  |  |  |
| The cab shall have a pivot and a four-point insulated rubber mounting system. Rear brackets must be insulated from the chassis frame to reduce the transfer of road vibration and chassis torque to the cab while offering superior handling characteristics. No solid rear locking system shall be acceptable. |  |  |  |
| The cab's super structure will be shaped using high-strength **6061-T6 aluminum extrusions and 3/16" thick 5052-H32 or 3003 H14 aluminum plates.** |  |  |  |
| Cabin width, viewed from the outside: **99** "from one end to the other minimum |  |  |  |
| The width, measured from the inside, will be at least **93 "(**Specify dimension if different) |  |  |  |
| The cabin length will be **77**  inches from the center of the front axle to the front of the cab (Specify dimension if different) |  |  |  |
| Minimum **70"** from the center of the front axle to the rear of the cab. |  |  |  |
| The crew cabin floor will be completely flat, including the ability to include a **PTO (PTO)** at the 1 hour position, while maintaining free space without raising the floor. |  |  |  |
| The rim of the cabin floor from the steps will meet the non-skid requirements of **NFPA 13-7.3,** incorporating a knurled piece with a non-slip edge. |  |  |  |
| The edge of the first step will be approximately 5" to the outside, compared to the second step, to increase safety when going down the stairs. |  |  |  |
| The cab super-structure shall be designed with high strength 6061-T6 aluminum extrusions and 3/16" 5052-H32 aluminum plate. This shall include the “A”, “B”, “C” and “D” extruded pillars, triple wall front end reinforced by 3/16" thick x 2"x3" extrusion tubes, 3/16" side walls and rear wall. This shall offer superior occupant protection in the event of vehicle impact. |  |  |  |
| The extrusions shall provide adequate space for routing of wiring and hoses which will provide service accessibility. Routing of harnessing which requires pulling of wires through tubes will not be allowed. No Exceptions. |  |  |  |
| The "A" pillar shall be of a closed section, one-piece extrusion extending from the cab header to the bottom of the cab. This design shall ensure strength and superior resistance to buckling in the event of a frontal impact. |  |  |  |
| The cabs front corners shall be constructed of 5052-H32 stamped aluminum to provide a consistent material composition. The stamping process alleviates the high tendency of fractures through the fusing of dissimilar metal composition as appears with a casting process.  |  |  |  |
| Cast cab components, including cab corners, "A" pillars and front fascia components shall not be acceptable due to the high tendency of fractures. No Exceptions.  |  |  |  |
| Additional cab strength shall be obtained through closed section, dual extrusions in the construction of the "D" pillars. |  |  |  |
| The front facade shall be constructed with dual wall .19” thick 5052-H32 aluminum plates which make up the front bulkhead, reinforced by .19” thick 6061-T6 aluminum extrusion (box-sections), though-out the inner and outer perimeter of the front end / facade. The reinforcing third wall / barrier is .13” thick 5052-H32 work hardened aluminum facade panels. All panels shall be welded, no adhesive. |  |  |  |
| The cab side wall of the cab shall be 3/16” thick 5052-H32 aluminum plate. The cab side plate shall wrap the corner of the cab b pillar and slam post. The cab rear wall plates shall be reinforced with a minimum of two (2) 3/16 x 3” aluminum sections; the cab side reinforcements shall be a minimum of 28” apart and span from the cab B pillar and cab C pillar. |  |  |  |
| The rear wall of the cab shall be 3/16” thick 5052-H32 aluminum plate. The rear cab plate shall wrap the corner of the cab and attach to the cab D pillar and slam post. The cab rear wall plates shall be reinforced with four horizontal and dual vertical support sections; the dual vertical support structure shall consist of 1/8” thick x 2” 6061-T6 aluminum tubes and the horizontal hat sections shall consist of 1/8” thick x 4” 5052-H32 aluminum. The dual vertical support sections shall be 40” a-part, and the cab shall contain a minimum of four (4) 4” hat section horizontal supports. |  |  |  |
| Additionally, the rear edge of the floor shall include a 3/16” 6061-T6 aluminum tube extrusion (under the floor) and a 7” 5052-H32 aluminum cab floor support section (above the floor) |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ROOF SYTLE- 8IN RAISED:**

The cab roof design shall incorporate an angled front roof, transitioning into a rolled extrusion for a swept back design. |  |  |  |
| The roof height shall feature an 8" raise starting over the driver and officer positions and continuing back to the roof and rear wall joint. Raised roof designs that do not include a raised portion over the driver and officer positions will not be acceptable. No Exceptions. |  |  |  |
| The roof of the cab shall feature dual .25" thick interlocked structural member extrusions running the entire width of the cab defending against buckling in the event of a rollover. |  |  |  |
| The cab header shall feature dual 6061-T6 aluminum extrusions which shall offer superior rigidity and strength.  |  |  |  |
| The raised roof shall offer a crew head height area of 63-1/2” from the floor to the ceiling in the crew areas for optimum headroom. |  |  |  |
| The crew roof super structure shall include a reinforcement hat-section structure 1/8” thick 5052-H32 aluminum bracing. The for-aft support braces will be 24” on center apart, the side to side support braces will stretch from cab side to cab side and centered between the dual 3/16” extruded and plate reinforced roll-cage section. |  |  |  |
| The forward cab roof section shall include a combination of 1/8” 6061-T6 extruded tube reinforcements and a hat-section structure 1/8” thick 5052-H32 aluminum bracing. The bracing shall wrap the entire perimeter of the cab forward roof, and the condenser support structure. |  |  |  |
| The condenser support structure shall include 1/8” triple sections, supporting the outer perimeter and center of the condenser mounting pad. |  |  |  |
| Additionally, the entire roof super structure is reinforced by a .25” thick roof edge corner extrusion around the entire cab perimeter. |  |  |  |
| A drip rail shall be provided along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side. |  |  |  |
| 1. **CAB EXTERIOR REAR COMPARTMENTS:**
 |  |  |  |
| The cab shall feature a compartment which shall be located at the rear of the cab behind the driver's side and officer’s side crew doors. Each compartment shall measure 9"wide x 37" tall x 22" deep the compartment with a clear door opening of 8" wide x37" tall and shall feature:A hinged box pan style exterior compartment door.A hidden, piano style stainless steel door hinge which shall be mounted inside the panel of the door prohibiting dirt and debris from becoming trapped in the hinge.Each rear cab compartment shall shall have a black die cast steel handle with a manual door lock. The door lock shall be an integral part of the compartment handle. The door may be unlocked from the exterior with a key.The interior of the rear compartment shall have a DA sanded finish. |  |  |  |
| Each rear compartment shall include one (1) 18"strip of LED lighting and shall be located in the inside front corner of the compartment near the door |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **INTERIOR EMS CABINETS:**
 |  |  |  |
| There shall be two (2) forward-facing cabinet installed in the outboard position near the exterior side wall of the cab. The cabinet shall be constructed of smooth Aluminum plate with approximate interior dimensions of 25" Wide x 12" Deep x Full Height from the floor to the ceiling. |  |  |  |
| The cabinet shall be finished to match the interior of the cab interior finish, both color and texture. The interior of the forward facing compartment shall have a DA sanded finish. |  |  |  |
| A full height cargo webbing designed to restrain the contents shall be installed on the cabinet. The cargo webbing will be 2” wide, permanently attached at the bottom of the cabinet and equipped with buckle attachments at the top. |  |  |  |
| Two (2) adjustable shelves shall be installed in the interior of each cab cabinet. The shelves shall be constructed from aluminum. |  |  |  |
| A vertically mounted LED strip light shall be installed inside of each EMS compartment. The light shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat build up and be approximately 30" in length. The compartment light shall be mounted adjacent to the unistrut to illuminate the compartment interior. |  |  |  |
| The compartment light will be controlled by a "On-Off" switch located near each EMS compartment. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB DOORS:**

The cab shall include a total of four (4) doors, two (2) forward and two (2) rear crew doors.  |  |  |  |
| The forward cab doors shall be a minimum of 45" wide, and have a cab structure opening of 42.5" wide; and the rear crew doors shall be a minimum of 41" wide, and a cab structure opening of 38.5" wide to provide enhanced entry and egress of the cab. |  |  |  |
| Each cab door shall feature:* Superior strength and rigidity from 3/16" closed section extruded door frames
 |  |  |  |
| * damping inside each door for a solid feel and minimized reverberation when closed
 |  |  |  |
| * A rolled rubber bulb seal style gasket shall be utilized around the door ensuring a weather tight fit
 |  |  |  |
| * Integrated, mechanical door stop
 |  |  |  |
| * A full length, hidden piano style 10-gauge stainless steel door hinge with a 1/4" pin, which shall be mounted inside the panel of the door prohibiting dirt and debris from becoming trapped in the hinge
 |  |  |  |
| * An integrated one-piece inner door assembly that includes a glass track, mounting provisions for window regulator, door handle and door panel shall be utilized. The inner door assembly shall be easily removed with nut inserts. Self-tapping screws shall not be acceptable.
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB STEPS:**

The cab steps shall meet NFPA 13-7.3 in size and slip resistance requirements.  |  |  |  |
| The cab shall incorporate a two-step design at each door, with a first step height of approximately 22” from the ground. The leading edge of the first step shall be 5" further outboard than the second step to provide a staircase design for safer egress.  |  |  |  |
| The top crew step shall incorporate an angle approximately midway from the rear wall to the crew door hinge extending out the flooring under the rear facing outer seat positions, offering foot placement for safety while seated in this position. |  |  |  |
| The cab steps shall include Grip Strut insertions. The step shall include a frame which is integral with the construction of the cab for rigidity and strength. The Grip Strut shall allow water and other debris to flow through rather than becoming packed under the step. The middle step shall be integral with the cab in construction and shall be trimmed in 3003-H22 embossed aluminum tread plate which is 0.084" thick.The middle step shall be integral with the cab in construction and shall be trimmed in 3003-H22 embossed Aluminum tread plate which is 0.084" thick and shall be black Line-X. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB STEPS KICK PLATES:**

The cab step risers at all doors, the vertical section of all steps, shall include an aluminum tread plate with Black Line-X finish. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AUXILIARY CAB STEPS:**

The cab shall be equipped with four (4) auxiliary stirrup style steps. There shall be one installed below each cab door opening. The frame shall be constructed of marine grade aluminum, and the stepping surface shall be constructed of heavy duty aluminum. The step surface shall be designed to function under the most adverse conditions. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FULL HEIGHT DOORS:**

All doors shall be full height from the roof of the cab extending down to cover and protect the entrance step areas. |  |  | Yes |
| Aluminum treadplate door kick panels shall be provided with Black Line-X finish. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DOOR HANDLES:**

The exterior door handles shall be constructed of die-cast steel. They shall feature heavy duty pull style handles which are extended out and suitable for easy grasping with a gloved hand.  |  |  |  |
| The handles shall be complimentary to the cab exterior and shall be black in color. |  |  |  |
| The interior door handle shall be a paddle style which shall be yellow in color. The paddle shall be hinged towards the front of the cab and shall include a manual door lock unless otherwise specified. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB DOOR LOCKS:**

All cab doors shall include manual door locks with keys. The door lock shall include a toggle and shall be an integral part of the interior door handle which is red in color. The exterior door lock is integral with the door latch. The cab doors may be unlocked from the exterior with a key or through a thumb turn from inside the cab. |  |  | Yes |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **INTERIOR CAB DOORS:**

All cab doors shall consist of a one-piece formed and stamped aluminum interior panel. The panel shall include a formed collar around the interior door latch. The door panels shall be attached to the door with nutserts. ABS material shall not be acceptable. **No Exceptions** |  |  |  |
| All cab doors shall be finished with a polyurethane coating for durability. The finish shall be gray in color. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **INTERIOR FRONT DOOR HANDLES:**

The interior driver and officer cab doors shall each include one (1) customized cast aluminum single piece door grab pulls designed specifically for the fire service.The single piece door pull shall have a curved designed in an “L” formation to provide multiple points for grasping with a gloved hand. The horizontal dimension shall be a minimum of 28" and the vertical dimension shall be a minimum of 20". The door pulls shall have an ergonomic curve making them easier to grasp when entering and exiting the cab. **No Exceptions.** |  |  |  |
| The door pull shall feature secure mounting in three separate locations of the pull utilizing stainless steel fasteners with nut inserts in each location. Self-taping screws or other mounting techniques shall not be allowed for interior door pulls or grab handles. |  |  |  |
| Each handle shall be constructed of A356 aluminum casting and shall feature a yellow powder coated finish. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **INTERIOR GRAB HANDLE REAR DOOR:**

A yellow powder coated cast aluminum grab handle shall be provided on the inside of each rear crew door. The handle shall extend horizontally the width of the window just above the windowsill. The handle shall assist with entry and egress from the crew area of the vehicle. |  |  |  |
| The interior driver and officer rear cab crew doors shall include one (1) customized cast aluminum single piece door grab pulls designed specifically for the fire service. |  |  |  |
| The door pulls shall have an ergonomic curve making them easier to grasp when entering and exiting the cab. No Exceptions. |  |  |  |
| The door pull shall feature secure mounting with stainless steel fasteners with nut inserts in each location. Self-taping screws or other mounting techniques shall not be allowed for interior door pulls or grab handles. |  |  |  |
| Each handle shall be constructed of A356 aluminum casting and shall feature a yellow powder coated finish. |  |  |  |
| Rear door grab 7" chrome grab handle shall be provided in the rear crew cab doors interior. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **GRAB HANDLES "A" PILLAR:**

There shall be two (2) additional molded 9.00” rubberized grab handle shall be installed inside the front cab doors. The handles shall be located one on the Driver’s side A Pillar and one on the officer's side on the A Pillar. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **WINDSHIELD:**

A one (1)-piece, safety glass full width windshield with more than 3,228 square inches of area will be provided.  |  |  |  |
| The windshield shall feature:* A completely uninterrupted view from both the driver and officer position
 |  |  |  |
| * The windshield will consist of three (3) layers; the outer layer, the middle safety laminate, and the inner layer. The .114" thick outer light layer will provide superior chip resistance. The middle safety laminate layer will prevent the windshield glass pieces from detaching in the event of breakage.
 |  |  |  |
| * Economical replacement readily available from auto glass supplier
 |  |  |  |
| * Easily removable for replacement using standard automotive techniques
 |  |  |  |
| A frit band will be provided along with an outer trim seal on the outside perimeter of the windshield for a finished automotive appearance. |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **WINDSHIELD WIPER SYSTEM:**

A single windshield wiper system shall be incorporated in conformance with FMVSS and SAE requirements. Two (2) 22" windshield wiper arms shall be mounted below the windshield. Each arm shall include a 26" long wiper to provide optimum windshield clearing. |  |  |  |
| The windshield wiper fluid reservoir can be filled without raising the cab. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **WINDSHIELD WIPER ACTIVATION:**

The windshield wipers shall be activated through a switch on the driver's panel, with intermittent control. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **WINDOW -DRIVER'S DOOR:**

The driver's door shall include a window which measures a minimum of 25.5" wide x 21" high with a minimum clear viewing area of 694 square inches. The glass shall include a 50% dark tint and through the use of a manual crank style handle shall roll completely into the door housing. |  |  |  |
| The window shall be trimmed in a black anodized aluminum ring and rubber seal to keep water from entering the cab when closed. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **WINDOW- OFFICER'S DOOR:**

The officer's door shall include a window which measures a minimum of 25.5" wide x 21" high with a minimum clear viewing area of 694 square inches. The glass shall include a 50% dark tint and through the use of a manual crank style handle shall roll completely into the door housing. |  |  |  |
| The window shall be trimmed in a black anodized aluminum ring and rubber seal to keep water from entering the cab when closed. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR DRIVER SIDE CREW WINDOW:**

The rear driver's side crew door shall include a window measuring 26.75" wide x 21.75" high with a minimum clear viewable area of 581 square inches. The glass shall include a 50% dark tint and through the use of a manual crank style handle shall roll completely into the door housing. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR OFFICER SIDE CREW WINDOW:**

The rear officer's side crew door shall include a window measuring 26.75" wide x 21.75" high with a minimum clear viewable area of 581 square inches. The glass shall include a 50% dark tint and through the use of a crank style handle shall roll completely into the door housing. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR CAB CANOPY SIDE WINDOWS:**

The cab shall include a fixed driver’s and passenger side windows glass which shall be located between the cab front and rear doors. The glass shall be 17.5" wide x 23.5" high and shall include a 50% dark tint and shall be trimmed in a black anodized rubber ring for a tight seal when closed. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB INSULATION:**

The cab shall be completely insulated from road and vehicle resonance, exterior sound and thermal intrusion.  |  |  |  |
| The cab insulation system shall be comprised of three separate components each designed to assure optimal thermal and acoustic properties are achieved. Two layers of insulation material shall be utilized.  |  |  |  |
| A minimum of .8” of SCbond Polyurethane Foam insulation shall be applied as an additional insulation between the cab skin and all interior ceiling surfaces. The insulation shall have a density of 10 lb/ft3 +/-.5 providing better thermal properties and acoustic reduction properties. |  |  |  |
| A layer of 1/8” barrier bubble film laminated between two layers of reflective metalized film shall be provided in the roof to minimize the effects of radiant heat. The barrier shall be mold and mildew resistant and have a Class A/Class 1 fire rating. The barrier shall have a minimum of a R-5.6 rating. |  |  |  |
| The interior cab insulation system shall meet **NFPA 1901 14.1.6** standards and ensure that no seated position within the cab exceeds 90dB. This decibel rating shall be measured with the apparatus traveling 45 mph with climate control settings off. |  |  |  |
| All insulation used in the construction of the cab shall be marine grade featuring longevity and resistance to degradation. |  |  |  |
| Use of open cell material as the primary insulation will not be acceptable. **No exceptions** |  |  |  |
| Use of open cell material as the primary insulation will not be acceptable.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE TUNNEL INSULATION:**

The engine tunnel shall include an insulated barrier from noise on the underside of each tunnel surface. This barrier shall be engineered for surrounding engines. |  |  |  |
| The insulation barrier shall provide an acceptable decibel level within the cab meeting or exceeding the recommendations of **NFPA 1901.** |  |  |  |
| The thickness of the engine tunnel insulation shall be 1" thick. The insulating material shall be open cell polyether based foam with a textured surface, specifically designed for acoustic absorption.  |  |  |  |
| Use of aluminized faced material on the engine tunnel shall not be acceptable.  **No exceptions.** |  |  |  |
| The engine tunnel insulation shall be precisely cut and sealed to fit each segment on the underside of the tunnel surface. The insulation shall then be affixed by a pressure sensitive adhesive. |  |  |  |
| The insulation shall meet or exceed FMVSS 302 flammability testing. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB UNDERBODY INSULATION:**

The underside of the cab shall include at a minimum of 1" of a uni-seal Cab-Foam insulation offering reducing vibration noise and thermal effect to the interior of the cab. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DAMPING INSULATION:**

The entire cab, including the ceiling and walls shall include additional insulation reducing structure borne noise from vibration, impact and resonance within the cab. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **INTERIOR TRIM MATERIAL:**

The interior trim shall feature a 31 oz. marine grade vinyl which features a tensile strength of **ASTM D751** of excellent, tear strength meeting the Federal standard **191-5134** of excellent and shall be oil resistant passing the **CID-A-A-2950A** requirement for no permeation. |  |  |  |
| Due to the excellent qualities of the marine grade vinyl material, no other type of interior trim shall be acceptable. **No Exceptions** |  |  |  |
| The soft trim vinyl shall feature mildew resistance passing **ASTM G21-90** and shall be rated to -25 degrees Fahrenheit. |  |  |  |
| The vinyl shall be flame retardant meeting **California Fire Code 117, UFAC Class 1, and BIFMA Class 1** and shall have a high resistance to abrasion. |  |  |  |
| The interior of the cab side wall soft trim shall be black in color and the ceiling panel soft trim shall be gray in color. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR WALL INTERIOR MATERIAL:**

The rear wall of the cab shall be covered in aluminum diamond plate for durability and appearance. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FLOOR MAT:**

The interior flooring of the cab shall be covered with an advanced black multi-layer acoustic dampening mat. The floor matting shall be an open/closed cell, flexible polyurethane polyamide material with frictional dampening and dissipation properties. The mat shall be a fire and skid resistant non-wicking material. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **SUN VISORS:**

The driver and officer seats shall feature a sun visor mounted in the header over each seating position. The sun visors shall be green tinted plastic. |  |  | Yes |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **INTERIOR CAB FINISH:**

The interior cab shall be finished in a high performance polyurethane coating including the interior A, B, C and D pillars, all occupant seat frames and any surrounding surfaces extending to the ball seal around each door. This type of coating shall feature: |  |  |  |
| * Durability, scratch, chemical and abrasion resistance
 |  |  |  |
| * Consistent, even coverage and a uniform texture.
 |  |  |  |
| * Resistance from fading from exposure to UV light
 |  |  |  |
| * Black in color
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE TUNNEL:**

The distance from the back of the tunnel to the interior wall shall be 56" measured at floor level and 62" at top of engine tunnel. **No Exception**. |  |  |  |
| The engine tunnel shall be constructed of aluminum offering superior durability in addition to thermal and acoustic resistance. Covering the engine tunnel shall be a layer of formed composite material for a contoured transition into the dash and offering a pleasing appearance. |  |  |  |
| The tunnel shall feature Line-X bed liner coating for a durable finish. The color shall be black. |  |  |  |
| The engine tunnel shall feature:A low-profile design measuring approximately 46.5" wide and 23-1/2" in height from the crew floor shall offer optimum visibility of the windshield and cab interior from any seated position. **No Exception.** |  |  |  |
| The engine tunnel at the driver's position shall be a tapered design, featuring 24" clear width at floor level, first taper shall start 16" from floor level and taper inward for a clear width of 25.5" and the final taper shall start at 20.5" from floor level and taper inward for a clear width of 33". |  |  |  |
| The engine tunnel at the officer's position shall be a tapered design, featuring 22-1/2" clear width at floor level, first taper shall start 16" from floor level and taper inward for a clear width of 24" and the final taper shall start at 20.5" from floor level and taper inward for a clear width of 31-1/2". |  |  |  |
| The design shall offer a minimum of 30" for the driver and 28-1/2" for the officer as measured from the inside door pan to the top edge of the tunnel. The dimension measured at the "H" (hip) point, with the seat in the lowest position, shall be a minimum of 28-1/2" for the driver and 27" for the officer. **No Exception.** |  |  |  |
| Recessed sections for ease of mounting equipment at the rear of the tunnel or for compartments and bases which can be used for installing Fire/EMS equipment and components such as flashlights and light boxes. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PAC TRAC ON REAR ENGINE TUNNEL :**

There shall be two (2) pieces of 7000 Series Pac Trac provided on the rear of engine tunnel for the purpose of mounting equipment. The Pac Trac shall be full width of the engine tunnel, and Pac Trac 3-Section Z-Mount brackets shall be used for in the installation. |  |  |  |
| 8 equipment brackets PAC 1004 to be attached to the Pac Trac shall be provided by the bidder. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **MAP BOOK STORAGES :**

Two map book storages will be provided:One (1) at each front cab door entrance to accommodate a minimum of one (1) 2" three ring binders. The vertical mounted module shall include a nylon safety belt for retaining the binder when not in use. The compartment shall be fabricated of smooth aluminum with D/A orbital sander finish. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB DASH:**

The cab dash shall offer heavy duty, durable construction using resin transfer molding (RTM) technology formed composite material. The composite material shall be .28" thick for improved resistance and military type strength. |  |  |  |
| RTM is a low pressure, closed molding process which offers a dimensionally accurate and high quality surface finish composite molding, using liquid thermoset polymers reinforced with various forms of fiber reinforcements. The matrix selection of polymer and reinforcement dictates molding mechanical and surface finish performance.  |  |  |  |
| ABS polymer construction shall not be acceptable. **No Exceptions.**  |  |  |  |
| The cab dash and the engine tunnel of the cab shall be coated with Line-X bed liner coating for a durable finish. The color shall be black. |  |  |  |
| This construction shall allow for a clean, seamless dash area that shall reduce unnecessary joining of cab dash components. This design allows for the following features: |  |  |  |
| * Optimal heating and cooling of cab occupants, HVAC louvers shall be integrated into the gauge panel with a total of six (6) louvers; three louvers pointing at the driver and three louvers pointing at the officer.
 |  |  |  |
| * The cab dash instrument cluster shall be installed on a painted panel. This panel shall provide for easy removal to increase serviceability and provide ease of maintenance.
 |  |  |  |
| * For improved safety cab switches and controls shall be ergonomically located within easy reach of the driver when in the seated position with seatbelts fastened. This design will reduce driver distraction and increase safety by putting frequently accessed driver controls within easy reach to allow the driver more time to focus on the road.
 |  |  |  |
| * The officer side cab dash shall have a painted fire service grade RTM composite fiberglass panel that shall house the three HVAC louvers on the officer side. This panel will also provide ergonomically located switches and controls for the officer. All controls shall be within easy reach while in the seated position with seatbelts fastened.
 |  |  |  |
| * Access panels on the top of the dash for both the driver and officer sides easing maintenance access to controls, components and gauge assemblies
 |  |  |  |
| * The driver side dash shall include gauges for primary air pressure, secondary air pressure, a Pacific Insight instrumentation gauge panel and the DEF gauge as standard
 |  |  |  |
| * The dash shall have composite trim panels. The trim panels shall be red in color.
 |  |  |  |
| * The driver side dash shall also include two (2) lower panels to the left and right of the steering column for FMVSS switches such as the Off/Ignition and start switches and the park brake assembly
 |  |  |  |
| * The driver dash shall include a panel for inclusion of a Weldon Vista screen and six (6) additional switches or the HVAC controls and additional switching to the right of the Driver
 |  |  |  |
| * The officer dash shall include a flat area for optional mounting cradles or brackets for a laptop computer, mobile data terminal, map compartment or clip board
 |  |  |  |
| * The officer dash shall include a panel for inclusion of a Weldon Vista screen and or provisions for switches and gauges to the left of the Officer
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB DASH & ENGINE TUNNEL:**

The cab dash and the engine tunnel of the cab shall be coated with Line-X bed liner coating for a durable finish. The color shall be black. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **MODULAR CENTER DASH CONSOLE:**

The dash and front portion of the tunnel shall include an angled modular console centered between the driver and officer positions. |  |  |  |
| The console shall feature:A heavy-duty housing constructed from 14-gauge steel which is powder coated with a durable semi-gloss textured black finish to provide glare and corrosion resistance |  |  |  |
| The console top constructed of black anodized aluminum extruded rails which allow for mounting brackets, plates, and other console options |  |  |  |
| Integral nut tracks which allow mounting of equipment to the sides of the console by way of sliding 1/4"-20 hex nuts |  |  |  |
| A hinged lid constructed from 16-gauge steel also powder coated for corrosion resistance |  |  |  |
| The availability of pre-wiring for specific components |  |  |  |
| A modular design for ease of changes and future additions such as changing out brands of radio, types of sirens or adding accessory space.  |  |  |  |
| A black mounting plate containing a switch panel with seven (7) switches shall be provided and incorporated in the center dash console. |  |  |  |
| The console shall offer an available eight (8) zones configured with mounting plates for optional components as shown below: |  |  |  |
| **MICROPHONE TABS**Two (2) black mounting plate(s) containing mic tabs shall be provided and incorporated in the modular dash console. |  |  |  |
| The location(s) shall be as follows:One (1) Havis Console - Upper Portion |  |  |  |
| **BLACK MOUNTING PLATE FOR RADIO**One (1) black mounting plate(s) containing radio mounting shall be provided and incorporated in the modular dash console. |  |  |  |
| **BLACK MOUNTING PLATE FOR POWER POINTS**Two (2) black mounting plate(s) containing two (2) 12-volt power points and one (1) dual USB power point shall be provided and incorporated in the modular dash console. |  |  |  |
| **CONSOLE MOUNTED SIREN**One (1) black mounting plate(s) containing mounting for a siren shall be provided and incorporated in the modular dash console.The location(s) shall be as follows: |  |  |  |
| **BLACK MOUNTING PLATE**One (1) black mounting plate(s) containing blank plates shall be provided and incorporated in the modular dash console. |  |  |  |
| **CONSOLE MOUNTED ACCESSORY BOX**Two (2) black mounting plate(s) containing an open accessory box shall be provided and incorporated in the modular dash console. |  |  |  |
| **CONSOLE MOUNTED CUP HOLDER**Two (2) black mounting plate(s) containing two cup holders shall be provided and incorporated in the modular dash console. |  |  |  |
| **INSTRUMENTATION PANEL** The instrumentation panel inlay shall be painted job color. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB HEADER:**

The cab header shall offer heavy duty, durable construction using resin transfer molding (RTM) technology formed composite material. The composite material shall be .28" thick for improved resistance and military type strength. |  |  |  |
| RTM is a low pressure, closed molding process which offers a dimensionally accurate and high quality surface finish composite molding, using liquid thermoset polymers reinforced with various forms of fiber reinforcements. The matrix selection of polymer and reinforcement dictates molding mechanical and surface finish performance.  |  |  |  |
| ABS polymer construction shall not be acceptable. **No Exceptions.**  |  |  |  |
| The cab header shall offer a finish of a polyurethane coating for a rugged design and finish. No Exceptions. |  |  |  |
| The polyurethane finish shall provide a tough, flexible, impact-absorbing, chemical & abrasion-resistant, even-textured and skid-resistant surface. The polyurethane finish shall offer durability and scratch resistance even against today's advanced firefighting turnout materials with consistent, even coverage and a uniform texture. The polyurethane coating finish shall resist fading from UV light |  |  |  |
| The cab header shall also be purpose built for integration of Fire/EMS components and ease of maintenance with panels above both the driver and officer positions measuring 8" wide x 15"long for mounting radios, and switches. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HVAC HEATING AND COOLING SYSTEMS:**

The interior cab climate control shall be comprised of a triple system that shall include a defroster, a cab and crew heater and air conditioner for a complete HVAC system. The air conditioning system shall be comprised of compressor, condenser, and a minimum of three (3) evaporators to provide consistent temperature control throughout the entire cab.  |  |  |  |
| The system shall be rated as an Emergency Vehicle grade for the use in Fire and Rescue style vehicles and shall provide environmental air treatment in accordance with published SAE standards. |  |  |  |
| The HVAC system shall be tested and certified by the component manufacturer and a third party independent certified testing laboratory, including all three systems. Documentation of test results shall be provided with the bid. No Exceptions. |  |  |  |
| The HVAC system shall be a total and complete system, and shall provide sufficient defrosting, heating and cooling to the entire cab. The HVAC system shall meet or exceed all specified items without the use of auxiliary heating and cooling systems.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DEFROSTING SYSTEM:**

The defrosting system shall feature: |  |  |  |
| * To provide maximum defrost and heating performance, a 30,000 BTU heater-defroster unit with 718 CFM of air flow will be provided inside the cab.
 |  |  |  |
| * Easy access, a removable cover and strategic location under the center portion of the instrument panel.
 |  |  |  |
| * Six (6) vents shall be located in the top forward portion of the dash for superior defrosting properties across the entire windshield.
 |  |  |  |
| * The system shall be capable of clearing 90 percent or more of the windshield in fifteen (15) minutes or less after a three (3) hour cold soak at 0 degrees Fahrenheit (-17.78 degrees Celsius).
 |  |  |  |
| * The system shall exceed Flash Fogging standards that are set forth in the SAE Heavy Duty Cab with Sleeper specifications. Documentation from a third-party testing facility shall be available upon request. No Exception.
 |  |  |  |
| * An integral aluminum frame air filter, high performance dual scroll blowers, and ducts designed to provide maximum defrosting capabilities for the one (1) piece windshield.
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HEATING SYSTEM:**

The heating system shall feature: |  |  |  |
| * Delivery of a minimum of 82,000 BTU/hour of heat to the entire cab.
 |  |  |  |
| * Heat and air circulation shall be provided to the driver and officer foot area of the cab as standard through ducting in the foot well area of both positions. **No Exception**
 |  |  |  |
| * Substantial air movement and heating provided to the driver and officer's position, with six (6) adjustable louvers, located in the dash, three (3) adjustable louvers directed at the driver and three (3) adjustable louvers directed at the officer
 |  |  |  |
| * Dual overhead units, with five (5) adjustable louvers shall be mounted above the rear facing seat positions on the driver and officer side of the cab
 |  |  |  |
| * A minimum of 880 CFM of air flow measured at the front seated positions and 1580 CFM of air flow per side in the rear seated positions for a combined total of 4040 CFM of air flow in the cab. No Exceptions.
 |  |  |  |
| * The heater shall be plumbed with a shut off valve at the engine, so that the coolant bypasses the heaters.
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AIR CONDITIONING:**
 |  |  |  |
| The air conditioning system shall feature:* A minimum of 96,000 BTU/hour of cooling capacity to the entire cab.
 |  |  |  |
| * One (1) evaporator shall be located under the center dash and Two (2) crew overhead evaporators located near the B-pillar on each side of the cab allowing for greater frontal visibility for the forward-facing crew seating and allowing for more interior mounting of accessories.
 |  |  |  |
| * A gravity condensation drain system shall be utilized. These drains shall remove all condensation from the evaporator units and direct it to the exterior of the chassis cab for optimal performance.
* Systems utilizing pumps to remove condensation, or gravity systems with poles or other obstructions located within the cab to route drains through shall not be acceptable. **No Exceptions.**
 |  |  |  |
| * Substantial air movement for optimum cooling shall be provided to the driver and officer positions, with six (6) adjustable louvers, located in the dash, three (3) adjustable louvers shall be directed at the driver and three (3) adjustable louvers shall be directed at the officer
 |  |  |  |
| * The air condition system shall be capable of cooling the cab from 110 degrees Fahrenheit (43.33 degrees Celsius) to 70 degrees Fahrenheit (21.11 degrees Celsius) at 60% humidity in less than 30 minutes with an engine RPM of 1400; and cool the cab from 100 degrees Fahrenheit to 73 degrees Fahrenheit at 80% humidity, after a three (3) hour heat soak. A certification document from the testing facility shall be available upon request. No Exception.
 |  |  |  |
| Proposals offering ceiling mounted evaporator units in the center of the cab above or on the engine tunnel shall not be accepted as this is a safety consideration due to the lack of visibility and communication within the cab. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB PAINT AIR CONDITIONING CONDENSER COVER:**

The air conditioning condenser cover shall be made out of aluminum and shall be painted to match the roof color. Plastic condenser covers will not be acceptable. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HEATER HOSE:**

The heater hose inside the cab for the HVAC system shall be premium silicone hose. |  |  |  |
| The heater hoses leading from the engine to the cab shall include a foam insulation wrap which runs the length of the hose improving heating in extreme cold climates. The heater hoses which shall be routed inside the cab shall not be insulated. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CONDENSER:**

The cab air conditioning system shall include one (1) low profile HE-condenser which shall be centered forward on the roof of the cab. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AUXILIARY DEFROSTER FANS:**

Two (2) each 6" diameter defrost fans integrated into the driver and officer header angled towards the windshield for improved air circulation. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HEATING AND COOLING CONTROLS:**

The HVAC system shall be controlled through all available vistas, and the HVAC system for the crew area shall be controlled through a manual panel located in the crew area.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR CREW ARE CONTROLS – REAR FACING DRIVER’S SIDE:**

The controls for the crew area heat shall be mounted overhead, centered between the rear facing seating position. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DRIVER SEAT:**

This seat in cab shall be black in color with red seat belt.The driver's seat shall be a 911 Seats XL wide series seat. Standard features of this 10way Non SCBA 3pt ABTS (all belts to seats) include 108 degree recline, adjustable headrest, wide contoured back with 2 way adjustable lumbar. Electronic adjustments include fore/aft, up/down, front/rear tilt. |  |  |  |
| The seat shall feature an XL 21-inch-wide comfort cushion including Seats Incorporated exclusive EVC (elastomeric vibration control); easing tailbone pressure, enhancing comfort and reducing vibration by up to 50%. This system has Seats Inc’s D2 (dual density) foam combining a soft topper foam pad further enhancing comfort, and a high-density bottom foam base to promote longevity.Cushion reinforced with French seaming and is NFPA compliant with an occupancy sensor. |  |  |  |
| The seat shall feature 3pt ABTS (all belts to seats). The seat belt shall feature Ready Reach to ensure that the seat belt is easy to see and grab while in full turnout gear. |  |  |  |
| The seat back shall incorporate a standard style headrest and have the fire department logo. |  |  |  |
| The driver’s electric seat shall be installed in an ergonomic position in relation to the cab dash. |  |  |  |
| The power seat or seats installed in the cab shall be wired directly to battery power. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DRIVER SEAT BOX STORAGE COMPARTMENT:**

There shall be a storage area under the driver’s seat. The compartment shall be 21.25 inches wide, 22.50 inches long, and 6.25 inches high. The access opening shall be 15.00 inches wide and 4.50 inches high.There shall be an aluminum diamond plate door cover provided for the driver’s and officer seat compartment. It shall be equipped with a piano style hinge and a manual latch. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **OFFICER SCBA SEAT :**
 |  |  |  |
| The officer seat shall be 911 Seats Incorporated 911 Seats XL, wide series seat, SCBA.The seat shall feature 3pt ABTS (all belts to seats). The seat belt shall feature Ready Reach to ensure that the seat belt is easy to see and grab while in full turnout gear.The seat shall feature a 21-inch-wide XL comfort cushion including Seats Incorporated exclusive EVC (elastomeric vibration control); easing tailbone pressure, enhancing comfort and reducing vibration by up to 50%. This system has Seats Inc’s D2 (dual density) foam combining a soft topper foam pad further enhancing comfort, and a high-density bottom foam base to promote longevity.  Seat to include wide comfort back with contoured foam.Cushion reinforced with French seaming and is NFPA compliant with an occupancy sensor.Seat back shall include a Ziamatic brand EZ-LOC® mechanical self-contained breathing apparatus (SCBA) bracket.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **OFFICER’S SEAT BOX STORAGE COMPARTMENT:**

There shall be a storage area under the officer’s seat. The compartment shall be 19.75 inches wide, 17.50 inches long, and 6.25 inches high. The access opening shall be 9.00 inches wide and 4.50 inches high.There shall be an aluminum diamond plate door cover provided for the officer’s seat compartment. It shall be equipped with a piano style hinge and a manual latch. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR FACING OUTER SCBA SEAT:**
 |  |  |  |
| Two (2) rear facing outer crew area seats shall be 911 Seats Incorporated XL, wide series flip bottom seats. |  |  |  |
| The seat(s) shall also feature a 21-inch-wide XL comfort cushion including Seats Incorporated exclusive EVC (elastomeric vibration control); easing tailbone pressure, enhancing comfort and reducing vibration by up to 50%. This system has Seats Inc’s D2 (dual density) foam combining a soft topper foam pad further enhancing comfort, and a high-density bottom foam base to promote longevity. Seat to include wide comfort back with contoured foam.  |  |  |  |
| The seat shall feature 3pt ABTS (all belts to seats). The seat belt shall feature Ready Reach to ensure that the seat belt is easy to see and grab while in full turnout gear.  |  |  |  |
| The seat back shall include a Ziamatic brand EZ-LOC® mechanical self-contained breathing apparatus (SCBA) bracket. |  |  |  |
| Each rear facing outer seat shall be mounted facing the rear of the cab. |  |  |  |
| 1. **FORWARD FACING OUTER SCBA SEAT:**

Two (2) forward facing outer seats shall be Seats inc 911XL flip-up SCBA seats and shall feature all the seat belts within the seat (ABTS).  |  |  |  |
| The seat(s) shall also feature a 21-inch-wide XL comfort cushion including Seats Incorporated exclusive EVC (elastomeric vibration control); easing tailbone pressure, enhancing comfort and reducing vibration by up to 50%. This system has Seats Inc’s D2 (dual density) foam combining a soft topper foam pad further enhancing comfort, and a high-density bottom foam base to promote longevity.  Seat to include wide comfort back with contoured foam. |  |  |  |
| The seat shall feature 3pt ABTS (all belts to seats). The seat belt shall feature Ready Reach to ensure that the seat belt is easy to see and grab while in full turnout gear. |  |  |  |
| The seat back shall include a Ziamatic brand EZ-LOC® mechanical self-contained breathing apparatus (SCBA) bracket. |  |  |  |
| The forward facing center seats shall be installed facing the front of the cab. |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **SEAT FRAME FORWARD FACING ENCLOSED:**

The forward facing outer seats shall include enclosed seat frames which are located and installed on the rear wall on both the driver and officer side. |  |  |  |
| The seat box shall be constructed of no less than 5052-H32 .19" thick aluminum plate. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **SEAT FRAME FORWARD FACING ACCESS:**

The seat frame shall include a cutout in the center of the wall facing the tunnel for access. The cutout shall be a minimum of 7.5”h x 28”w. |  |  |  |
| The seat frame shall include a diamond plate door with a flush latch in the center of the wall facing the tunnel. |  |  |  |
| The seat frame shall be finished to match the interior finish of the cab. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **SEATS FEATURES:**
 |  |  |  |
| All seats shall include a covering of Endurance Vinyl, the vinyl shall be a high strength, and easy to clean. Endurance Vinyl shall be easier to clean and higher durability than standard vinyl. |  |  |  |
| All SCBA seats backs shall include a Ziamatic brand EZ-LOC® mechanical self-contained breathing apparatus (SCBA) bracket. The Positive Locking Mechanical walk away bracket shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of fire truck cabs. The bracket shall be third Party tested to ten (10) times the force of gravity.The bracket shall secure a self-contained breathing apparatus with all sizes of cylinders without the need of tools for adjustment. The bracket shall securely lock the SCBA in place without damaging the cylinder wall. The bracket shall also include an integrated center cushion release handle which activates the lever on the bracket saving the occupant from reaching behind the SCBA in order to release the bracket.The basic bracket and clamp arms shall be made of strong, yet light-weight, aluminum alloys. Hex arms and operating levers shall be plated steel to withstand years of constant use. The bracket shall allow donning of the SCBA in a fast and easy manner.All SCBA seats shall come with a parade panel. |  |  |  |
| All seats shall have a 7-year manufactures warranty. **No exception**. |  |  |  |
| All seats head rests shall have the fire department logos. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **EXTERIOR GRAB HANDLES:**

One (1) Black 18” exterior assist handle shall be mounted behind each of the cab doors. The grab handle shall be made of 1.25” diameter aluminum to enable non-slip assistance with a gloved hand and mounted on stanchions. The handle shall feature white LED lights which shall illuminate when the respective door is opened. The handles shall be mounted to the cab with nutserts. No Exception.The grab handle lights shall activate when the park brake is engaged. |  |  | Yes |

|  |  |  |
| --- | --- | --- |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **SCUFF PLATE:**

The grab handles shall include a stainless-steel scuff plate to protect painted surfaces. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB FASCIA:**

The cab fascia shall offer a traditional, yet aggressive appearance, in its design and shall be constructed of work-hardened 5052-H32 aluminum. This design shall feature: |  |  |  |
| * A super structure which is fully welded to the cab, for a seamless and robust integration
 |  |  |  |
| * Thermoformed headlamp bezels, constructed of impact resistant, polycarbonate composite which is vacuum metalized to eliminate pealing and bubbling of a chrome type film or plating
 |  |  |  |
| * Traditional style headlight bezels with 4 x 6 high intensity headlights which shall add a classic look to the fascia while improving visibility.
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT GRILLE:**

A prominent front grille shall punctuate the aggressive design of the cab with its outboard wing style warning light bezels and heavy framework. The front grille shall feature: |  |  |  |
| * Fabricated construction for superior strength and durability
 |  |  |  |
| * Line-X black finish for a distinctive appearance
 |  |  |  |
| Two (2) 4” x 6” warning light locations in the upper wings |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **LIGHT BEZEL:**

The front grille shall include wing light bezels that are able to house two (2) 4" x 6" lights. The bezels shall be constructed of steel and coated in black Line-X. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DEPARTMENT NAME ON CENTER GRILLE BAR:**

The fire department's name shall be laser cut into the center bar of the stainless steel grille. There shall be rooom for up to ten (10) characters that are three-inch (3") tall. |  |  |  |
| 1. **GRILLE BACK LIGHTING:**

The fire department's name shall be back lit in blue. The grille light shall come on with the E-Master switch or when the park brake is set. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT GRILLE INLAY:**

The front grille shall include a honeycomb inlay of steel, painted black, which shall provide air flow to through the grille and provide a sporty, muscular appearance to the front of the apparatus |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FLUID FILLS & CHECK:**

For ease of maintenance and access, the following fluid checks shall be located behind the tiltable and/or removable mesh panel:* Engine Oil dipstick
 |  |  |  |
| * Engine Coolant Sight Glass
 |  |  |  |
| * Power Steering Fluid dipstick
 |  |  |  |
| * Windshield Washer Fluid
 |  |  |  |
| The following fluid fill shall be located behind the tiltable and/or removable mesh panel: |  |  |  |
| * Engine Oil
 |  |  |  |
| * Power Steering
 |  |  |  |
| * Windshield Washer
 |  |  |  |
| Proposals including access to fluid checks through the tunnel or by raising the cab shall not be considered. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **LED HEADLIGHTS:**

A set of 4 FireTech 4X6 LED Headlights shall be provided. The kit shall consist of 2 fixtures which operate as SAE VOR “high/low” beams, and 2 fixtures which operate as SAE VO “high-only” beams. All 4 headlights shall have a SAE “P” parking lamp halo surrounding the driving beams, which shall be energized any time the vehicle park brake is set. Optically, on the high/low headlight, an articulated set of elliptical optics must be used to illuminate the foreground while operating in “low” beam mode. The lens of the high/low beam headlight shall be marked “DOT VOR SAE HL P 16.” The lens of the high-only beam shall be marked “DOT VO SAE HL P 16.” All circuits of the headlights shall be designed to operate from 9-32v DCAll 4 fixtures must be manufactured such that the internal pressure of the headlight remains constant regardless of operating temperature. The housing shall be equipped with a mechanically fastened GORE PolyVent. Similar functioning vent materials affixed to the housing using adhesive shall not be acceptable for substitution.The headlights shall be installed, wired, and aimed, in accordance with FMVSS108. The manufacturer of the headlights shall warrant the headlights against defects for the life of the apparatus.The headlights shall be warranted against failure and condensation accumulation by Hiviz for the life of the apparatus. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DAYTIME RUNNING LIGHTS:**

The daytime running light feature shall include the headlights on low beam and the marker lights shall be illuminated and a wig-wag or alternating feature. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HEADLIGHT FLASHER:**

Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per **NFPA**, these clear flashing lights will also be disabled “On Scene” when the park brake is applied. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HEADLIGHT FLASHER SWITCH:**

The alternating high beam headlamp switch shall be located in the VISTA screen. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HEADLIGHT LOCATION:**

The headlights shall be located on the front fascia in the lower buckets, on each side of the cab grille. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT TURN SIGNALS:**

Two (2) Whelen M6 LED square, front turn signal assemblies shall be provided. Each turn signal shall be mounted in an attractive façade style black bezel which is an integral part of the fascia. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TURN SIGNAL LOCATION:**

The turn signals shall be located on the front fascia directly below the headlights, one each side of the cab grille. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **SIDE MARKER LIGHTS:**

Two (2) Weldon amber LED round, side marker light assemblies shall be mounted in a black bezel on the side of the cab ahead of the driver door, adjacent to the front head lamp bezel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HEADLIGHT AND MARKER LIGHT ACTIVATION:**

The head light and marker lights shall be activated through a switch on the driver's panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT MARKER LAMPS:**

The cab front shall include five (5) LED amber marker lamps above the windshield in accordance with the Department of Transportation requirements.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB FENDERS:**

The cab wheel wells shall include full width, 14-gauge 304 stainless-steel cab fenders to resist corrosion and enable easier cleaning maintenance. The fenders shall be powder coated black with a slight texture. The inner liner, measuring 18" wide shall be constructed of plastic with an outer fenderette measuring 2.5" wide. The inner liner shall be installed with 410 stainless-steel hardware that has been coated with black zinc oxide. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT MUD FLAPS:**

The cab and chassis shall be provided with rubber front mud flaps. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB TILT SYSTEM:**

The cab shall be a full tilt style. A hydraulic cab lift system shall be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves.  |  |  |  |
| The dual lift cylinders shall lift the cab 45 degrees from a horizontal plane facilitating easy engine maintenance and possible removal. |  |  |  |
| The center line of the chassis cab tilt shall be a minimum of 76" from the center line of the front axle, providing a large corridor between the cab and front tire for maximum work space and accessibility to fan, fan belt, fan drive, air compressor, power steering pump, alternator and air filter. |  |  |  |
| The tilt angle shall allow access to the engine and area under the cab without contacting any components mounted to the gravel shield.  |  |  |  |
| The cab shall include a four (4)-point rubber isolated cab pivot and mounting system. The rear histic mounts shall be isolated from the chassis frame to reduce the transfer of road vibrations and frame torque into the cab, while providing superior handling characteristics. |  |  |  |
| The cab shall be locked down by a two (2)-point automatic spring-loaded hook mechanism that actuates after the cab has been lowered. |  |  |  |
| The cylinders shall include blocking valves which prevent motion when no control buttons are pushed. In the event of a hydraulic system failure, the valves shall retain the fluid in the cylinders. |  |  |  |
| A redundant mechanical stay arm shall automatically be engaged once the cab has been fully raised. Before lowering the cab, this device must be disengaged using the stay arm control located on the driver’s side rear of the cab. |  |  |  |
| All mounting points shall be bolted directly to the frame rail. |  |  |  |
| The cab lift safety system shall be interlocked with the parking brake. The cab tilt mechanism shall be active only when the parking brake is set and the battery master switch is in the on position. If the parking brake is release, the cab tilt mechanism shall be disabled. |  |  |  |
| A warning light shall illuminate in the cab instrument panel to indicate whenever the cab is not fully latched in the locked down position, and the parking break is release. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB TILT LIMIT SWITCH:**
 |  |  |  |
| An adjustable cab tilt limit switch shall be included with the cab tilt system. The switch shall effectively limit cab's travel to avoid impact with bumper mounted items, or station ceiling clearance, when being tilted. |  |  |  |
| There shall be a safety bar to hold the cab at the new adjusted height for additional safety. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB TILT LOCK DOWN INDICATOR:**
 |  |  |  |
| The cab dash shall include a message located within the dual air pressure gauge which shall alert the driver when the cab is unlocked and ajar. The alert message shall cease to be displayed when the cab is in the fully lowered position and the hold down hooks are secured and locked to the cab mounts. |  |  |  |
| In addition to the alert message an audible alarm shall sound when the cab is unlocked and ajar and the parking brake is released. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REARVIEW MIRRORS:**
 |  |  |  |
| Retrac Aerodynamic West Coast style dual vision mirror heads model 613815 shall be provided and installed each of the front cab doors. The mirrors shall be mounted via 1" diameter tubular Stainless-steel arms to provide a rigid mounting to reduce vibration.The mirrors shall measure 8" wide x 19" high and shall include an integral convex mirror in the mirror head below the flat glass to provide wider field of vision. The flat and convex mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The flat and convex mirrors shall be heated for defrosting in severe cold weather conditions.  The mirror backs shall be constructed of vacuum formed black ABS plastic housings that shall be corrosion resistant and shall include an amber marker light. The mirrors shall be manufactured with the finest quality non-glare glass.There shall be one 8.00 inch round convex mirror mounted to the upper right corner of the cab. The convex mirror housing shall be Black color Line-X |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REARVIEW MIRROR REMOTE ACTIVATION:**

The driver's panel shall include activation for the rearview mirrors remote function. The activation for the mirror heat shall be through the Weldon Vista screen. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TWO (2) TONE CAB PAINT:**
 |  |  |  |
| The cab surface shall be thoroughly washed with grease cutting solvent (PPG DX330) prior to any sanding. The cab surface shall then be sanded and minor imperfections filled and sanded. The prepared surface shall then be washed again with (PPG DX330) to remove any contaminants from all surfaces to be painted. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB PAINT EXTERIOR BREAKLINE:**

The upper and lower paint shall meet on the cab as defined at the pre-con meeting.A provision for a bandit style paint shall be included. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB UNDERCOAT:**

The cab shall have an undercoat applied prior to the cab being set on the running gear. The under coat shall be a waterborne, one-component, air dry undercoat formulated to prevent chipping, cracking and marring of painted or unpainted surfaces after exposure to high impact sand, gravel or other abrasive materials. It shall also have high corrosion resistance. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT AXLE:**

A Marmon-Herrington front drive axle shall be incorporated as the front axle for the chassis. The axle shall feature: |  |  |  |
| * A capacity of 23,000 pounds
 |  |  |  |
| * Designed for as needed AWD operation
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT WHEEL BEARING LUBRICATION:**

The front axle wheel bearings shall be lubricated with oil. The oil level can be checked in the front axle hubs. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT SUSPENSION:**

The front suspension shall include a Hendrickson leaf spring suspension. The suspension shall feature: |  |  |  |
| * Capacity rating of 23,000 pounds
 |  |  |  |
| * 9 Leafs
 |  |  |  |
| * A Grease fitting
 |  |  |  |
| * Double wrapped front eye
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT SHOCK ABSORBERS:**

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.  |  |  |  |
| The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would. |  |  |  |
| The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and “road sensing” shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers.  |  |  |  |
| Proposals offering the use of conventional twin tube or “road sensing” designed shocks shall not be considered. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **POWER STEERING GEAR WITH ASSIST:**

The power steering gear shall be a TRW model TAS 85 and shall include the following: |  |  |  |
| * A balanced, hydraulic, positive displacement, sliding vane power steering pump which is gear driven from the engine
 |  |  |  |
| * One-piece, 2" diameter drag link for maintaining consistent wheel alignment resulting in less maintenance.
 |  |  |  |
| * The steering gear shall be mounted on a plane that is at a 9-degree angle in relationship to the center plane of the chassis. This mounting technique is designed to reduce the operating angle of input steering shafts. A more direct, responsive, and smoother handling vehicle will result from these unique design characteristics.
 |  |  |  |
| A certified torque and geometry study by TRW shall be available upon request |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TRANSFER CASE:**

The front axle shall be driven by a two-speed transfer case designed for front engine applications. The transfer case shall have the capability to be in either high or low speed range. Power shall be supplied into the top shaft, out of the bottom shaft to the rear axle with an internal air engaged disconnect and to the front axle with an air engaged front axle disconnect. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ALL-WHEEL DRIVE ACTIVATION:**

The all wheel drive shall be engaged through a switch located in the driver's console. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CHASSIS ALIGNMENT:**

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the apparatus manufacturer. |  |  |  |
| Alignment documentation shall be available upon request. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT AXLE CRAMP ANGLE:**

The chassis shall have a front axle cramp angle of 35 degrees to the left and right. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT TIRES:**

The front tires shall be Michelin 445/65R 22.5 20PR “L” tubeless radial Xone Line grip D mixed service tread.  |  |  |  |
| The front tires shall feature:A stamped load capacity of 25 600 pounds per axle with a speed capacity of 65 miles per hour when properly inflated to 115 pounds per square inch. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT WHEEL:**

The front wheels shall be Alcoa hub piloted, 22.50 inch X 13.00-inch aluminum wheels.The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and a polished finish that lasts.The outer wheels and lug nut covers shall be finished with powder coated black. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT BRAKES:**

The chassis shall include front brakes which are a Bendix brand, 16.5" x 7" S-cam drum type. Front brakes shall include brake chambers supplied and approved per application. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT BRAKE SLACK ADJUSTERS:**

The front brakes shall include automatic slack adjusters shall be installed on the chassis which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **STEERING COLUMN AND WHEEL:**

The cab shall include a Douglas Autotech steering column. The steering column shall feature an 18”, four (4) spoke steering wheel located at the driver’s position; a five (5) position tilt and 2.25” telescopic adjustment. The steering wheel shall be provided with a black vinyl cover with foam padding and a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.  |  |  |  |
| The chassis shall include dual electric 12-volt horn with a minimum 110 decibels. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR AXLE:**

A single Meritor RS-25-160 driving axle shall be incorporated as the rear axle for the chassis. The axle shall feature: |  |  |  |
| * Rated capacity of 27,000 pounds
 |  |  |  |
| * Heavy duty Hypoid gearing for longer life, increased strength and quieter operation
 |  |  |  |
| * Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage
 |  |  |  |
| * Rigid differential case for high axle strength and reduced maintenance
 |  |  |  |
| * Rugged Dependability
 |  |  |  |
| * Rectangular shaped, hot formed housing with a standard wall thickness at spring seat of .63” for extra strength and rigidity
 |  |  |  |
| * Precision forged, single differential gearing
 |  |  |  |
| * 2-year warranty
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR AXLE DIFFERENTIAL LUBRICATION:**

The rear axle differential shall be lubricated with oil.The oil shall be synthetic. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR SUSPENSION:**

The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type parabolic multi-leaf spring suspension, with 57.50 inch X 3.00 inch springs. One (1) adjustable and one (1) fixed torque rod shall be provided.  |  |  |  |
| The rear suspension capacity shall be rated at 27,000 pounds based on the capacity of the brakes and rear tires. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR BRAKES:**

The rear brakes shall be Meritor 16.50 inch X 7.00-inch S-cam drum type. |  |  |  |
| The rear brakes shall include brake chambers supplied by Meritor and shall be approved per application. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR BRAKE DUST SHIELDS:**

The rear brakes shall be equipped with brake dust shields |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR BRAKE SLACK ADJUSTERS:**

The rear brakes shall include Meritor automatic slack adjusters installed on the axle which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR SHOCK ABSORBERS:**

Shock absorbers shall be supplied by the suspension manufacturer and installed on the rear axle suspension. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR AXLE DIFFERENTIAL CONTROL:**

The rear axle shall include a driver controlled differential lock. This shall allow the main differential to be locked and unlocked when encountering poor road or highway conditions, where maximum traction is needed, for use at speeds no greater than 25 MPH.  |  |  |  |
| The differential lock shall be controlled by a switch with in easy reach of the driver. The light on the switch shall illuminate with positive engagement of the differential control. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR TIRES:**

The rear tires shall be Michelin 12R-22.5 16PR "H" tubeless radial XDN2.  |  |  |  |
| The rear tires shall feature:* All weather tread designed for premier traction and mileage
 |  |  |  |
| * A stamped load capacity shall of 27,120 pounds per axle with a speed capacity of 75 miles per hour when properly inflated to 120 pounds per square inch
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR WHEELS:**

The rear wheels shall be Alcoa hub piloted, heavy duty, 22.50 inch x 8.25-inch aluminum wheels. The wheels shall be forged from a single piece of aluminum which shall be corrosion resistant, engineered to be lightweight and provide exceptional performance. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.The outer wheels and lug nut covers shall be finished with powder coated black. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HUB AND LUG NUT COVERS:**

The apparatus shall have steel hub and lug nut covers on the front and single rear axles.The hub and lug nut covers shall be finished with powder coated black. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR MUD FLAPS:**

One (1) pair of black mud flaps shall be installed behind the rear wheels. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TIRE BALANCING:**

There shall be counter acting balancing beads used in all of the tires |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **VALVE STEM EXTENSION - SINGLE AXLE:**

To allow for easy checking and inflation of the rear inner tire it shall be equipped with a multi-layer valve stem extension, the layers shall be as follows: starting from the inner to out layer, stainless steel metal core, air tube, stainless steel jacket, protective color. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TIRE PRESSURE INDICATOR:**

There shall be a tire pressure indicator at each tire’s valve stem on the vehicle that shallindicate if there is insufficient pressure in the specific tire. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **VEHICLE TOP SPEED:**

The top speed of the vehicle shall be programmed at approximately 65 MPH +/-2 MPH at governed engine RPM. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BRAKE SYSTEM:**

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir systems with a minimum of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. A spring brake valve shall be installed to provide a controlled service brake application during an unlikely event including primary air supply loss. The system shall include an anti-compounding feature. All air reservoirs provided on the chassis shall be labeled for identification. |  |  |  |
| The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI. |  |  |  |
| A four (4) sensor, four (4) modulator Anti-lock Braking System (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards. |  |  |  |
| The Meritor Wabco ABS system shall come with a three (3) year/300,000 mile parts and labor warranty. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AIR TANK BRACKETS & STRAPS:**

The air tank(s) shall be mounted to the frame rail with brackets that are hot dipped galvanized thereby creating a barrier and cathodic protection from corrosion, and eliminating the requirement for finish paint and the subsequent requirements for touch up paint and/or total repaint after a period of time due to nicks, chips and corrosion. Powder coated or painted air tank brackets shall not be accepted. No exception.All of the air tank straps shall be plastic coated stainless steel cable. **No Exception.** |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PARK BRAKE:**

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.Park brake system shall include an anti-compounding feature. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PARK BRAKE CONTROL:**

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color. |  |  |  |
| The parking brake actuation valve shall be mounted on the driver's side dash to the right of the steering column within easy reach of the driver. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AIR DRYER:**

The brake system shall include a Wabco System Saver 1200 Plus air dryer with an integral 100-watt heater with a Metri-Pack sealed connector. The system shall have an integrated purge volume and integrated governor.  |  |  |  |
| The system shall have the following features:* Premium desiccant provides greater water adsorption
 |  |  |  |
| * Replaceable spin on cartridge for simple maintenance
 |  |  |  |
| * Compact light weight design
 |  |  |  |
| * Pressure relief safety valve
 |  |  |  |
| * Turbo cut-off valve for boosted compressor applications
 |  |  |  |
| * Service components are external for easy replacement
 |  |  |  |
| * Common service components proven for reliability and quality
 |  |  |  |
| * Integrated with the air governor.
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AUXILIARY AIR TANK:**

An auxiliary air tank shall be installed on the chassis to act as an additional reserve supply to the air system for the air horn, any air tools, or other non-service brake use. |  |  |  |
| The reservoir shall offer a 1700 cubic inch reservoir, isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **MOISTURE EJECTORS:**

Heated, automatic moisture ejectors with a manual drain provision shall be installed on all reservoirs of the air supply system. The manual drain provision shall include an actuation pull cable coiled and tied at each drain valve. The supplied cables when extended shall be sufficient in length to allow each drain to be activated from the side of the apparatus. |  |  |  |
| Five (5) cables from the spring-loaded air tank drain shall be routed and attached to the outer edge of the apparatus for ease of access. The 1/8" braided steel cable shall allow accumulated moisture in the air brake system to be easily drained. The cable shall be installed so that maximum ground clearance is maintained. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AIR SUPPLY LINES:**

A dual air system plumbed with color coded reinforced nylon tubing air lines shall be installed on the chassis. The primary (rear) brake line shall be green, the secondary (front) brake line orange, the parking brake line yellow and the auxiliary (outlet) will be black; in accordance with SAE standards. **No Exception.**   |  |  |  |
| Brass push-lock type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AIR HORN RESERVOIR:**

One (1) air tank, with a 1200 cubic inch reservoir, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRAME:**

The chassis frame shall consist of two (2) “C” style parallel rails, constructed of high strength low alloy and shall feature the following: |  |  |  |
| * A Stenx MODEL 110XF 10.19” high by 3.63” deep cold rolled steel frame or equivalent.
 |  |  |  |
| * .38” thick flange
 |  |  |  |
| * Inner channel measuring 9.31" high x 3.25" deep x .25" thick
 |  |  |  |
| * The 10.19” frame height shall be maintained throughout the entire length of the frame to allow for maximum storage capacity for the entire apparatus.
 |  |  |  |
| If frame rails that are larger than those specified are to be utilized, the maximum height of each frame rail shall not exceed 10.25” at any point on the frame rail. This will ensure the lowest possible vehicle center of gravity allowing maximum stability as well as providing the lowest body height possible. |  |  |  |
| * Frame rail shall have a consistent frame web throughout the entire length.
 |  |  |  |
| * The entire frame rail design shall be manufactured in the United States of America and readily available on the aftermarket.
 |  |  |  |
| * Grade 8 Structural fasteners, Huck bolts shall not be acceptable. No Exception.
 |  |  |  |
| * The hardware used for the chassis shall be are to be corrosion resistant. The process shall be dip-spin-bake coated with two coats of zinc/aluminum metal flake coating in an inorganic binder. Coating one is to be zinc flake and coating two is to be aluminum flake. The zinc flakes sacrificially corrode to protect the base metal. The aluminum flakes prolong the life of the zinc. Salt fog test life, based on ASTM B117 on unassembled fasteners, is 1000 hours to red rust. The same test on assembled fasteners is 750 hours to red rust. The two-step coating is RoHS compliant as it eliminates the hexavalent chromium used in the passivation of electroplated zinc coatings to create yellow zinc (zinc dichromate). The elimination of the zinc plating also greatly reduces the likelihood that hydrogen embrittlement will occur. Hydrogen embrittlement is a side effect of electroplating that reduces toughness and can lead to fracture. **No Exception**
 |  |  |  |
| * Manufacturer's lifetime warranty
 |  |  |  |
| The frame ratings shall be as follows:* 110,000 PSI minimum yield strength high strength low alloy steel
 |  |  |  |
| * Minimum Resisting Bending Moment (RBM) of 2,810,000 inch pounds per rail
 |  |  |  |
| To avoid frame cracking and failure over time, the top flange of the frame adjacent to the engine installation shall have a tapered design. Notches for engine components shall not be accepted due to fatigue and the potential for cracking. **No Exceptions.**A single piece 80,000 PSI steel extension shall be installed on the front of the frame rails. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **UNDER FRAME REINFORCEMENT:**

An under slung frame reinforcement shall be installed below the frame rails in the transmission area to increase the vertical rigidity of the frame.  |  |  |  |
| The under-frame reinforcement provides:* Enhanced handling
 |  |  |  |
| * Improved ride quality
 |  |  |  |
| * Increase resistance to frame and cross member fatigue
 |  |  |  |
| * Enhanced vehicle stability providing improved safety to occupants
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CROSS MEMBERS:**

There shall be a minimum of seven (7) steel plate cross members installed on the apparatus.  |  |  |  |
| * 50,000 psi minimum yield strength steel plate cross members
 |  |  |  |
| * Manufacturer's lifetime warranty to match frame warranty. No Exceptions.
 |  |  |  |
| * Installed with one-piece cross member gusset to maximize vertical strength and minimize cross member flex
 |  |  |  |
| Crossmembers can be inverted when required to allow for PTO drive line installation without the need for notching or modifying the cross members in anyway. **No Exceptions.** |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRAME FINISH:**

Prior to assembly, each frame rail section and cross members shall be hot dip galvanized. The galvanizing process will permeate each frame section to prevent rust and corrosion and not be merely an over-coating. The galvanized frame sections shall be provided in the natural finish eliminating the requirement for finish paint and the subsequent requirements for touch up paint and/or total repaint after a period of time due to nicks, chips and corrosion.Galvanizing shall provide a barrier and cathodic protection from corrosion. During the galvanizing process, the complete frame sections and cross members shall be immersed in molten zinc; except for the cross member that contains the engine mounts. Through diffusion, the zinc shall bond to the steel at the molecular level. The resulting zinc coating shall provide a barrier that shields the steel from the environment. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT FRAME EXTENSION FINISH:**

The front frame extension shall be hot dipped galvanized to resist weather, dirt and other corrosive material. |  |  |  |
| Proposals offering powder coated or painted frames shall not be accepted. **No Exceptions** |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BUMPER:**

The chassis shall feature a heavy-duty bumper constructed from ASTM A36, 1/4" thick steel and painted primary job color. The bumper shall be 12" high by 102" wide with two inch (2") flanges and chamfered corners. |  |  |  |
| Integral heavy duty steel bumper "wings" shall extend from the bumper to the cab.  |  |  |  |
| The bumper shall be mounted to a twenty-eight inch (28") long chassis frame extension.  |  |  |  |
| A contoured apron / gravel shield fabricated from NFPA compliant, slip-resistant polished aluminum shall enclose the area between the bumper and the cab.That aluminium cover shall be covered in LINE-X black in color. |  |  |  |
| A contoured apron / gravel shield fabricated from NFPA compliant, slip-resistant polished aluminum shall enclose the area between the bumper and the cab.The front bumper shall have 3M Diamond Grade reflective red and yellow striping installed. The chevron style striping shall be applied at a 45-degree upward angle.The bumper shall be mounted to a twenty-eight (28") long chassis frame extension.  |  |  |  |
| One (1) recessed reel compartment constructed from smooth aluminum shall be installed in the center of the front bumper extension. Water drain holes shall be drilled in the bottom. |  |  |  |
| One (1) raised aluminum tread plate door for the front bumper compartment shall be supplied. The door shall have a minimum 1" lips on all sides surrounding the entire compartment opening, a stainless-steel hinge at the rear and a latch to secure the compartment.The cover shalbe covered in LINE-X, black in color. |  |  |  |
| One (1) LED compartment light(s) shall be provided to illuminate the front bumper compartment(s). The light shall activate automatically when the compartment door is opened. The light switch shall activate the "Do Not Move Apparatus" warning light in the cab indicating |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRAME GALVANIZING WARRANTY:**

The bidder shall warrant the galvanized frame rails shall be warranted for a period of twenty 20 years and includes the following coverage: |  |  |  |
| * The galvanized surfaces of the frame rails and cross members shall be free from corrosion caused by dissimilar metals, adhesion, blistering or peeling.
 |  |  |  |
| * The galvanized surfaces of the frame rails and cross members shall be free from any corrosion perforation.
 |  |  |  |
| Under this warranty the bidder agrees to repair or refinish any galvanized surface that has been found to have a defect caused by defective manufacturing methods or galvanized material where there is no indication of abuse, neglect, unusual or other than normal service providing that such item or items are, at the option of the bidder, made available for inspection at their request, returned to their factory or other location designated by the bidder with transportation prepaid within thirty days after the date of failure or within twenty years from the date of delivery of the apparatus to the original purchaser, whichever occurs first, and inspection indicates the failure was attributed to a defect caused by defective manufacturing methods or galvanized material selection. Written authorization for repair or item replacement must be sought from the bidder’s customer service prior to the repair or item replacement occurring. |  |  |  |
| **Coverage Period****0 – 10 years = 100%** **11 – 15 years = 50%****16 – 20 years = 25%** |  |  |  |
| This warranty shall not apply to or cover:* Normal maintenance services including clean and repair of surface corrosion caused by normal road salt/chemicals or debris contacting the frame rails and cross members.
 |  |  |  |
| * Damage to the galvanized frame rails caused by exposure to severe environmental or chemical conditions or acidic environment.
 |  |  |  |
| * Any item that has been repaired, replaced or altered by a facility not approved in advance by the bidder or in a manner which, the bidder’s discretion, may adversely affect the safe operation or durability of the vehicle or item.
 |  |  |  |
| * Special, incidental or consequential damages including, but not limited to, loss of time, inconvenience, loss of use, lost profits or transportation fees or charges to or from any facility.
 |  |  |  |
| * Any malfunction resulting from misuse,

negligence, alteration, accident or lack of operational knowledge, lack of normal or required maintenance or adjustments, fire or acts of God. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TOW HOOKS:**

Two (2) tow hooks shall be mounted to the bumper extension under the bumper towards the forward section of the extension. The tow hooks shall be steel and shall be powder coated black. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR TOWING PROVISIONS:**

There shall be two tow eyes furnished under the rear of the body and attached directly to the chassis frame rails. There shall be a reinforcement spreader bar connecting the two tow eyes. Tow eyes are to be constructed of 3/8" plate steel with a 4" I.D. hole, large enough for passing through a tow chain end hook. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE:**

A Cummins L 9.0 liter, four-cycle diesel fueled, turbo charged engine shall feature the following: |  |  |  |
| * One of the highest power to weight ratios in its class
 |  |  |  |
| * Heavy-duty replaceable wet liners, roller followers, by-pass oil filtration with replaceable spin on cartridge and targeted piston cooling for longer service in tough work environments
 |  |  |  |
| * Improved cooled EGR system
 |  |  |  |
| * 543 Cubic inches of displacement
 |  |  |  |
| * High pressure common rail fuel system producing a precise quantity of fuel at ultra high pressures.
 |  |  |  |
| * Fully integrated, robust electronic engine controls
 |  |  |  |
| * Electric fuel lift pump. No Exceptions.
 |  |  |  |
| The engine shall be coupled with a Holset VGT™ (Variable Geometry Turbocharger).  |  |  |  |
| The engine shall be filled with Citgo brand Citgard 500 (or equivalent) SAE 15W40 CJ4 low ash engine oil for proper engine lubrication. |  |  |  |
| The engine shall be EPA certified to meet the 2017 emissions standards without compromising performance, reliability or durability using cooled exhaust gas recirculation and selective catalytic reduction technology.  |  |  |  |
| The engine shall include an original equipment manufacturer installed oil drain plug.  |  |  |  |
| The engine shall include programming which will govern the top speed of the vehicle. |  |  |  |
| The engine shall have 450 horsepower at 2100 RPM, with a governed speed of 2200 RPM.  |  |  |  |
| The engine shall have 1250 foot pounds of torque at 1400 RPM. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AIR COMPRESSOR:**

The air compressor provided for the engine shall be a Wabco® SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AIR GOVERNOR:**

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be integrated in the air dryer assembly. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE FAN DRIVE:**

The engine cooling system fan shall incorporate a thermostatically controlled, one (1) piece nine (9) blade Horton clutched type fan drive, and shroud.  |  |  |  |
| When the clutched fan is disengaged, it shall facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail safe so that if the clutch drive fails, the fan shall engage to prevent engine overheating due to the fan clutch failure. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CLUTCH FAN SWITCH:**

A switch on the dash shall be provided to turn the fan clutch on and off manually. The switch shall not function to turn off the fan when the fan is activated due to high coolant temperature. |  |  |  |
| The clutch fan shall be thermostatically controlled only or with manual fan clutch switch (when applicable). |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AUXILIARY ENGINE BRAKE:**

A Cummins engine compression brake, for the six (6) cylinder engine, shall be provided. The engine compression brake shall: |  |  |  |
| * Activate upon 0% accelerator when in operation mode
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TRANSMISSION PRE-SELECT:**

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed. The transmission shall assist the secondary braking system, thereby slowing the vehicle. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AUXILIARY ENGINE BRAKE CONTROL:**

An auxiliary engine brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:  |  |  | Yes |
| * A valid gear ratio is detected.
 |  |  |  |
| * The driver has requested or enabled engine compression brake operation.
 |  |  |  |
| * The throttle is at a minimum engine speed position.
 |  |  |  |
| * The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.
 |  |  |  |
| The compression brake shall be controlled via an off/low/medium/high virtual switch on the Weldon Vista display. The multiplex system shall remember and default to the last engine brake control setting when the vehicle is shut off and re-started. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE BLOCK HEATER:**

A 1000 watt, 120-volt engine coolant heater with automatic thermostat shall be installed. The block heater shall be connected to the electrical inlet |  |  |  |
| The manual shoreline cover shall be Black in color. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **SHORELINE LOCATION:**

The shoreline shall be located in the Driver’s side bumper tail. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE PROGRAMMING HIGH IDLE SPEED:**

The Engine high idle will be set at 1250 RPM. The high idle will be operational only when the parking brake is set and the truck transmission is in neutral. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE HIGH IDLE CONTROL:**

The vehicle shall be equipped with an automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output and optimize output of the HVAC system.This device shall operate only when the master switch is activated and the transmission is in neutral with the parking brake set. The device shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually through an virtual switch in the Vista, or automatically re-engage when the brake is set, or when the transmission is placed in neutral. A light on the Vista screen shall indicate the high idle speed control. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE AIR INTAKE:**

The engine air intake system shall include an ember separator air intake filter which shall be located behind the fascia. |  |  |  |
| The filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a corrosion resistant steel frame.  |  |  |  |
| This multilayered screen shall be designed to trap embers or allow them to burn out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation. |  |  |  |
| The intake shall also feature a cyclone style water separator to remove unwanted moisture from incoming air. |  |  |  |
| The engine shall include an air intake filter which shall be bolted to the frame and located under the front of the cab. This dry type filter shall ensure dust and debris is safely contained inside the disposable housing, eliminating the chance of contaminating the air intake system during air filter service via a leak-tight seal. |  |  |  |
| The filter must have a capacity of no less than 1350 cubic feet of air per minute. The filter paper media must be of a flame retardant treated material. An electric air filter restriction indicator shall also be included with the system. |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE EXHAUST SYSTEM:**

The exhaust system shall include a one-piece diesel particulate filter (DPF), a diesel oxidation catalyst, and a selective catalytic reduction catalyst (SCR) to meet current EPA standards. The selective catalytic reduction catalyst shall utilize a diesel exhaust fluid solution consisting of urea and purified water to convert nitrogen oxide into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be injected into the system between the DPF and SCR chambers. |  |  |  |
| The system shall utilize 0.065-inch-thick stainless steel exhaust tubing between the engine turbo and the DPF.  |  |  |  |
| The after-treatment canister through the end of the tailpipe shall all be connected with zero leak gasketed clamps. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires with an exhaust gas diffuser.  |  |  |  |
| The diffuser shall lower exhaust gas temperatures during the regeneration cycle. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **EXHAUST HEAT SHIELD:**

A heat shield shall be installed under the body in the areas where the exhaust system is routed. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DIESEL EXHAUST FLUID TANK:**

There shall be a molded cross linked polyethylene tank for the Diesel Exhaust Fluid (DEF). The tank shall have a capacity of not less than five (5) usable gallons (18.92 Liters) and shall be mounted on the left-hand side of the chassis frame in front of the batteries below the frame.  |  |  |  |
| The DEF tank shall be designed with capacity for expansion in case of fluid freezing. Engine coolant, which shall be thermostatically controlled, shall be run through lines in the tank to help prevent the DEF from freezing and to provide a means of thawing the fluid if it should become frozen. |  |  |  |
| There shall be an access door provided in the top rear step of left side crew area for access to the DEF tank. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE EXHAUST ACCESSORIES:**

An exhaust temperature mitigation device shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation device shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE EXHAUST WRAP:**

The exhaust tubing between the engine turbo and the diesel particulate filter (DPF) shall be wrapped with a thermal cover in order to retain the necessary heat for DPF regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DIESEL PARTICULATE FILTER CONTROLS:**

Provide DPF system status annunciation indicator lights, lights shall be installed on driver dash to alert driver when regeneration is needed and when DPF is in an active re-generation cycle. |  |  |  |
| Warning systems shall provide DEF low level warning.  |  |  |  |
| Driver's dash shall be provided with two (2) controls for the Diesel particulate filter; one (1) manual regeneration switch to activate a regeneration cycle manually when passive burn is unobtainable due to driving conditions; and one (1) Regen "Inhibit Switch". |  |  |  |
| The switches shall be located in a covered location. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE COOLING SYSTEM:**

The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system requirements. |  |  |  |
| The system shall include and feature the following: |  |  |  |
| * A vertically stacked charge air cooler providing the maximum cooling capacity for the engine. Proposals offering horizontally stacked charge air cooler shall not be acceptable. No Exceptions.
 |  |  |  |
| * The charge air cooler and radiator shall measure not less than 1382 square inches.
 |  |  |  |
| * A surge tank with a low coolant probe and capable of removing entrained air from the cooling system, with built in sight glass.
 |  |  |  |
| * Radiator re-circulation shields to prevent heated air from re-entering the cooling system and affecting performance.
 |  |  |  |
| * Mounts allowing the entire radiator to drop through the frame for service when needed - **No Exceptions.**
 |  |  |  |
| * Engine placement shall provide a minimum of 8” between the engine fan and radiator to maximize the airflow and cooling of the engine.
 |  |  |  |
| * A Spin on Element water filter with corrosion inhibitor shall be provided for the cooling system. **No Exception.**
 |  |  |  |
| * The coolant filter shall be provided with two (2) shut off valves, one (1) one inlet and one (1) outlet. **No Exception.**
 |  |  |  |
| * Cooling system shall be tested and certified by the engine manufacturer.
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **COOLANT HOSES:**

The cooling systems hose shall be formed silicone hose and formed aluminized steel tubing and include constant tension spring clamps. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE COOLANT:**

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees F.Supplemental coolant additives (SCA) are not required as this is part of the extended life coolant makeup. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ADDITIONAL COOLANT SHUT OFF VALVE:**

An additional coolant shut off valve with connection shall be installed in the chassis coolant lines with a connector. This shall allow for the installation of an additional heater such as a pump compartment heater without draining the coolant system. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FUEL FILTER/WATER SEPARATOR:**

The fuel system shall have a **Fleetguard FS1098** fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.  |  |  |  |
| A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator. |  |  |  |
| A secondary fuel filter shall be included as approved by the engine manufacturer. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FUEL SYSTEM:**

The fuel tank shall have a capacity of sixty-eight (68) gallons/two hundred fifty-seven (257) liters.  |  |  |  |
| The tank shall offer: |  |  |  |
| * Beveled Rear Corner to allow for better angle of departure.
 |  |  |  |
| * A vent port which will facilitate venting to the top of the fill neck for rapid filling without any “blow-back”
 |  |  |  |
| * Two (2) 2” NPT fill ports for left and right hand fill with a .5” NPT drain plug centered side to side, 9" from the front of the tank
 |  |  |  |
| * A roll over ball check vent for temperature related fuel expansion and draw
 |  |  |  |
| * A design including dual draw tubes and sender flanges
 |  |  |  |
| * A baffled design which shall be constructed of steel
 |  |  |  |
| * A black Powder Coated exterior to ensure corrosion resistance
 |  |  |  |
| The fuel tank shall be mounted below the frame, behind the rear axle. There shall be two (2) three-piece strap hanger assemblies with “U” straps bolted midway on the fuel tank, allowing the tank to be easily lowered and removed for service purposes.  |  |  |  |
| The strap hanger material shall be stainless steel. **No Exceptions.** |  |  |  |
| For isolation of vibration and movement, rubber isolating pads shall be provided between the tank and the hanger strap assemblies. The tank straps shall be attached to rubber coated cross members which help isolate the tank from frame flex. |  |  |  |
| Strap mounting studs through the rail, hidden behind the body shall not be acceptable. |  |  |  |
| All fuel lines shall be connected with steel fittings with all fittings pointed towards the right side (curbside) of the chassis. |  |  |  |
| The chassis fuel lines shall feature an additional 4’ of length provided so the tank can be easily lowered and removed for service purposes which shall be coiled and secured at the top of the tank. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FUEL LINES:**

The fuel system supply and return lines installed from the fuel tank to the engine shall be black aramid braided lines with a fiber outer braid. The fuel lines shall be connected with reusable steel fittings. Fuel line is compatible with bio-fuel blends. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FUEL SHUTOFF VALVE:**

Two (2) fuel shutoff valves shall be installed at the fuel filter to allow the fuel filter to be changed without loss of fuel to the fuel pump. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FUEL COOLER:**

The cross flow air to fuel cooler shall be all aluminum and shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel cooler shall be located behind the battery box, under the frame. |  |  |  |
| The fuel cooler shall incorporate a fan for improved heat transfer. |  |  |  |
| The fuel cooler shall be mounted to the frame using hot dipped galvanized brackets. Powder coated or painted brackets shall not be acceptable. **No exception.** |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ALTERNATOR:**

The charging system shall include a 320-amp Leece Neville 12-volt alternator.   The alternator shall include a self-excited integral regulator. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TRANSMISSION:**

The drive train shall include an Allison model EVS 3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.   |  |  |  |
| The transmission shall include two (2) internal oil filters and Allison approved transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.  |  |  |  |
| The transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance. |  |  |  |
| The transmission shall include an original equipment manufacturer installed magnetic oil drain plug. |  |  |  |
| The transmission shall be provided with an automatic neutral. When the parking brake is applied the transmission automatically returns to neutral. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TRANSMISSION COOLING SYSTEM:**

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TRANSMISSION SHIFT SELECTOR:**

An Allison GEN V pressure sensitive range selector touch pad shall be provided and located on the tunnel to the right of the driver. The shift selector shall provide an indicator on the digital display and shall alert the driver/operator when a specific maintenance function is required. |  |  |  |
| The transmission driven power take off (PTO) shall be mounted in the 1:00 o’clock position. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TRANSMISSION MODE PROGRAMMING:**

The transmission, upon start-up, will select the fifth speed operation without the need to press the mode button. |  |  |  |
| The EVS group package number 127 shall contain the 198-vocational package for the fire service for this apparatus as a Pumper. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector which requires re-selecting the drive range to shift out of neutral for the override.  |  |  |  |
| This package shall be coupled with the use of a split shaft PTO and incorporate pumping circuits. The transmission will detect the pump engaged signal and automatically select or deselect fourth gear lock-up. These circuits shall be used allowing the vehicle to operate in the fourth range lockup while operating the pump mode due to the 1 to 1 ratio through the transmission, therefore the output speed of the engine is the input speed to the pump. The pump output can be easily calculated by using this input speed and the drive ratio of the pump itself to rate the gallons of water the pump can provide. |  |  |  |
| A nine (9) pin diagnostic connector will be provided next to the steering column. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DRIVELINE:**

All drivelines shall be heavy duty metal tube and equipped with Spicer 1710 series universal joints.  |  |  |  |
| The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **V-MUX ELECTRICAL SYSTEM:**

There shall be a 12-volt direct current single starting electrical system providing power to all components for the cab and chassis. The system shall feature: |  |  |  |
| • A Weldon Multiplexed system |  |  |  |
| • 300-degree Fahrenheit high temperature, flame retardant loom |  |  |  |
| • All SAE wiring color coded and labeled as to its function |  |  |  |
| • Wiring which is cross link with 311-degree Fahrenheit insulation |  |  |  |
| • A suppressed system in accordance with SAE J551 |  |  |  |
| The primary power distribution will be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers will be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers will be located strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers will be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays will be easily accessible.  |  |  |  |
| Circuit protection devices, which conform to SAE standards, will be utilized to protect electrical circuits. All circuit protection devices will be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload.  |  |  |  |
| General protection circuit breakers will be a combination of automatic and manual reset breakers. This will provide a durability and capacity maximization of the electrical system. |  |  |  |
| When required, automotive type fuses will be utilized to protect electronic equipment. Control relays and solenoid will have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA |  |  |  |
| In the V-MUX electrical system there will be eight pre-defined Load Manager Trigger points spaced apart in 0.4 Volt increments. Each Output channel can be set for Load Management that will be turned OFF if node voltage falls below a certain level. The trigger points will be configured as shown below. |  |  |  |
| There will be an Automatic High Idle (Auto Throttle) logic that will run in conjunction with the Load Management. The Auto Throttle logic will be ran on the Hercules node under the passenger side kick panel compartment. The standard system design will be triggered on at 12.3 V and triggered off at 12.6 V with a 30 second delay before disengagement. The Auto Throttle function will act to turn the V-MUX High Idle Output ON and OFF. In turn the High Idle sends a signal to the engine ECU. The Auto Throttle Command will be interlocked with Park Brake and Park/Neutral for safety. A Service Brake override interlock will also be configured to immediately return the engine to Low Idle if the vehicle has to move. |  |  |  |
| Two (2) Weldon Vista IV displays shall be located one (1) on the driver’s side dash and one (1) on the officer’s side of the dash. The headlights, emergency flashers and scene lights shall be controlled by those screens.The driver switch panel to the right of the Driver's position shall include one (1) row with six (6) backlit rocker switches with laser etched labels located under the Weldon Vista screen.Standard switches shall include:Windshield Wiper/Washer Control |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **EMI/RFI PROTECTION:**

To prevent erroneous signals from crosstalk contamination and interference, the electrical system will meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system will be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.  |  |  | Yes |
| The apparatus will have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system will meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, will provide EMC testing reports from testing conducted on an entire apparatus and will certify that the vehicle meets SAE J551/2 and SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.  |  |  |  |
| EMI/RFI susceptibility will be controlled by applying appropriate circuit designs and shielding. The electrical system will be designed for full compatibility with low-level control signals and high-powered two-way radio communication systems. Harness and cable routing will be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ELECTRICAL HARNESSING INSTALLATION:**

To ensure rugged dependability, all wiring harnesses installed by the apparatus manufacturer will conform to the following specifications:  |  |  |  |
| **SAE J1128 -** Low tension primary cable **SAE J1292 -** Automobile, truck, truck-tractor, trailer and motor coach wiring **SAE J163 -** Low tension wiring and cable terminals and splice clips **SAE J2202 -** Heavy duty wiring systems for on-highway trucks **NFPA 1901** - Standard for automotive fire apparatus **FMVSS 302** - Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks and buses **SAE J1939** - Serial communications protocol**SAE J2030** - Heavy-duty electrical connector performance standard**SAE J2223** - Connections for on board vehicle electrical wiring harnesses NEC - National Electrical Code**SAE J561** - Electrical terminals - Eyelet and spade type**SAE J928** - Electrical terminals - Pin and receptacle type A  |  |  |  |
| For increased reliability and harness integrity, harnesses will be routed throughout the cab and chassis in a manner which allows the harnessing to be laid into its mounting location. Routing of harnessing which requires pulling of wires through tubes will not be allowed.  |  |  |  |
| Wiring will be run in loom or conduit where exposed, and have grommets or other edge protection where wires pass through metal. Wiring will be color, function and number coded. Wire colors will be integral to each wire insulator and run the entire length of each wire. Harnessing containing multiple wires and uses a single wire color for all wires will not be allowed. Function and number codes will be continuously imprinted on all wiring harness conductors at 3.00" intervals. All wiring installed between the cab and into doors will be protected by an expandable rubber boot to protect the wiring. Exterior exposed wire connectors will be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids.  |  |  |  |
| Electrical wiring and equipment will be installed utilizing the following guidelines:  |  |  |  |
| * All wire ends not placed into connectors will be sealed with a heat shrink end cap. Wires without a terminating connector or sealed end cap will not be allowed.
 |  |  |  |
| * All holes made in the roof will be caulked with silicon. Large fender washers, liberally caulked, will be used when fastening equipment to the underside of the cab roof.
 |  |  |  |
| * Any electrical component that is installed in an exposed area will be mounted in a manner that will not allow moisture to accumulate in it. Exposed area will be defined as any location outside of the cab or body.
 |  |  |  |
| * For low cost of ownership, electrical components designed to be removed for maintenance will be quickly accessible. For ease of use, a coil of wire will be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work.
 |  |  |  |
| * Corrosion preventative compound will be applied to non-waterproof electrical connectors located outside of the cab or body. All non-waterproof connections will require this compound in the plug to prevent corrosion and for easy separation of the plug.
 |  |  |  |
| * Any lights containing non-waterproof sockets in a weather-exposed area will have corrosion preventative compound added to the socket terminal area.
 |  |  |  |
| * All electrical terminals in exposed areas will have protective Coating applied completely over the metal portion of the terminal.
 |  |  |  |
| * Rubber coated metal clamps will be used to support wire harnessing and battery cables routed along the chassis frame rails.
 |  |  |  |
| * Heat shields will be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust will be protected by a heat shield.
 |  |  |  |
| * Cab and crew cab harnessing will not be routed through enclosed metal tubing. Dedicated wire routing channels will be used to protect harnessing therefore improving the overall integrity of the vehicle electrical system. The design of the cab will allow for easy routing of additional wiring and easy access to existing wiring.
 |  |  |  |
| * All braided wire harnesses will have a permanent label attached for easy identification of the harness part number and fabrication date.
 |  |  |  |
| * All standard wiring entering or exiting the cab will be routed through sealed bulkhead connectors to protect against water intrusion into the cab.
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BATTERY CABLE INSTALLATION:**

All 12-volt battery cables and battery cable harnessing installed by the apparatus manufacturer will conform to the following requirements:  |  |  |  |
| **SAE J1127 - Battery Cable****SAE J561 - Electrical terminals, eyelets and spade type****SAE J562 - Nonmetallic loom****SAE J836A - Automotive metallurgical joining****SAE J1292 - Automotive truck, truck-tractor, trailer and motor coach wiring****NFPA 1901** - Standard for automotive fire Apparatus |  |  |  |
| Battery cables and battery cable harnessing will be installed utilizing the following guidelines: |  |  |  |
| * All battery cables and battery harnesses will have a permanent label attached for easy identification of the harness part number.
 |  |  |  |
| * Splices will not be allowed on battery cables or battery cable harnesses.
 |  |  |  |
| * For ease of identification and simplified use, battery cables will be color coded. All positive battery cables will be red in color or wrapped in red loom the entire length of the cable. All negative battery cables will be black in color.
 |  |  |  |
| * For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus will be coated to prevent corrosion.
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ELECTRICAL COMPONENT INSTALLATION:**

All lighting used on the apparatus will be, at a minimum, a two (2) wire light grounded through a wired connection to the battery system. Lights using an apparatus metal structure for grounding will not be allowed. An operational test will 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 will be recorded and provided to the purchaser at time of delivery. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **12V POWER POINTS:**

There shall be one (1) 12v power point and one (1) dual USB power point provided. They shall be mounted in the driver’s side of the dash. They shall be within easy reach of the driver; and shall be wired directly to the battery. |  |  |  |
| There shall be one (1) 12v power point and one (1) dual USB power point provided. They shall be mounted in the officer’s side of the dash. They shall be within easy reach of the officer; and shall be wired directly to the battery. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ACCESSORY POWER DISTRIBUTION PANEL:**

An accessory power distribution panel shall be installed behind the officer's seat. The panel shall feature ten (10) blade type fuses protected by a 40-amp fuse. The panel shall be capable of carrying up to a maximum 40-amp battery direct load. |  |  |  |
| An accessory power distribution panel shall be installed behind the officer's seat. The panel shall feature ten (10) blade type fuses protected by a 40-amp fuse. The panel shall be capable of carrying up to a maximum 40-amp load through the master switch. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **COMMUNICATION ANTENNA BASE:**

A communications antenna base shall be provided and mounted on the cab roof on the Officer's side.The cable routing for the communication antenna shall terminate under the dash panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **VEHICLE DATA RECORDER AND SEAT BELT WARNING SYSTEM :**

The chassis shall have a Weldon Vehicle Data Recorder system installed. The system shall be designed to meet NFPA 1901. The following information shall be recorded:* Vehicle Speed
* Acceleration
* Deceleration
* Engine Speed
* Engine Throttle Position
* ABS Event
* Seat Occupied Status
* Seat Belt Status
* Master Optical Warning Device Switch Position
* Service Brake
* Engine Hours
* Time
* Date
 |  |  |  |
| Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system. The laptop connection shall be a panel mounted female type A or B USB connection point, remotely mounted in the left side foot well of the cab. The latest software shall be available for download from the Weldon website. |  |  |  |
| A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall activate an indicator light in the instrument panel, a digital seat position indicator with a seat position legend in the switch panel, and an audible alarm.  |  |  |  |
| The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB INSTRUMENTATION:**

The instrumentation panel within the cab shall feature a gauge panel which shall include information centers, telltale indicator lamps, control switches, alarms, and a LCD diagnostic panel.  |  |  |  |
| The gauges shall be easy to read including red backlighting. |  |  |  |
| The instrument panel shall contain the following gauges and indictors: |  |  |  |
| The middle information center shall include: |  |  |  |
| * A programmable speedometer to read either 0 to 140 MPH or 0 to 140 KM/H
 |  |  |  |
| * An amber telltale lamp indicating the Check Engine
 |  |  |  |
| * An amber telltale lamp indicating MIL Engine Emissions System Malfunction
 |  |  |  |
| * A red telltale lamp indicating Stop Engine
 |  |  |  |
| * A tachometer gauge with 0-3,000 RPM
 |  |  |  |
| The right-hand side information center shall include: |  |  |  |
| * A gauge to display the engine oil pressure with high and low level indicators and stop engine alarm
 |  |  |  |
| * A fuel level gauge with a low fuel indicator and alarm
 |  |  |  |
| * An LED bar displaying 4 stages of the level for the Diesel Exhaust Fluid (DEF) with a refill indicator
 |  |  |  |
| * A voltage gauge with low voltage indicator
 |  |  |  |
| * A water temperature gauge with high water temp indicator and alarm
 |  |  |  |
| The left-hand side information center shall include: |  |  |  |
| * A primary air PSI gauge including low air and high air warning displays
 |  |  |  |
| * A secondary air PSI gauge with low and high air warning indication
 |  |  |  |
| An LCD diagnostic display, located in the left-hand side information center shall include digital readouts for the following: |  |  |  |
| * Odometer
 |  |  |  |
| * Transmission oil temp
 |  |  |  |
| * Engine oil temp
 |  |  |  |
| * Speedometer
 |  |  |  |
| * Engine hours
 |  |  |  |
| * Engine and transmission code
 |  |  |  |
| * Exhaust temp
 |  |  |  |
| * Engine coolant temp
 |  |  |  |
| * Engine oil PSI
 |  |  |  |
| * Turbo boost PSI
 |  |  |  |
| * Primary air pressure
 |  |  |  |
| * Secondary air pressure
 |  |  |  |
| * Engine load %
 |  |  |  |
| * Engine torque
 |  |  |  |
| * Battery volts
 |  |  |  |
| * Fuel level %
 |  |  |  |
| * Vehicle speed
 |  |  |  |
| * RPM
 |  |  |  |
| * DEF level
 |  |  |  |
| * Instant fuel economy
 |  |  |  |
| * Average fuel economy
 |  |  |  |
| * Engine hours
 |  |  |  |
| * Capable to record three trips, each shall be included:
 |  |  |  |
| · Trip distance |  |  |  |
| · Fuel economy |  |  |  |
| · Fuel used |  |  |  |
| · Idle fuel used |  |  |  |
| * The LCD screen shall also provide diagnostic capability
 |  |  |  |
| To promote safety, the following telltale indicator lamps will be integral to the gauge assembly and are located below the middle information center. The indicator lamps will be "dead-front" design that is only visible when active. The colored indicator lights will have descriptive text or symbols. The following indicator lamps shall be located on the Telltale panel: |  |  |  |
| * BLUE Indicator Lights

 High Beam Headlight GREEN Indicator Lights |  |  |  |
| * Right Turn Indicator
 |  |  |  |
| * Left Turn Indicator
 |  |  |  |
| * Battery On (Always On)

 YELLOW Indicator Lights |  |  |  |
| * Particle Filter Regeneration (DPF)
 |  |  |  |
| * Regeneration Inhibit (Switch Engaged)
 |  |  |  |
| * Air Intake Restriction
 |  |  |  |
| * High Exhaust System Temperature (HEST)
 |  |  |  |
| * Wait to Start (when applicable)
 |  |  |  |
| * ATC (Automatic Traction Control) (when applicable)
 |  |  |  |
| * Water in Fuel

 RED Indicator Lights |  |  |  |
| * Low Engine Coolant Level
 |  |  |  |
| * Air Bag Warning (when applicable)
 |  |  |  |
| * Check Transmission
 |  |  |  |
| * High Transmission Temperature
 |  |  |  |
| * ABS
 |  |  |  |
| * Parking Brake
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DIAGNOSTIC PANEL:**

A diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved trouble shooting providing a lower cost of ownership. The panel shall be accessible while standing on the ground and located inside the driver's door to the left of the steering column. Diagnostic switches shall allow engine and ABS systems to provide blink codes should a problem exist.The diagnostic panel shall include:  |  |  |  |
| * Engine diagnostic port
 |  |  |  |
| * Engine diagnostic switch (blink codes flashed on check engine telltale indicator)
 |  |  |  |
| * Diesel particulate filter regeneration switch (when applicable)
 |  |  |  |
| * Diesel particulate filter regeneration inhibit switch (when applicable)
 |  |  |  |
| The enclosed diagnostic panel, accessible through the HVAC access panel shall include: |  |  |  |
| * Transmission diagnostic port
 |  |  |  |
| * ABS diagnostic port
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BACKLIGHTING COLOR:**

The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BATTERIES:**

The single start electrical system shall include six (6) 1000 CCA batteries. |  |  |  |
| The batteries shall feature:* A 200-minute reserve capacity
 |  |  |  |
| * 4/0 dual path starter cables per SAE J541
 |  |  |  |
| * Heat shrink and sealant encapsulated ends on the cables
 |  |  |  |
| * Maintenance free
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BATTERY COMPARTMENTS:**

A well-ventilated battery storage compartment shall house the batteries on the officer and driver side of the chassis and shall be located so as to offer easy access to the batteries when the cab is tilted.  |  |  |  |
| Each battery compartment shall feature:* Hot dipped galvinized 3/16" steel construction.
* A complete floor of heavy duty, industrial grade, recycled Turtle Tile brand interlocking matting
* A double hinged hot dipped galvanized steel cover with two (2) rubber latches shall be utilized providing easy access to the batteries. No tools shall be required to gain access to the batteries.
* When in the open position, the double hinged door shall be flush with the bottom of the battery compartment, allowing for a sweep out style floor and removal of the batteries when necessary, without the inference of a lower lip. **No Exceptions.**
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BATTERY CABLES:**

The starting system shall include cables which shall be protected by a 275-degree F, minimum high temperature flame retardant loom. |  |  |  |
| The cables shall be in a loom to help keep out dirt, dust and debris. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BATTERY JUMPER STUD:**

The starting system shall include battery jumper studs.  |  |  |  |
| These studs shall be located in the forward most portion of the driver's side lower step.  |  |  |  |
| The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **IGNITION:**

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a marine grade two position switch, of which shall be mounted on the left side of the steering wheel adjacent to the driver's knee.  |  |  |  |
| A push button type starter button shall be provided on the driver dash to the left of the steering wheel. |  |  |  |
| The starter button shall only operate when both the master battery and ignition switches are in the “ON” position. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **POWER & GROUND STUD:**

An electrical distribution panel shall include two (2) power studs. The studs shall be a minimum of 1/4" and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40-amp battery direct load. One (1) power stud shall be capable of carrying up to a 15-amp ignition switched load. The two (2) power studs shall share one (1) 1/4" ground stud. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **GROUND LIGHTS:**

Each door shall include a Whelen 3SC0CDCR LED NFPA compliant ground light mounted to the underside of the cab step below each door.  |  |  |  |
| Each light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. |  |  |  |
| The ground lights shall activate when the park brake is engaged.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CAB STEP LIGHTING:**

One (1) LED light shall be mounted to the riser of the middle cab step, a total of eight (8) step lights for the cab, in accordance with NFPA.  |  |  |  |
| Each light shall include a polycarbonate lens and shall be contained in a housing which is vibration welded with a bulb which shall be shock mounted. Each step light shall not be any larger than 3" in diameter. |  |  |  |
| The step lighting shall be activated by opening any of the cab doors on the respective side. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **INTERIOR DOOR JAMB WARNING LIGHTS :**

The interior of each door shall include one (1) Code 3 Mega Thin LED warning light located on the doorjamb. Each light shall activate with a flashing pattern when the door is in the open position to serve as a warning to oncoming traffic. The light shall be red in color. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ENGINE COMPARTMENT LIGHTING:**

Two (2) LED lights shall be mounted to the engine compartment in such a fashion as to provide as much light as possible to the engine compartment area. The engine compartment lighting shall activate with the tilting of the cab. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **INTERIOR OVERHEAD CAB LIGHTING:**

Each cab door shall include a dual blue and white LED lamp. There shall be one (1) light centered over each of the Driver and Officer’s seat and one centered over each crew door. The clear lamp shall illuminate with the opening of each respective door with both the blue and clear portions of the lamp activated by individual lighted switches on each lamp. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DO NOT MOVE APPARATUS LIGHT:**

The front headliner of the cab shall include a flashing red Whelen round LED light with a red lens clearly labeled "Do Not Move Apparatus". The flashing red light shall be 3.00 inches in diameter and shall be located centered left to right for greatest visibility.  |  |  |  |
| The light shall be interlocked for activation when either a cab door is not firmly closed or an apparatus compartment door is not closed, and the parking brake is released. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ROOF TOP SPOT LIGHT :**
 |  |  |  |
| One (1) GoLight Model 20214 (black) LED spotlight with wired dash-mount remote shall be installed on the officer's side cab roof. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BACK-UP ALARM:**

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR AND SIDE FACING CAMERA :**

A rear facing box style rearview camera shall be installed on the rear of the vehicle. There shall also be a teardrop style rearview camera mounted to the Officer side of the vehicle.The rear camera shall be activated when the vehicle transmission is shifted to reverse, and the side tear drop camera shall be activated with the blinker. The image viewed on the Driver and Officer's side Vista.The rear facing camera shall feature stainless steel construction, automatic heating when the temperature is below 10 degrees Fahrenheit, and 150-degree lens. **No Exception**.There shall be a speaker mounted in the forward overhead position that is dedicated to the backup microphone. It shall be activated when the transmission is shifted into reverse; and it shall enable the driver to hear what is happening behind the apparatus. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BATTERY CHARGER AND AIR COMPRESSOR (POWER PACK):**
 |  |  |  |
| A 40-amp, three stage battery charger and high output rocking piston air compressor shall be provided. The charger and compressor are to be contained in a single metal enclosure. The charger maintains the chassis batteries to a peak voltage of 14.4 VDC, which is compatible with all chassis battery types, including high performance deep cycle batteries. The air compressor maintains chassis air pressure between 85 to 110 PSI. |  |  |  |
| The PowerPack has systems to protect the compressor from hard starting under load and has low compressed air output temperatures. This ensures longer compressor life and low starting currents. The compressor has a higher output than many other chassis air makeup compressors. The compressor is specifically designed to have lower sound levels. |  |  |  |
| A Kussmaul Super Auto Eject 20 amp 120-volt shore power assembly, cover, solenoid input wire, power cord, and plug shall be installed. The 12-volt solenoid shall eject the shore power cord away from vehicle path upon sensing engine start; after ejection, the weatherproof cover snaps into position over inlet. The unit shall sequence energizing of an Auto Eject, eliminating terminal arching when connecting and disconnecting power cord.  |  |  |  |
| The unit shall have a waterproof back enclosure with watertight cable fittings, which protect mechanism from road contamination. A pre-wired 3-foot AC electrical cord and starting sense wire (side wired) shall be installed.  |  |  |  |
| The assembly shall have the following dimensions: 6.17” high x 4.08” wide x 2.8” deep with 4 lb. weight.  |  |  |  |
| The shoreline shall be located in the driver’s side behind the front door above the wheel well. |  |  |  |
| A display is provided with the PowerPack. The display is to be installed and located in the canopy window. The display also have a moving graphic indicating to the user that the PowerPack is plugged in and shore power AC line power is at the PowerPack. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **LOW VOLTAGE ELECTRICAL SYSTEM SPECIFICATIONS:**

The electrical system shall include all panels, electrical components, switches and relays, wiring harnesses and other electrical components. The electrical equipment installed by the apparatus manufacturer shall conform to current automotive electrical system standards, the latest Federal DOT standards, and the requirements of the applicable NFPA standards. |  |  |  |
| The apparatus shall have a Weldon V-MUX multiplexing system, to provide diagnostic capability. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The electrical system shall be pre-wired for computer modem accessibility to allow service personnel to easily plug in a modem to allow remote diagnostics, troubleshooting, or program additions. There shall be a diagnostic display provided in the cab. The multiplexed system shall use twisted-pair shielded wire within the electrical system for noise reduction. The diagnostic display shall allow for fault and condition messages to be displayed. For superior system integrity, the networked system shall meet the following minimum requirement components:* Power management center
* Load shedding power management
* Solid-state circuitry
* Switch input capability
* Responsible for lighting device activation
* Self-contained diagnostic indicators
* Power distribution module
* Diagnostic display for warning message indication
 |  |  |  |
| All wiring shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for the protected circuit. Voltage drops in all wiring from the power source to the using device shall not exceed 10 percent. The wiring and wiring harness and insulation shall be in conformance to applicable SAE and NFPA standards. The wiring harness shall conform to SAE J-1128 with GXL temperature properties. All exposed wiring shall be protected in a loom with a minimum 289-degree Fahrenheit rating. All wiring looms shall be properly supported and attached to body members. The electrical conductors shall be constructed in accordance with applicable SAE standards, except when good engineering practice requires special construction. |  |  |  |
| The wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection and shall be installed in accordance with the device manufacturer's instructions. Electrical connections shall be with mechanical type fasteners and large rubber grommets where wiring passes through metal panels. |  |  |  |
| The wiring between the cab and body shall be joined using Deutsche type connectors or an enclosed in a terminal junction panel area. This system will permit body removal with minimal impact on the apparatus electrical system.  |  |  |  |
| All connections shall be crimp-type with insulated shanks to resist moisture and foreign debris such as grease and road grime. Weather-resistant connectors shall be provided throughout to ensure the integrity of the electrical system. |  |  |  |
| Any electrical junction or terminal boxes shall be weather resistant and located away from direct water spray. In addition, the main body junction panel shall house the automatically reset breakers and relays as required. |  |  |  |
| There shall be no exposed electrical cabling, harnesses, or terminal connections located in compartments, unless they are enclosed in a junction box or covered with a removable electrical panel. The wiring shall be secured in place and protected against heat, liquid contaminants and damage. Wiring shall be uniquely identified every three-inches (3") by color coding or permanent marking with a circuit function code and identified on a reference chart or electrical wiring schematic per requirements of applicable NFPA #1901 standards. |  |  |  |
| The electrical circuits shall be provided with low voltage overcurrent protective devices. Such devices shall be accessible and located in required terminal connection locations or weather resistant enclosures. The overcurrent protection shall be suitable for electrical equipment and shall be automatic reset type and meet SAE standards. All electrical equipment, switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. The system shall have electro-magnetic interference suppression provided as required in applicable SAE standards. |  |  |  |
| The electrical system shall include the following: |  |  |  |
| * Electrical terminals in weather exposed areas shall have a non-conductive grease or spray applied. A corrosion preventative compound shall be applicable to all terminal plugs located outside of the cab or body.
 |  |  |  |
| * The electrical wiring shall be harnessed or be placed in a protective loom.
 |  |  |  |
| * Holes made in the roof shall be caulked with silicone. Large fender washers shall be used when fastening equipment to the underside of the cab roof.
 |  |  |  |
| * Any electrical component that is installed in an exposed area shall be mounted in a manner that will not allow moisture to accumulate in it.
 |  |  |  |
| * A coil of wire must be provided behind an electrical appliance to allow them to be pulled away from mounting area for inspection and service work.
 |  |  |  |
| * All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.
 |  |  |  |
| The warning lights shall be switched in the chassis cab with labeled switches in an accessible location. Individual rocker switches shall be provided only for warning lights provided over the minimum level of warning lights in either the stationary or moving modes. All electrical equipment switches shall be mounted on a switch panel mounted in the cab convenient to the operator. The warning light switches shall be of the rocker type. For easy nighttime operation, an integral indicator light shall be provided to indicate when the circuit is energized. All switches shall be appropriately identified as to their function. |  |  |  |
| A single warning light switch shall activate all required warning lights. This switch will allow the vehicle to respond to an emergency and "call for the right of way". When the parking brake is applied, a "blocking right of way" system shall automatically activate per requirements of the applicable NFPA standards. All "clear" warning lights shall be automatically turned off upon application of the parking brake. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **NFPA REQUIRED TESTING OF ELECTRICAL SYSTEM:**

The apparatus shall be electrically tested upon completion of the vehicle and prior to delivery. The electrical testing, certifications, and test results shall be submitted with delivery documentation per requirements of the applicable NFPA standards. The following minimum testing shall be completed by the apparatus manufacturer:. |  |  |  |
| **1. Reserve capacity test:**The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for ten (10) minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a failed test. |  |  |  |
| **2. Alternator performance test at idle:**The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure. |  |  |  |
| **3. Alternator performance test at full load:**The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of two (2) hours. Activation of the load management system is permitted during this test. However, if an alarm sounds due to excessive battery discharge, as detected by the system requirements in the NFPA standards, or a system voltage of less than 11.7 volts’ dc for more than 120 seconds is present, the test has failed. |  |  |  |
| **4. Low voltage alarm test:**Following the completion of the above tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts’ dc for a 12-volt system shall be considered a test failure. The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure. |  |  |  |
| **NFPA REQUIRED DOCUMENTATION**The following documentation shall be provided on delivery of the apparatus: |  |  |  |
| * Documentation of the electrical system performance tests required above.
 |  |  |  |
| * A written load analysis, including:
 |  |  |  |
| * The nameplate rating of the alternator.
 |  |  |  |
| * The alternator rating under the conditions.
 |  |  |  |
| * Each specified component load.
 |  |  |  |
| * Individual intermittent loads.
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **WEATHER RESISTANT ELECTRICAL JUNCTION BOX:**

The electrical junction or terminal boxes shall be weather resistant and located away from water spray conditions. In addition, the main body junction panel shall house the automatic reset breakers and relays where required. The main body junction panel shall be located in the pump compartment. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **COMPARTMENT DOOR OPEN SYSTEM ON VISTA SCREEN :**
 |  |  |  |
| The cab and body main compartment doors shall be wired to illuminate an open door indicator on the **Weldon V-MUX Vista** screen located in the cab when the parking brake is released. The indicator shall individually specify the door(s) that is(are) open. Accessories on the truck, such as light towers, hydraulic ladder rach, deck gun and small accessory doors shall also be wired to illuminate an indicator on the **Vista** screen when not stowed or open. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AIR HORNS:**

Two (2) 24.5" Stuttertone Flat Black paint in color air horns shall be recess mounted into the front bumper with one positioned on each side.An air protection valve shall be provided in the air horn piping that will not allow the chassis air brake system to drop below 90 PSI. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ELECTRIC TRAFFIC HORN AND AIR HORN SELECTOR SWITCH:**

One (1) selector switch shall be provided on the cab's dash that will allow the chassis steering wheel horn button to activate either the electric traffic horn or air horn system. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AIR HORN ACTIVATION:**
 |  |  |  |
| One (1) dual roof mounted pull cord shall be installed to activate the air horn system. The pull cord shall be installed within easy reach of the driver and officer. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP ENCLOSURE LIGHTS:**

One (1) LED work light shall be provided in the pump enclosure. |  |  |  |
| A switch shall be installed from a remote location on the operator's panel. The weatherproof on-off toggle switch shall be used for the remote switching. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BROW SCENE LIGHT :**

One (1) Whelen Pioneer Plus Super LED model PFH2 dual lamp brow light shall be center mounted, facing forward. The light shall draw 13 amps and generate 10,000 lumens. The bulb shall be accessible through the front. The lamphead shall be approximately more than 3" deep by 4-5/8" high by 14" wide. Lamphead and brackets shall be powder coated white. |  |  |  |
| The mounting location for the specified light shall be on the front edge of the chassis cab roof. |  |  |  |
| The one (1) front scene light(s) shall activate via a virtual scene light switch located on the driver's and officer's Vista screen and by a switch on the pump panel. The switching shall be wired to operate in a three-way configuration to allow the light(s) to be controlled from either location regardless of switch position. The switches shall be labeled "FRONT SCENE". |  |  |  |
| 1. **CAB SIDE SCENE LIGHTS :**
 |  |  |  |
| Two (2) Whelen Pioneer Super LED model PFA1R single lamp recess mount light shall be provided. The light shall draw 3 amps and generate 2500 lumens. The bulb shall be accessible through the front. The lamphead shall be approximately than 3" deep by 4-5/8" high by 8" wide. Lamphead and brackets shall be powder coated black. |  |  |  |
| One (1) scene light shall be located on the left side of the cab and One (1) scene light shall be located on the right side of the cab.  |  |  |  |
| The one (1) left side scene light(s) shall activate via a virtual scene light switch located on the driver's and officer’s Vista screen AND WIRED TO CAB DOOR SWITCH as per it’s respective side. |  |  |  |
| The one (1) right side scene light(s) shall activate via a virtual scene light switch located on the driver's and officer’s Vista screen AND WIRED TO CAB DOOR SWITCH as per it’s respective side. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **IN CAB HAND HELD SPOT LIGHTS :**

Six (6) Survivor LED Orange w/12v. charger, model 90509 shall be provided and installed inside of the cab on engine tunnel back wall. |  |  |  |
|  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **MARKER LIGHTS:**

LED marker lights shall be installed on the vehicle in conformance to the Canadian Motor Vehicle Safety Standard requirements. |  |  |  |
| Two (2) Britax P/N L427.203.L12V flex rubber arm style LED Clearance lights shall be mounted on the rear of the body, one each side. These lights are in addition to the lights required by the DOT. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **LICENSE PLATE BRACKET:**

One (1) stainless steel license plate bracket shall be provided at the rear bumper. The bracket shall have a LED light. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TAIL LIGHTS:**

One (1) pair of Code 3, model STTRBZ, LED tail/brake/turn/backup lights shall be provided. The 9x7 light shall incorporate all three, brake, turn and backup lights in one light. The red, white and amber lightheads use the Torus LED technology. |  |  |  |
| The lights shall be mounted on a black bezel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **MID BODY TURN SIGNALS:**

One (1) pair of mid body turn signals shall be provided. The LED lights shall be a Whelen M2 LED amber color. The location of the turn lights shall be at mid-body near the rear wheel axle and recessed in the lower body rub rail. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP PANEL GROUND LIGHTS:**

Two (2) LED ground lights shall be installed under the pump panel running boards. One (1) light shall be located on the driver's side and one (1) light located on the officer's side of the apparatus. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR STEP GROUND LIGHTS:**

Two (2) LED ground lights shall be installed under rear step of the apparatus. |  |  |  |
| The ground lights shall automatically activate when the apparatus headlights are operating. |  |  | Yes |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR TAILBOARD LIGHTS:**

Two (2) LED step lights with clear lens shall be installed to illuminate the step surfaces at the rear of the apparatus body. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **STEP LIGHT:**

Two (2) LED step light with clear lens shall be installed to illuminate the side running boards. |  |  |  |
| The step/walkway light switch shall be installed and wired to a switch on the pump panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DECK LIGHTS:**

The deck lights shall be installed at the front and at the rear of the hose bed. |  |  |  |
| There shall be four lights total with light switch with indicator at pump panel for all four (4). |  |  |  |
| Two at the front of the hose bed and two at the rear of the hose bed. |  |  |  |
| The lights shall be Fire research model **SOBRITE LED** and each has 7000 lumens. Lights body will be black color. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **SCENE LIGHTS:**

Whelen Pioneer Super LED model PCPSM2C dual lamp surface mount light with black housing shall be provided. The light shall draw 12 amps and generate 16,000 lumens. The bulb shall be accessible through the front. The lamphead shall be approximately 2" deep by 6-5/8" high by 16" wide. |  |  |  |
| * One (1) scene light shall be located on the left side of the apparatus body. The scene light shall be installed on a mounting plate black in colour.
 |  |  |  |
| * One (1) scene light shall be located on the right side of the apparatus body. The scene light shall be installed on a mounting plate black in colour.
 |  |  |  |
| Two (2) Whelen Pioneer Super LED model PCPSM1C single lamp surface mount light with Black housing shall be provided. Each light shall draw 6 amps and generate 8000 lumens. The bulb shall be accessible through the front. The lamphead shall be approximately 2" deep by 6-5/8" high by 9" wide. |  |  |  |
| * Two (2) scene lights shall be located on the rear of the apparatus body. They shall automatically come on when the; apparatus transmission is in the reverse position.
 |  |  |  |
| One (1) scene light switch with indicator shall be installed in cab and on the pump panel to control all scene light(s). The switch shall be labeled **"SCENE LIGHTS".** |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FLUID DATA PLAQUE:**

One (1) fluid data plaque containing required information shall be provided based on the applicable components for this apparatus, compliant with NFPA Standards: |  |  |  |
| * Engine oil
 |  |  |  |
| * Engine coolant
 |  |  |  |
| * Chassis transmission fluid
 |  |  |  |
| * Drive axle lubricant
 |  |  |  |
| * Power steering fluid
 |  |  |  |
| * Pump transmission lubrication fluid
 |  |  |  |
| * Other NFPA applicable fluid levels or data as required
 |  |  |  |
| Location shall be in the driver's compartment or on driver's door. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DATA & WARNING LABELS:**

**HEIGHT LENGTH & WEIGHT**A highly visible label indicating the overall height, length, and weight of the vehicle shall be installed in the cab dash area. |  |  |  |
| **CAB SEATING POSITION LIMITS**The label shall also include the seating positions for firefighters. A weight allowance of 250 pounds for each shall be factored into the gross vehicle weight rating of the chassis. |  |  |  |
| **NO RIDE LABEL**One (1) **"NO RIDERS**" label shall be applied on the vehicle at the rear step area or other applicable areas. The label shall warn personnel that riding in or on these areas, while the vehicle is in motion is prohibited. |  |  |  |
| **TIRE PRESSURE PLAQUE**A label shall be placed in a visible area that indicates the front and rear tire pressure |  |  |  |
| **HELMET WARNING TAG**One (1) label shall be installed in the cab, visible from each seating position. The label shall read **"CAUTION: DO NOT WEAR HELMET WHILE SEATED."** Helmets must be properly stowed while the vehicle is in motion according to the current edition of **NFPA 1901** |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FIRE PUMP:**

A new fire pump will be assembled and installed on the chassis and will comply with all NFPA and ULC in force that apply |  |  |  |
| The pump will be tested at its manufacturing plant by an external firm (third party) Underwriters Laboratory (UL) in a 1901 Edition 2016 and this prior to itsInstallation on the truck**. (No exception)** |  |  |  |
| The pumping system shall have a high-Pressure pump or a high-pressure auxiliary pump. |  |  |  |
| The pump will be new, class A, with a nominal flow of 1250 IGPM at 150 psi centrifugal type. |  |  |  |
| The pump manufacturer shall test the pump for 10 minutes hydrostatically at a pressure of 500 PSIG. Hydrostatic certification by the pump manufacturer shall be provided.  |  |  |  |
| **PUMP PERFORMANCE (NORMAL PRESSURE)** |  |  |  |
| * 100% of rated capacity (1 250 igpm) at 150 pounds net pressure
 |  |  |  |
| * 70% of rated capacity (875 igpm) at 200 pounds net pressure
 |  |  |  |
| * 50% of rated capacity (625 gipm) at 250 pounds net pressure
 |  |  |  |
| * 100% of rated capacity (1 250 igpm) at 165 pounds net pressure
 |  |  |  |
| **PUMP PERFORMANCE (HI-PRESSURE)** |  |  |  |
| The high-pressure pump must be able to deliver one flow rate at a minimum of 80 GIPM at 600 psi simultaneously with the low pressure **(no exception).** |  |  |  |
| Pump performance certification (Normal Pressure and Hi-Pressure) shall be provided by the pump manufacturer at the time of delivery (NO EXCEPTION). |  |  |  |
| Specify brand & model & pump or Pump system proposed with an example of pump performance certification (Normal Pressure and Hi-Pressure) as per the pump proposed. |  |  |  |
| The 1250 IGPM PTO driven pump must be ULC tested as a down rated to **1050 IGPM** pump capacity when vehicle is completed.  |  |  |  |
| When the pump is dry, it must be able toTo draft, in stationary mode, from a water tableLocated at 3m (10 feet) below the level of the pump using twenty 6m (20 feet) of suction hoses, and provide a water outlet flow, within 45 seconds. |  |  |  |
| The pump must meet the requirements **of NFPA****1901 last revision and CAN / ULC S515-13 INCLUDING AMENDMENTS**. A certificate from ULC will beSupplied to the pump operator panel. |  |  |  |
| The pump must be engaged via a switch in the cab “and” on the pump panel. |  |  |  |
| **PUMP VOLUTE, IMPELLERS AND SHAFT**The main pump body shall be easily removable without disturbing setting of the pump on the chassis or engine.  |  |  |  |
| The pump body and the pump impeller is to be of high quality seawater resistant made with Stainless Duplex Steel. |  |  |  |
| Pump impellers shall be accurately balanced and mounted on a stainless-steel pump shaft. The shaft shall be supported by roller bearings. Bearings shall be protected from water and sediment by maintenance free self-adjusting mechanical seals.  |  |  |  |
| Cast iron pumps will be acceptable. |  |  |  |
| **PUMP DRIVE SYSTEM**Pump drive system shall be with a heavy-duty PTO system bolted directly to the chassis transmission. There shall be a heavy-duty drive shaft furnished from the PTO to the midship pump transmission.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FIRE PUMP COOLING:**

The fire pump shall be equipped with a thermal bypass cooling system. The system shall automatically dump water through a discharge line to the ground when pump water temperature exceeds 140 degrees.  |  |  |  |
| The fire pump shall be equipped with 3/8" cooling line from the pump to the water tank chimney. This re-circulation line shall be controlled by a pump panel control valve with nameplate label noting it as the "fire pump bypass cooler".  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CHASSIS ENGINE HEAT EXCHANGER COOLING SYSTEM:**

The apparatus shall be equipped with a heat exchanger for supplementary chassis engine cooling during fire pump operations.  |  |  | Yes |
| The pump shall be jacketed built in heat exchanger.  |  |  |  |
| A manually opened valve, mounted at the operator's panel, shall direct water from the fire pump to the engine heat exchanger that is mounted in the engine radiator cooling hose. |  |  |  |
| The system shall provide cooling water from the fire pump to circulate around the engine radiator coolant without mixing or coming in direct contact with the engine coolant. The unit shall be installed by the chassis manufacturer and connected to the plumbing system by the fire apparatus manufacturer.  |  |  |  |
| A nameplate label shall be installed on the pump panel noting "engine cooling system" with "on-off" opening directions noted. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP ANODES:**

There shall be sacrificial, zinc anodes in the pump steamer ports which shall protect the pump and piping from electrolysis. These anodes shall also act as screens. |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PTO PUMP SHIFT SPECIFICATIONS -- PUMP AND ROLL:**

An electric powered PTO pump shift shall be installed in the cab driver's area where not subject to accidental engagement.  |  |  |  |
| An electric powered locking rocker switch for PTO pump engagement shall be installed in the cab driver's area. The pump shift system shall permit "pump and roll" operations, as well as stationary pumping operations. |  |  |  |
| The following indicator lights shall be included with pump shift.  |  |  |  |
| 1. A green indicator light, labeled "PUMP ENGAGED" shall indicate pump PTO has successfully been engaged.  |  |  |  |
| 2. A green indicator light, labeled "OK TO PUMP" shall indicate the PTO is engaged and parking brake is activated. Pump control is through the pressure governor. |  |  |  |
| 3. A red indicator light, labeled "PUMP & ROLL" shall indicate the PTO is engaged and parking brake is released. Pump control is through the driver's throttle pedal. |  |  |  |
| 4. Pump shift and interlocks shall comply with applicable sections of the NFPA standards. |  |  |  |
| 5. An instruction label and nameplate shall be provided to indicate proper pump engagement instructions. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP ENGAGEMENT SWITCH AT PUMP PANEL:**

There shall be an additional pump engagement switch located on the pump operator's panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PRIMER – AUTOMATIC:**

An automatic fire pump priming system shall be provided and installed. The system shall be oil-less type and environmentally safe. Once engaged, the system shall be fully automatic and not require any action from the pump operator/engineer when pump draft is lost. This feature provides an additional safety margin by maintaining pump flow from the available water source automatically during drafting operations. When air is introduced during a drafting operation from conditions such as whirlpools or turbulence from porta-tank refill operations, the priming system shall automatically engage to remove the air and stabilize water flow and pump pressure. For additional safety, the entire system shall operate at less than 70dBA of ambient noise.  |  |  |  |
| The priming system shall engage automatically whenever the pump discharge falls below five (5) psi and shall remain engaged until a pump prime has been achieved. The priming system shall automatically disengage when a positive pump discharge pressure has been established. The electrical current draw from the chassis batteries shall not exceed four (4) amps at any given time of operation and allow for unlimited run time without causing an overheat condition for of any of the system components. |  |  |  |
| A single engagement switch shall be provided on the pump control panel that will allow the operator to engage the automatic pump priming system. There shall be a light provided on the pump control panel to indicate when the system is engaged. The pump shall be capable of taking suction and discharging water with a lift of 10 feet in not more than 30 seconds with the pump dry, through 20 feet of suction hose of appropriate size. The priming system shall comply with applicable sections of NFPA standards. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PRIMER CONTROL:**

A rocker switch control shall be provided on the pump operator's panel, for the main pump primer control if needed for non automatic mode (override). |  |  |  |
| One (1) additional primer control valve shall be furnished to prime the rear suction line plumbing. |  |  |  |
| The Trident Emergency products RPV (remote priming valve) shall activate using the same air that powers the AirPrime system when the coinciding panel valve is depressed. Priming the remote suction line evacuates air from that line and minimizes cavitation during remote suction operations. The valve control is to be co-located next to the main priming valve control on the pump operator's panel. One (1) push button switch control shall be provided on the pump operator's panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PRESSURE GOVERNOR AND ENGINE-PUMP MONITORING:**

One (1) Fire Research InControl series TGA400 pressure governor and monitoring display kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 5 1/2" high by 10 1/2" wide by 2" deep. The control knob shall be 2" in diameter with no mechanical stops, have a serrated grip, and a red idle push button in the center. It shall not extend more than 1 3/4" from the front of the control module. Inputs for monitored information shall be from a J1939 databus or independent sensors. Outputs for engine control shall be on the J1939 databus or engine specific wiring. |  |  |  |
| The following continuous displays shall be provided: |  |  |  |
| * Pump discharge; shown with four daylight bright LED digits more than 1/2" high
 |  |  |  |
| * Pump Intake; shown with four daylight bright LED digits more than 1/2" high
 |  |  |  |
| * Pressure / RPM setting; shown on a dot matrix message display
 |  |  |  |
| * Pressure and RPM operating mode LEDs
 |  |  |  |
| * Throttle ready LED
 |  |  |  |
| * Engine RPM; shown with four daylight bright LED digits more than 1/2" high
 |  |  |  |
| * Check engine and stop engine warning LEDs
 |  |  |  |
| * Oil pressure; shown on a dual color (green/red) LED bar graph display
 |  |  |  |
| * Engine coolant temperature; shown on a dual color (green/red) LED bar graph display
 |  |  |  |
| * Transmission Temperature: shown on a dual color (green/red) LED bar graph display
 |  |  |  |
| * Battery voltage; shown on a dual color (green/red) LED bar graph display.
 |  |  |  |
| The dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. All LED intensity shall be automatically adjusted for day and night time operation. |  |  |  |
| The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions: |  |  |  |
| * High Battery Voltage
 |  |  |  |
| * Low Battery Voltage (Engine Off)
 |  |  |  |
| * Low Battery Voltage (Engine Running)
 |  |  |  |
| * High Transmission Temperature
 |  |  |  |
| * Low Engine Oil Pressure
 |  |  |  |
| * High Engine Coolant Temperature
 |  |  |  |
| * Out of Water (visual alarm only)
 |  |  |  |
| * No Engine Response (visual alarm only).
 |  |  |  |
| The program features shall be accessed via push buttons and a control knob located on the front of the control panel. There shall be a USB port located at the rear of the control module to upload future firmware enhancements. |  |  |  |
| Inputs to the control panel from the pump discharge and intake pressure sensors shall be electrical. The discharge pressure display shall show pressures from 0 to 600 psi. The intake pressure display shall show pressures from -30 in. Hg to 600 psi. |  |  |  |
| The governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A throttle ready LED shall light when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle. In pressure mode, the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode, the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle. |  |  |  |
| The pressure governor, monitoring and master pressure display shall be programmed to interface with a specific engine. |  |  |  |
|  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **IN-CAB PUMP AND ROLL DISCHARGE PRESSURE GAUGE :**
 |  |  |  |
| One (1) LED 2-1/2" (65mm) diameter Class 1 pressure gauge (Dual Scale PSI/kPa) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel. The gauges shall be back-lit with RED LEDs. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CHASSIS FUEL GAUGE :**

One (1) fuel tank level gauge, part number 960536, shall be installed on the pump panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **MIDSHIP FIRE PUMP DRIVESHAFTS AND INSTALLATION:**

The midship PTO fire pump shall be installed and shall include installation of the fire pump, modification and/or fabrication of new drivelines and all pump-mounting brackets. The PTO drive shaft(s) shall be spin balanced prior to final installation. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP PLUMBING SYSTEM:**

The fire pump plumbing system shall be of rigid stainless steel pipe or flexible piping with stainless steel fittings. Mechanical grooved couplings shall be installed to permit flexing of the plumbing system and allow for quick removal of piping or valves for service. Flexible hose couplings shall be threaded stainless steel or mechanical grooved coupling connections.  |  |  |  |
| The fire pump and plumbing shall be hydrostatically tested in compliance to applicable sections of NFPA standards. The test results shall be included in the delivery documentation. |  |  | Yes |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **STAINLESS STEEL INTAKE AND DISCHARGE MANIFOLD:**

The suction and discharge manifold assembly shall be fabricated with Schedule #10 type 304 stainless steel. All threaded fittings shall be a minimum of Schedule 10 stainless steel. The suction manifold assembly shall have radiused sweep elbows to minimize water turbulence into the suction volute. The suction and discharge manifolds shall be welded and pressure tested prior to installation. The stainless-steel manifold assembly shall be attached to the pump intake volute with a heavy-duty, flexible Victaulic coupling.The stainless-steel manifold inlet shall be attached to the pump discharge and have additional brackets as required to support the discharge manifold, valves and related components.The stainless-steel manifold assemblies shall have a ten (10) year warranty. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FIRE PUMP & PLUMBING SYSTEM PAINTING:**

The fire pump and plumbing system shall be painted by the fire apparatus manufacturer. The fire pump and the plumbing shall be painted metallic silver. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **6” HOSE THREADS:**

The 6” hose threads shall be National Standard Thread (NST) on all larger apparatus intakes.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FIRE PUMP MASTER DRAIN:**

The fire pump plumbing system and fire pump shall be piped to a single pump panel mounted 'handwheel' type master pump drain assembly. |  |  |  |
| The master drain valve shall be a bronze master drain with a rubber disc seal, a universal joint and a handwheel control on the pump panel. The master drain shall also provide for low point drainage of the fire pump and auxiliary devices. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP DRAINS:**

An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift, to open and push down, to close.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ADDITIONAL LOW POINT DRAINS:**

The plumbing system shall be equipped with additional low point manually operated drain valves to allow total draining of the fire pump plumbing system. These valves shall be accessible from the side of the vehicle and labeled. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FIRE PUMP AIR BLOWOUT:**

One (1) air blow out shall be provided for the fire pump. The air supply must be supplied from chassis air system and be connected to a quarter turn valve located on the pump operator's panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP 6 IN INTAKES:**

One (1) 6" suction intake shall be installed on the left side pump panel to supply the fire pump from an external water supply. The threads shall be 6" NST. The intake shall be provided with a removable screen |  |  |  |
| 6" gated suction intake shall be installed behind the left side pump panel. Intake shall be gated with an Elkhart Model EB6B electrically operated 6" butterfly valve, controlled at the pump operator's panel. The valve operating mechanism shall prevent movement of the valve from the fully closed position to the fully open position or vice versa, in less than three seconds. The valve control shall have a colored identification label. |  |  |  |
| A pressure dump/relief valve shall be included that is factory preset at 125 PSI and field adjustable from 75 to 250 PSI. The pressure dump/relief valve shall provide over-pressure protection for the suction hose even when the intake valve is closed. The outlet of the dump/relief valve shall be 2.5" in diameter to allow directing the discharge flow away from the pump operator's position. |  |  |  |
| One (1) 6" chrome plated cap shall be provided. The threads shall be NST and the cap shall be equipped long handles |  |  |  |
| One (1) 6" suction intake shall be installed on the right-side pump panel to supply the fire pump from an external water supply. The intake shall be provided with a removable screen. |  |  |  |
| One (1) 6" chrome plated cap shall be provided. The threads shall be NST and the cap shall be equipped long handles.  |  |  |  |
| An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift, to open and push down, to close.  |  |  |  |
| **GATED 6" INTAKE -- RIGHT SIDE REAR BODY** One (1) gated suction intake with 5" piping shall be installed behind the right side rear body panel. Intake pipe shall be provided with drain valves mounted at all low points of plumbing. |  |  |  |
| The intake shall be gated with an Elkhart model EB5B electrically operated 5" butterfly valve, controlled at the pump operator's panel. The valve operating mechanism shall prevent movement of the valve from the fully closed position to the fully open position or vice versa, in less than three seconds. The valve control shall have a colored identification label. |  |  |  |
| A pressure dump/relief valve shall be included that is factory preset at 125 PSI and field adjustable from 75 to 250 PSI. The pressure dump/relief valve shall provide over-pressure protection for the suction hose even when the intake valve is closed. The outlet of the dump/relief valve shall be 2.5" in diameter to allow directing the discharge flow away from the pump operator's position.  |  |  |  |
| An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. |  |  |  |
| An inlet fitting with 6" NST thread shall be provided, complete with a removable strainer screen. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **LEFT SIDE -- 2-1/2" GATED INTAKE:**

One (1) 2-1/2" gated suction intake shall be installed on left side pump panel to supply the fire pump from an external water supply. The control valve shall be a quarter turn ball valve and shall have 2-1/2" QST female thread of chrome plated brass. |  |  |  |
| The intake shall be equipped with a ¾" drain and bleeder valve. An identification label and removable screen shall be installed. |  |  |  |
| One (1) 2-1/2" chrome plated plug shall be provided. The threads shall be QST and the plug shall be equipped rocker lugs and chain or cable securement.  |  |  |  |
| The valve shall be an Elkhart two and one half-inch (2-1/2") swing-out ball valve. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valves shall be capable of bi-directional flow and incorporating a self-locking ball. The valve shall not require lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance. |  |  |  |
| The valve shall be equipped with one (1) manually operated, swing-type manual control located adjacent the intake. The control handle shall be equipped with self-locking feature. The valve shall be equipped with a color-coded name plate.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **INTAKE RELIEF/DUMP VALVE:**

One (1) TFT A18 series, 2-1/2" intake relief/dump valve preset at 125 psi shall be permanently installed on the suction side of the fire pump. The valve shall have an adjustment range of 75 psi to 250 psi, and shall be designed to automatically self-restore to a non-relieving position when excessive pressure is no longer present.  |  |  |  |
| Discharge side of the intake relief valve shall be plumbed away from the pump operator. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **WATER TANK TO PUMP LINE:**

One (1) 4" water tank to fire pump line shall be provided with a full flow quarter turn ball valve, 4" piping, and with flex hose and stainless steel hose clamps. The tank to pump line shall be equipped with a check valve to prevent pressurization of the water tank.  |  |  |  |
| The line shall be flow tested during the fire pump testing and shall meet applicable requirements of NFPA standards.  |  |  |  |
| The tank to pump valve shall be controlled at the pump operator's panel. |  |  |  |
| The valve shall be an Elkhart four-inch (4") swing-out valve. The valve shall have an all brass body. The valve shall utilize a manganese bronze flat design with a single UHMWP seat. The valve shall not require lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance. |  |  |  |
| The valve shall be operated manually using a 50:1 gear drive actuator in conjunction with a 4" chrome hand wheel control containing a mechanically driven position indicator. The actuator shall be quickly adjustable to one of four positions and require 12 revolutions from full open to full close. A color-coded name plate shall be installed over the valve control. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FIRE PUMP TO WATER TANK FILL LINE:**

One (1) 3" fire pump to water tank refill and pump bypass cooler line shall be provided. The valve shall be a full flow quarter turn ball valve with 3" piping and flex hose to tank. The valve control handle shall have a nameplate located near the valve control.  |  |  |  |
| The valve shall be an Elkhart Series three-inch (3") valve with a stainless ball. |  |  |  |
| The Elkhart valve equipped with a manually operated pull rod, with quarter-turn locking feature shall be provided on the intake. The handle shall be equipped with a color-coded name plate. |  |  |  |
| One (1) 2-1/2" Class 1 discharge pressure gauges (0-400 PSI) shall be provided. The gauge shall be lite up. The lighting shall be **green** in color. The gauges will be located on the pump panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CANADIAN UNDERWRITERS LABORATORIES CERTIFICATION:**

The apparatus shall undergo a Canadian Underwriters Laboratories Incorporated inspection and test per current ULC standards, prior to delivery of the completed apparatus. These tests shall include pump, tank, weight, brake, and other applicable ULC inspection and testing. The test shall be performed on site by UL/ULC staff and shall include a listing of the apparatus as a fire fighting appliance. The manufacturer shall be ULC certified as a listed fire firefighting appliance manufacturer. |  |  |  |
| The ULC acceptance certificate and listing label shall be furnished with the apparatus on delivery. |  |  |  |
| **The pump will have the capacity to reach 1250 IGPM (Imperial Gallons per Minute) at 150 PSI but it shall be ULC tested as 1050 IGPM at 150 PSI.** |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TWO (2) 1-1/2" CROSSLAY DISCHARGES:**

Two (2) pre-connect 1-3/4" hose crosslays shall be installed over pump enclosure, with quarter turn 2" diameter ball valves. The outlets shall be a 2" NPT female swivel x 1-1/2" male NPSH hose threads.  |  |  |  |
| The crosslay hosebeds shall have smooth aluminum sides. The hosebed decking shall be constructed with slots integrated into the hosebed floor.  |  |  |  |
| Each hosebed shall provide for a minimum capacity of 200 feet of 1-3/4" diameter double jacket hose with nozzle, for hose provided by the fire department.  |  |  |  |
| A single crosslay divider is to be notched on each end allowing for the storage of pre-connected nozzles in the crosslays. |  |  |  |
| An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close. |  |  |  |
| The specified valve shall be an Elkhart two-inch (2") swing-out ball valve. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valves shall be capable of bi-directional flow and incorporating a self-locking ball. The valve shall not require lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance. |  |  |  |
| For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation. |  |  |  |
| The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label. |  |  |  |
| Two (2) LED 2-1/2" (65mm) diameter Class 1 pressure gauge (Dual Scale PSI/kPa) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel. The gauges shall be back-lit with BLUE LEDs.  |  |  |  |
| Crosslay discharges shall be "LOW MOUNTED" above the lower pump panel. The body manufacturer shall denote in the specifications and proposal drawings. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CROSSLAY HINGED COVER WITH END FLAPS:**

The crosslay hosebed shall be equipped with a single aluminum diamond plate hinged cover with vinyl end flaps with hook & loop fasteners. The cover shall have rubber bumpers, latching devices, and lift up handle on each end of the cover. The cover shall be covered in LINE- X black in color. |  |  |  |
| The hosebed cover shall be labeled, "Not a Standing or Walking Surface", per NFPA. |  |  |  |
| The vinyl end flap covers shall be black in color. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ROLLERS FOR CROSSLAY HOSE BED:**

The crosslay hosebed shall be equipped stainless steel "U" shaped roller system, one on each end of the hosebed.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **LEFT SIDE PUMP PANEL -- 2-1/2" DISCHARGE:**

Two (2) 2-1/2" discharge shall be installed on the left side pump panel area and shall be controlled by a quarter turn ball valve. The discharge shall have 2-1/2" NST male hose threads. A color-coded nameplate label shall be provided adjacent the control handle.  |  |  |  |
| Two (2) colored elbow with rocker lugs shall be provided with 2-1/2" NST swivel female x 2-1/2" QST male hose threads.  |  |  |  |
| The color shall match the handle plate. |  |  |  |
| Two (2) 2-1/2" QST rocker lug colored vented cap and cable or chain securement shall be provided.  |  |  |  |
| The specified valve shall be an Elkhart two and one half-inch (2-1/2") swing-out ball valve. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valves shall be capable of bi-directional flow and incorporating a self-locking ball. The valve shall not require lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance. |  |  |  |
| For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation. |  |  |  |
| The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label. |  |  |  |
| Two (2) LED 2-1/2" (65mm) diameter Class 1 pressure gauges (Dual Scale PSI/kPa) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel. The gauges shall be back-lit with **BLUE** LEDs. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **RIGHT SIDE PUMP PANEL -- 2-1/2" DISCHARGE:**

One (1) 2-1/2" discharge shall be installed on the right-side pump panel area and shall be controlled by a quarter turn ball valve. The discharge shall have 2-1/2" NST male hose threads. A color-coded nameplate label shall be provided adjacent the control handle.  |  |  |  |
| One (1) colored elbow with rocker lugs shall be provided with 2-1/2" NST swivel female x 2-1/2" QST male hose threads.  |  |  |  |
| The color shall match the handle plate. |  |  |  |
| One (1) 2-1/2" QST rocker lug colored vented cap and cable or chain securement shall be provided.  |  |  |  |
| The specified valve shall be an Elkhart two and one half-inch (2-1/2") swing-out ball valve. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valves shall be capable of bi-directional flow and incorporating a self-locking ball. The valve shall not require lubrication of seats or any other internal waterway parts, and can swing out of the waterway for maintenance. |  |  |  |
| For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation. |  |  |  |
| The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label. |  |  |  |
| One (1) LED 2-1/2" (65mm) diameter Class 1 pressure gauge (Dual Scale PSI/kPa) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel. The gauge shall be back-lit with **BLUE** LEDs. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **RIGHT SIDE PUMP PANEL -- 3" x 4" DISCHARGE:**

One (1) 3" discharge shall be installed on the right-side pump panel area and shall be controlled by a full flow 3" slow-close quarter turn ball valve. The discharge shall have 4" NST male hose threads. A color-coded nameplate label shall be provided adjacent the control handle. |  |  |  |
| One (1) lightweight aluminum elbow with 30-degree slant and One (1) 4" lightweight aluminum Storz cap with cable or chain securement shall be provided. Threads shall be 4" Storz with lugs and manual locks x 4" female swivel NST with rocker lugs. The elbow shall match the color of the handle plate. |  |  |  |
| One (1) Elkhart valve equipped with a manually operated pull rod, with quarter-turn locking feature and a manual slow-close device shall be provided on the specified discharge. The handle shall be equipped with a color-coded name plate |  |  |  |
| One (1) LED 2-1/2" (65mm) diameter Class 1 pressure gauge (Dual Scale PSI/kPa) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel. The gauge shall be back-lit with BLUE LEDs. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR LEFT SIDE -- 2-1/2" DISCHARGE:**

One (1) 2-1/2" discharge shall be installed on the left side rear panel of the apparatus body and shall be controlled by a quarter turn ball valve on the pump panel. The discharge shall have 2-1/2" NPT x 2-1/2" NST male hose threads. The outlet shall be equipped with an engraved nameplate label shall be installed adjacent the valve control handle.  |  |  |  |
| One (1) colored elbow with rocker lugs shall be provided with 2-1/2" NST swivel female x 2-1/2" QST male hose threads.  |  |  |  |
| The color shall match the handle plate. |  |  |  |
| One (1) 2-1/2" QST rocker lug colored vented cap and cable or chain securement shall be provided.  |  |  |  |
| The specified valve shall be an Elkhart two and one half-inch (2-1/2") swing-out ball valve. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valves shall be capable of bi-directional flow and incorporating a self-locking ball. The valve shall not require lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance. |  |  |  |
| For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation. |  |  |  |
| The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label. |  |  |  |
| One (1) LED 2-1/2" (65mm) diameter Class 1 pressure gauge (Dual Scale PSI/kPa) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel. The gauge shall be back-lit with BLUE LEDs. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **3" MONITOR DISCHARGE:**

One (1) 3" discharge shall be piped to the area over the pump enclosure with 3" NPT male threads provided. The pipe shall be equipped with Victaulic couplings (if necessary) and shall be properly secured to prevent movement when a monitor or deck gun is attached. The quarter turn ball valve shall be controlled on pump panel.  |  |  |  |
| The specified valve shall be an Elkhart three-inch (3") swing-out ball valve. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valves shall be capable of bi-directional flow and incorporating a self-locking ball. The valve shall not require lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance. |  |  |  |
| One (1) Elkhart valve equipped with a manually operated pull rod, with quarter-turn locking feature and a manual slow-close device shall be provided on the specified discharge. The handle shall be equipped with a color-coded name plate.  |  |  |  |
| One (1) LED 2-1/2" (65mm) diameter Class 1 pressure gauge (Dual Scale PSI/kPa) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel. The gauge shall be back-lit with BLUE LEDs. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **MONITOR:**

One (1) Akron #3430 GP (or equivalent) Manual monitor and direct truck mount adapter shall be installed. The monitor shall be capable of 360-degree rotation and be capable of flowing 1000 GPM when installed on the direct truck mount. |  |  |  |
| The GP Manual monitor shall be equipped with a built-in pressure gauge. The “T” handle manual control provides precise and easy positioning and control. |  |  |  |
| One (1) Akron #1747 EXCEL nozzle (or equivalent) shall be provided. The nozzle manually adjustable with to accommodate the fluctuating flows of 300 to 1000 GPM. The stream pattern can easily be adjusted for an infinite pattern selection from straight stream to a wide full fog. The construction of the nozzle shall be lightweight aluminum with a 2-1/2" NH swivel base. |  |  |  |
| One (1) Akron 3488 (or equivalent) stream shaper with model #2499 quad stacked handline tips shall be provided. The set shall consist of four (4) tips with the base tip having a 2-1/2" female NH swivel inlet and 2" outlet. The other tip sizes shall be 1-3/4", 1-1/2" and 1-3/8". Each tip shall be laser engraved with a flow/pressure chart, orifice size, and thread size. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ELECTRIC REWIND HOSE REEL:**

One (1) Hannay unpainted aluminum hose reel with leak proof ball bearing swing joint, adjustable friction brake, electric rewind shall be installed.   |  |  |  |
| The reel shall be plumbed with wire reinforced, high-pressure hose coupled. The reel shall be bolted to a mounting system for easy service or removal. |  |  |  |
| The hose reel is to be mounted in the front bumper extension.  |  |  |  |
| The hose reel shall be installed within an aluminum tread plate enclosure for protection against cold weather. Access to the hose and nozzle shall be through a hinged door. |  |  |  |
| A push button hose reel rewind switch shall be installed to control the electric rewind hose reel. The exact location shall be determined at construction. |  |  |  |
| One (1) 1" discharge shall be provided and piped from the fire pump to the hose reel with flexible high pressure hose. The quarter turn ball valve shall be controlled on pump panel. A color-coded nameplate label shall be provided near the valve control handle.  |  |  |  |
| The specified hose reel shall be piped to the high-pressure fire pump. |  |  |  |
| The specified valve shall be an Elkhart one-inch (1") swing-out ball valve. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valves shall be capable of bi-directional flow and incorporating a self-locking ball. The valve shall not require lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance. |  |  |  |
| The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation. |  |  |  |
| The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label. |  |  |  |
| One (1) LED 2-1/2" (65mm) diameter Class 1 pressure gauge (Dual Scale PSI/kPa) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel. The gauge shall be back-lit with RED LEDs. |  |  |  |
| Two (2) 100' foot lengths of 1" water hose (200') with pin lug couplings and 800 PSI working pressure shall be provided and mounted on the specified hose reel.  |  |  |  |
| A 'high pressure' nozzle with detachable foam tube shall be furnished and installed on the specified booster hose reel. The nozzle shall have a 38mm storz connection. |  |  |  |
| The specified booster reel nozzle shall be mounted adjacent the hose reel area in secure mountings. |  |  |  |
| One (1) stainless steel four-sided captive type roller assembly shall be provided. The location of the captive rollers shall be on the bumper. |  |  |  |
| One (1) air blow out shall be provided for the booster reel. The air supply must be supplied from the chassis air system and be connected to a quarter turn valve located on the pump operator's panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HIGH PRESSURE FOAM SYSTEM:**

One (1) high pressure foam system, suitable for all commercially available foaming agents, shall be incorporated into the construction of the high pump. The system shall provide a constant proportioning rate of 3.0% regardless of water pressure and volume. The foam system shall be capable of providing foam at high pressure to feed the booster reel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **OFF-TRUCK FOAM CONNECTION :**

An Off-Truck foam plumbing shall be provided and be able to draft from from pail on the ground and capable to feed the foam system. The system shall be plumbed to the inlet side of the foam system and have in inline check valve.The Off-Truck assess kit whall include a quick disconnect pick-up tube with quick disconnect fitting and cap on side pump panel |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **SIDE MOUNT PUMP ENCLOSURE:**

The side mount pump enclosure shall be removable and supported from the chassis frame rails. This enclosure will allow independent flexing of the pump enclosure from the body and allow for quick removal. The support structure shall be constructed of extruded aluminum tubing and angle.  |  |  |  |
| One (1) open compartment shall be located on the top of the pump module. The compartment will be constructed as large as space permits with removable slip resistance floor material or decking in the base of the compartment.These compartment vertical sides will be aluminum finish and the floor will be slip resistance aluminum diamond plate. |  |  |  |
| All pump suction and discharge controls are to be mounted on the driver side pump operator's panel so as to permit operation of the pump from a central location. The fire pump, valves and controls shall be accessible for service and maintenance as required by applicable sections of NFPA standards.  |  |  |  |
| The LED white color coded "master" gauges shall be suitably enclosed and mounted on a full pump compartment width "hinged" gauge panel constructed of the same material as the pump operators control panel, allowing access to the backside of all gauges and gauge lines. The individual gauges shall be mounted inline with the control handle or adjacent to the control handle. Panel is to include a stainless-steel piano hinge, flush mounted chrome plated trigger latch, and stainless steel cable end stops. Electrical wiring and all gauge lines shall be properly tie wrapped to prevent kinking or cutting of the lines when the panel is opened.  |  |  |  |
| The following controls and equipment as specified in the specifications, shall be provided (and not limited to) on the pump panel or within the pump enclosure: |  |  |  |
| * Primer override.
 |  |  |  |
| * Pump and plumbing area service lights.
 |  |  |  |
| * Pressure control device and throttle control.
 |  |  |  |
| * Fire pump and engine instruments.
 |  |  |  |
| * Pump intakes and discharge controls.
 |  |  |  |
| * Master intake and discharge gauges.
 |  |  |  |
| * Tank fill control.
 |  |  |  |
| * Tank suction control.
 |  |  |  |
| * Water tank and foam level gauge.
 |  |  |  |
| * Pump panel lights.
 |  |  |  |
| **CROSSLAY INSTALLATION**The area atop the pump enclosure shall be notched for the installation of a crosslay hose bed. The hosebed shall have smooth sides and a perforated floor to allow for drainage.Provisions shall be provided to secure hose and equipment per requirements of applicable NFPA standards |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **LEFT SIDE RUNNING BOARD -- AGRESSIVE SURFACE:**

The left side mount pump panel shall be equipped with side running board. The running board will extend along the width of the pump enclosure from the forward end of the body module to behind the chassis cab.  |  |  |  |
| The running board shall be constructed of aluminum treadplate with grip style inserts, bolted in place with stainless steel fasteners. The step surfaces shall be with compliance to applicable sections of NFPA requirements.The running board shall be covered in LINE- X, black in color |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **RIGHT SIDE RUNNING BOARD -- AGRESSIVE SURFACE:**

The right-side mount pump panel shall be equipped with side running board. The running board will extend along the width of the pump enclosure from the forward end of the body module to behind the chassis cab.  |  |  |  |
| The running board shall be constructed of aluminum treadplate with grip style inserts, bolted in place with stainless steel fasteners. The step surfaces shall be in compliance with applicable sections of NFPA requirements.The running board shall be covered in LINE-X black in color. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP ENCLOSURE ACCESS DOOR -- RIGHT SIDE UPPER:**

A pump panel access door shall be provided on the upper right side of the side mount pump enclosure. The access door shall be approximately 18" high and as wide as possible. The door shall be constructed of aluminum tread plate with push button type latches. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FRONT ACCESS PUMP PANELS:**

Two (2) removable access panels constructed of .125 aluminum treadplate material shall be provided at the front of the pump compartment. The access panels shall be flush mounted in the forward wall of the pump compartment. Each door shall have a bent "D"-ring type handle with dual locking pins on each side. |  |  | Yes |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP PANEL -- SIDE MOUNT:**

The pump operator's panel, along with the lower left hand and right hand pump panels shall be constructed of Line-X aluminum material and be fastened to the pump enclosure with 1/4" stainless steel bolts.  |  |  |  |
| The instrument area shall have a stainless steel continuous hinge that shall swing for easy access to gauges. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **LEFT SIDE PUMP PANEL -- BOLTED:**

The pump panel installed on the left-hand side of the pump enclosure shall be fastened to the pump enclosure with 1/4" stainless steel bolts. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HINGED PUMP PANEL -- RIGHT SIDE:**

The pump panel installed on the on the right-hand side of the pump enclosure shall be hinged with push-button latches. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP PANEL COLOR TRIM PANELS:**

Innovative Controls intake and discharge trim rings shall be installed to the apparatus with mounting bolts. These bezel assemblies will be used to identify intake and discharge ports with color and verbiage. These trim rings are designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The specified assemblies feature a chrome-plated panel-mount bezel with durable UV resistant polycarbonate inserts. These UV resistant polycarbonate graphic inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. All insert labels shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP COMPARTMENT HEATER SYSTEM:**

The interior of the pump enclosure shall be equipped with a minimum of 30,000 BTU hot water heater system. The unit shall be piped to the chassis radiator system with standard heater hose. The hose shall be properly clamped and secured in place, and be properly protected from engine exhaust or mechanical damage.  |  |  |  |
| The heater unit shall be equipped with a 12-volt blower fan with control located on the pump operator's panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ARCTIC INSULATION PACKAGE:**

The entire pump compartment shall be insulated for heat retention. All four sides and the top shall be covered with a 1" closed cell foam with foil backing. Rubber booting shall be used as feasible to seal around plumbing and shafts going in and out of the pump house. |  |  |  |
| A removable casing constructed of galvanized steel (or aluminum), completely enclosing the underside of the pump compartment and heated by the engine exhaust shall be provided. The heat pan assembly shall include individual panels that can be easily removed from there mounting locations. The two-outer slide-out panels shall be bolted in place. |  |  |  |
| A flexible rubber gasket shall be installed between the pump compartment and the apparatus body. This gasket will be designed to seal the pump compartment to the apparatus body as tightly as practical. This gasket is necessary for winter operation in extremely cold climates |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **LABELS:**

Safety, information, data, and instruction labels for apparatus shall be provided and installed at the operator's instrument panel. |  |  |  |
| The labels shall include rated capacities, pressure ratings, and engine speeds as determined by the certification tests. The no-load governed speed of the engine, as stated by the engine manufacturer, shall also be included.  |  |  |  |
| The labels shall be provided with all information and be attached to the apparatus prior to delivery. |  |  |  |
| Discharge and intake valve controls shall be color coded in compliance to guidelines of applicable sections of NFPA standards. |  |  |  |
| Innovative Controls permanent type nameplates and instruction panels shall be installed on the pump panel for safe operation of the pumping equipment and controls. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP PANEL LIGHTS:**

One (1) 45" long Federal Signal Commander Light Strip, model COMSTR-45, LED compartment light shall be installed under an instrument panel light hood on the left side and on the right side panels. The LEDs and electronics shall be enclosed in a 5/8" diameter Lexan tube that is sealed at both ends with EPDM rubber caps to create a waterproof environment and be suitable for mounting in a wet location. The LEDs shall be in a row one inch apart and have a beam angle of 120 degrees. The tube shall rotate to adjust the beam direction as required.The light shall have forty-five (45) white LEDs that generate a rated 750 lumens of light at 12 VDC/0.87 amps and have a life span of over 50,000 hours. The light shall fit in a 47" space and be secured with four (4) molded nylon mounting clips. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **PUMP ENGAGED LIGHT:**

One (1) pump panel light shall be illuminated at the time the fire pump is engaged into operation. The remaining lights shall be controlled by a switch located on the operator's instrument panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **MASTER DISCHARGE AND INTAKE GAUGES:**

Two (2) LED 4-1/2" (115mm) diameter Class 1 discharge pressure and intake gauges (Dual Scale PSI/kPa, 30"-0-600 PSI & -100-0-4000 kPa) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel. The gauges shall be back-lit with BLUE LEDs. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **TEST TAPS:**

Test taps for pump intake and pump pressure shall be provided on the pump instrument panel and be properly labeled. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| --- | --- | --- | --- |
| 1. **WATER TANK GAUGE:**

The apparatus shall be equipped with one (1) Fire research Tankvision 400 water tank level gauge system. The tank level gauge shall indicate the liquid level on an easy to read LED display and show increments of 1/8 of a tank. |  |  |  |
| Each tank level gauge system shall include: |  |  |  |
| • A pressure transducer mounted on the outside of the tank in an easily accessible area.  |  |  |  |
| • Weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power. |  |  |  |
| The primary water tank level gauge shall be installed at the pump panel. |  |  |  |
| One (1) Fire Research TankVision model WLA205-A00 miniature tank indicator shall be installed in the chassis cab. The indicator shall show the volume of water in the tank on five (5) easy to see super bright LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be manufactured of Polycarbonate material with an integrated lens and have a distinctive blue label. |  |  | Yes |
| The miniature indicator shall receive input information over a single wire from a Fire Research TankVision primary indicator model, WLA400-A00. |  |  | yes |

|  |  |  |
| --- | --- | --- |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| --- | --- | --- | --- |
| 1. **WATER TANK LEVEL LIGHTS:**

Three (3) sets of Whelen PS-Tank mounted LED lights shall be installed one each side of the apparatus and one (1) on the rear to allow for monitoring the water tank level from a distance. |  |  | Yes |
| They shall be configured as follows: |  |  |  |
| * GREEN - Position 1 indicates FULL
 |  |  |  |
| * BLUE - Position 2 indicates 3/4
 |  |  |  |
| * AMBER - Position 3 indicates 1/2
 |  |  |  |
| * RED - Position 4 indicates 1/4
 |  |  |  |
| Each light shall remain illuminated until the water level drops below full 3/4, 1/2, or 1/4 levels. When the level drops below 1/4 the RED light will flash to indicate an empty tank. The Whelen PS-Tank water tank level lights shall be controlled with a Fire research Tankvision remote driver. |  |  |  |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |

|  |  |  |  |
| --- | --- | --- | --- |
| 1. **HANDRAIL SIDE PUMP PANEL:**

Four (4) extruded aluminum non-slip handrails, approximately 12" in length, shall be provided and vertically mounted, one (1) each side on the side pump panel on both sides. |  |  |  |
| The handrails shall have intergraded LED white lighting |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| --- | --- | --- | --- |
| 1. **WATER TANK - 1100 IMPERIAL GALLON:**

The apparatus shall be equipped with a one thousand one-hundred (1100) Imperial gallon polypropylene water tank. The tank shall be equipped with a four-inch (4") overflow pipe  |  |  |  |
| The apparatus shall be equipped with a "T" shaped tank. |  |  |  |
| A fill tower measuring approximately 10” x 10” square shall be provided on the water tank up to and including 1500 gallons’ total capacity. |  |  |  |
| The apparatus shall be equipped with a polypropylene water tank. The tank body and end bulkheads shall be constructed of .75" thick, polypropylene, nitrogen-welded and tested inside and out. Tank construction shall conform to applicable NFPA standards. The tank shall carry a lifetime warranty. |  |  |  |
| The transverse and longitudinal .375" thick swash partitions shall be interlocked and welded to each other as well as to the walls of the tank. The partitions shall be designed and equipped with vent holes to permit air and liquid movement between compartments. |  |  |  |
| The .5" thick cover shall be recessed .375" from the top of the side walls. Hold down dowels shall extend through and be welded to both the covers and the transverse partitions, providing rigidity during fast fill operations. Drilled and tapped holes for lifting eyes shall be provided in the top area of the booster tank. |  |  |  |
| A combination vent/water fill tower shall be provided at front of the tank. The 0.5" thick polypropylene fill and overflow tower shall be equipped with a hinged lid and a removable polypropylene screen. The overflow tube shall be installed in fill tower and piped with a minimum schedule 40 PVC pipe through the tank. |  |  |  |
| The water tank sump shall be located in the forward area of the tank. There will be a schedule 40 polypropylene tank suction pipe from the front of the tank to the tank sump. The tank drain and clean out shall be located in the bottom of the tank sump. The sump shall have a minimum 3" threaded outlet on the bottom to be used for a combination clean out and drain. |  |  |  |
| The pump to tank refill connection shall be a sized to mate with tank fill discharge line. A deflector shield inside the tank will also be provided.  |  |  |  |
| The tank shall rest on the body cross members in conjunction with such additional cross members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor. In cases where overall height of the tank exceeds 40 inches, cross member spacing must be decreased to allow for not more than 400 square inches of unsupported area. |  |  |  |
| The tank must be isolated from the cross members through the use of hard rubber strips with a minimum thickness and width dimension of 1/4” x 1” and a hardness of approximately 60 durometers. The rubber must be installed so it will not become dislodged during normal operation of the vehicle. Additionally, the tank must be supported around the entire bottom outside perimeter and captured both in the front and rear as well as side to side to prevent tank from shifting during vehicle operation. |  |  |  |
| A picture frame type cradle mount with a minimum of 2" x 2" x 1/4” mild steel, stainless steel, or aluminum angle shall be provided or the use of corner angles having a minimum dimension of 4" x 4" x 1/4” by 6” high are permitted for the purpose of capturing the tank. |  |  |  |
| Although the tank is designed on a free-floating suspension principle, it is required that the tank have adequate vertical hold down restraints to minimize movement during vehicle operation. If proper retention has not been incorporated into the apparatus hose floor structure, an optional mounting restraint system shall be located on top of the tank, half way between the front and the rear on each side of the tank. These stops can be constructed of steel, stainless steel or aluminum angle having minimum dimensions of 3" x 3" x 1/4” and shall be approximately 6” to 12” long. These brackets must incorporate rubber isolating pads with a minimum thickness of 1/4” inch and a hardness of 60 durometer affixed on the underside of the angle. The angle should then be bolted to the body side walls of the vehicle while extending down to rest on the top outside edge of the upper side wall of the tank.  |  |  |  |
| Hose beds floors must be so designed that the floor slat supports extend full width from side wall to side wall and are not permitted to drop off the edge of the tank or in any way come in contact with the individual covers where a puncture could occur. Tank top must be capable of supporting loads up to 200 lbs per sq. foot when evenly distributed. Other equipment such as generators, portable pumps, etc. must not be mounted directly to the tank top unless provisions have been designed into the tank for that purpose. The tank shall be completely removable without disturbing or dismantling the apparatus structure. |  |  |  |
| The tank construction shall include PolyProSealTM technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method shall provide a liquid barrier, offering leak protection in the event of a weld compromise. |  |  |  |
| The tank shall be equipped with Polychromatic fill towers. The water fill tower shall be blue in color. The foam tank fill towers, if applicable, shall be yellow for foam A and green for foam B and black for any additional foam fill towers. |  |  |  |
| The water tank shall be certified for the capacity of the water tank prior to delivery of the apparatus. This capacity shall be recorded on the manufacturer's record of construction and the certification shall be provided to the purchaser when the apparatus is delivered.  |  |  |  |
| The tank shall be manufactured by United Plastic Fabricating (UPF). |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| 1. **WATER TANK WARRANTY:**

**UNITED PLASTIC FABRICATION INC. Warrants each UPF POLY-TANK IIE** Booster/Foam tank to be free from manufacturing defects in material and workmanship for the service life of the vehicle (vehicle must be actively used in fire suppression). The UPF POLY-TANK IIE must be installed in accordance with the United Plastic Fabricating installation manual. Every UPF POLY-TANK IIE is thoroughly inspected and tested for leaks before leaving our facility. Should any problems develop with your UPF POLY-TANK IIE booster/foam tank and will not meet performance criteria during the service life of the vehicle, notify UPF in writing or call our TOLL-FREE SERVICE HOT LINE 1-800-USA-POLY. Provide UPF with the serial number and a description of the problem. If the tank problem would render the truck out of service, UPF will dispatch a service technician WITHIN 48 HOURS (2 DAYS) to repair the tank. (This time period is for North America only). If the vehicle can remain in service, UPF will dispatch a service technician within a mutually agreed upon time period. |  |  |  |
| We will repair, or at our option, replace the tank with a new UPF POLY-Tank IIE. UPF will cover customary and reasonable costs to remove and install the UPF POLY-TANK IIE. This warranty will not cover tanks that have been improperly installed, misused or abused, and the serial number must not have, been altered, defaced or removed. UPF will not cover any unauthorized third party repairs or alterations. Any of these actions may void the warranty. |  |  |  |
| **THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION OF THE FACE HEREOF. THERE IS NO EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. ADDITIONALLY, THIS WARRANTY IS IN LIEU OF ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF UNITED PLASTIC FABRICATION, INC.** |  |  |  |
| This warranty contains the entire warranty. It is the sole warranty and price agreements or representation, whether oral or written, are either merged herein or expressly cancelled. **UNITED PLASTIC FABRICATION, INC.** Neither assumes, nor authorizes any person supposing to act on its behalf, to change, nor assume for it, any warranty or liability concerning its product. |  |  |  |
| **IN NO EVENT WILL UNITED PLASTIC FABRICATION, INC BE LIABLE FOR AN AMOUNT IN EXCESS OF THE PRESENT RETAIL, PURCHASE PRICE PLUS INSTALLATION AND REMOVAL COST OF THE BOOSTER TANK, FOR ANY LOSS OR DAMAGE, WHETHER DIRECT OR** **INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR OTHERWISE ARISING OUT OF FAILURE OF ITS PRODUCT.** |  |  |  |
| This warranty gives you specific legal rights, and you may have other rights, which vary from state to state. Some states do not allow exclusion or limitation of incidental of incidental or consequential damage, so the above limitation or exclusion may not apply to you. Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| 1. **FOAM TANK CONTROL:**

One (1) Class A foam tank shall be plumbed with 1" valve and corrosion resistant hose from the foam tank to the foam inlet of the foam system. The manually opened valve shall be provided behind the pump panel with a label. |  |  |  |
| One (1) strainer with 304 stainless steel #20 mesh screen shall be installed in the foam line ahead of the foam concentrate pump. The strainer shall be easily accessible and removable for cleaning. The strainer screen shall be suitable for all types of Class A and B foam concentrates. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| 1. **20 GALLONS FOAM TANK:**

One (1) twenty (20) gallon Class A foam tank shall be installed within the water tank. The non-corrosive foam tank shall meet applicable sections of NFPA standards. The foam concentrate tank shall be provided with sufficient wash partitions so that the maximum dimension perpendicular to the plane of any partition shall not exceed 36 inches. The swash partition(s) shall extend from wall to wall and cover at least 75 percent of the area of the plane of the partition. |  |  |  |
| The foam concentrate tank shall be provided with a fill tower or expansion compartment having a minimum area of 12 square inches and having a volume of not less than 2 percent of the total tank volume. The fill tower opening shall be protected by a completely sealed air-tight cover. The cover shall be attached to the fill tower by mechanical means. The fill opening shall be designed to incorporate a 1/4-inch removable screen and shall be located so that foam concentrate from a five (5) gallon container can be dumped directly to the bottom of the tank to minimize aeration without the use of funnels or other special devices. |  |  |  |
| The foam tank fill tower shall be equipped with a pressure/vacuum vent that enables the tank to compensate for changes in pressure or vacuum when filling or withdrawing foam concentrate from the tank. The pressure/vacuum vent shall not allow atmospheric air to enter the foam tank except during operation or to compensate for thermal fluctuations. The vent shall be protected to prevent foam concentrate from escaping or directly contacting the vent at any time. The vent shall be of sufficient size to prevent tank damage during filling or foam withdrawal. |  |  |  |
| A color-coded label or visible permanent marking that reads **"FOAM TANK FILL**" shall be placed at or near any foam concentrate tank fills opening. A label shall be placed at or near any foam concentrate tank fill opening that specifies the type of foam concentrate the system is designed to use. Any restrictions on the types of foam concentrate that can be used with the system shall also be stated, and a warning message that reads **"WARNING: DO NOT MIX BRANDS AND TYPES OF FOAM."** |  |  |  |
| The foam concentrate tank outlet connection shall be designed and located to prevent aeration of the foam concentrate and shall allow withdrawal of 80 percent of the foam concentrate tank storage capacity under all operating conditions with the vehicle level. |  |  |  |
| The foam tank(s) shall be fabricated by United Plastic Fabricating.  |  |  |  |
| The foam tank shall have one (1) 1" gate valve drain provision piped to the side of the apparatus with large color coded label installed.  |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| 1. **FOAM TANK GAUGE:**

A Fire Research TankVision Pro model WLA360-A00 foam tank indicator kit shall be installed at the operator’s panel. The kit shall include an electronic indicator module, a pressure sensor, a 10-ft sensor cable and a tank vent. The indicator shall show the volume of Class A foam concentrate in the tank on nine (9) easy to see super bright RGB LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be waterproof, manufactured of Polycarbonate/Nylon, and have a distinctive green label. |  |  |  |
| The program features shall be accessed from the front of the indicator module. The program shall support self-diagnostics capabilities, self-calibration, six (6) programmable colored light patterns to display tank volume, adjustable brightness control levels and a datalink to connect remote indicators. Low foam warnings shall include flashing LEDs at 1/4 tank, down chasing LEDs when the tank is almost empty, and an output for an audio alarm. |  |  |  |
| The indicator shall receive an input signal from an electronic pressure sensor. The sensor shall be mounted from the outside of the foam tank near the bottom. No probe shall be placed on the interior of the tank. Wiring shall be weather resistant and have automotive type plug-in connectors. The foam tank vent shall be installed on the foam fill tower. |  |  |  |
| Fire Research TankVision model WLA265-A00 miniature foam tank indicator shall be installed in the cab. The indicator shall show the volume of Class A foam concentrate in the tank on five (5) easy to see super bright LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be manufactured of Polycarbonate material with an integrated lens and have a distinctive green label. |  |  |  |
| The miniature indicator shall receive input information over a single wire from a Fire Research TankVision primary indicator, model WLA360-A00 or WLA460-A00. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| 1. **DIRECT TANK FILL:**

One (1) 4" Fireman's Friend, model FFE4040CF8M-F-4", stainless steel, semi automatic fill shall be provided, including a 4" male NH with screen.  |  |  |  |
| The valve shall be located and controlled on the rear of body. |  |  |  |
| One (1) A lightweight aluminum 30-degree adapter shall be provided. Threads shall be 4" Storz with lugs with manual locks x 4" swivel female NST. An inlet strainer and a ¼ turn air bleeder 3/4in. drain must be supplied.It shall have a ¼ turn ¼ NPT drain direct mounted on the lower side of the elbow. |  |  |  |
| One (1) lightweight aluminum locking 4" Storz cap shall be provided. A chain or cable attachment shall be also supplied.  |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| 1. **HOSEBED WIDTH:**

The width of the pumper body hosebed shall be 70". |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| 1. **ALUMINUM HOSEBED GRATING:**

The hose bed compartment deck shall be constructed entirely from maintenance-free, extruded aluminum slats. The slats shall have an anodized, radiused ribbed top surface. The slats shall be of widths approximately 3/4'' high x 6'' wide and shall be assembled into a one-piece grid system to prevent the accumulation of water and allow ventilation to assist in drying hose. |  |  |  |
| The apparatus hose body shall be properly reinforced without the use of angles or structural shapes and free from all projections that might injure the fire hose. |  |  |  |
| The main apparatus hose body shall run the full length of the apparatus body from behind the pump panel area to the rear face of the body. |  |  |  |
| The upper rear interior of the hose body on the right and left sides shall be overlaid with brushed stainless steel to protect the painted surface from damage by hose couplings. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| 1. **HOSE BED STORAGE CAPACITY:**

The hose bed shall be designed to have a storage capacity for a minimum of 55 cubic feet of fire department supplied fire hose. |  |  |  |
| Two (2) adjustable hosebed divider constructed of .250" aluminum shall be installed on the apparatus. |  |  |  |
| Each hosebed divider installed on the apparatus shall be provided with a hand hole cut-out approximately 3" wide x 8" long. |  |  |  |
| The apparatus shall be equipped with a vinyl hosebed cover with a weighted rear flap. |  |  |  |
| The cover, approximately 74” wide, shall be secured utilizing a Velcro fastening system at the front and sides of the hosebed body. |  |  |  |
| The cover shall be black in color. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| 1. **HOSEBED RISERS:**

Hosebed risers shall be provided and installed at the front and along each side of the main hosebed for added depth to meet the hose storage requirement. Risers shall form the right and left side vertical hosebed sides. Hosebed risers shall be constructed of the same material as the body and painted to match body color. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| 1. **BODY CONSTRUCTION:**

The apparatus body shall be designed and built using a computer aided drafting and three-dimensional modeling program. This engineering program shall have finite element analysis capability, so the design can be studied and stress points identified. This will allow for a total design review to ensure the strongest and most durable body possible. The use of this engineering system will ensure accuracy and repeatability for service parts in the event of accidental damage. The body components shall be fabricated using CNC equipment to cut and bend the individual body parts. |  |  |  |
| The overall width of the pumper body shall not exceed 98". |  |  |  |
| The side compartments on the pumper body shall have the following dimensions: |  |  |  |
| Lower portion depth of 28" from outside body edge. |  |  |  |
| Upper portion depth of 13" from outside body edge. |  |  |  |
| The compartment modules shall be fabricated using .190 5052H32 aluminum sheets. The individual compartment pieces shall be cut using a CNC high definition plasma or large cutting equipment. The pieces shall incorporate a "notch and tab" design. This design will ensure that all parts fit accurately. These compartment modules shall bolt to the subframe creating a completely independent modular body. |  |  |  |
| The compartment top shall be formed from .190 aluminum treadplate, meeting NFPA slip resistant standards and shall extend down the side. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |

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| 1. **SUB-FRAME:**

The apparatus shall be designed using a structural subframe, designed as an independent assembly, separate of the chassis frame. This will allow for a totally modular body, capable of being remounted to a different chassis if the need arises. Designs which do not use a modular subframe assembly will not be allowed. |  |  |  |
| The sub frame shall be constructed following the bidder’s standards. |  |  |  |
| The subframe shall have a lifetime warranty against failure due to corrosion. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **SINGLE AXLE WHEEL WELL LINER:**

For ease of accessibility and maintenance, wheel well module shall be painted smooth aluminum plate.  |  |  |  |
| To fully protect the wheel well area from road debris and to aid in cleaning, a full depth (minimum of 25") radius wheel well liner shall be provided.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FENDERETTES:**

The rear wheel wells shall be radius cut for a streamlined appearance. A black color rubber fenderette shall be furnished at each rear wheel well opening, held in place with concealed stainless steel fasteners. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ROLL UP DOOR CONSTRUCTION:**

The roll up door(s) shall be fabricated from painted aluminum extrusions. |  |  |  |
| The door slats shall be double-wall extrusions with dimensions of 1.366" high x .315" thick. The exterior surface shall be flat and the interior surface concave to deflect loose equipment to prevent the door from jamming. Each slat shall have interlocking end shoes to prevent the slat from moving side to side resulting in binding of the door. Each slat shall be separated by a co-extruded PVC and rubber inner seal to prevent metal to metal contact and minimize dirt and moisture from entering the compartment. The inner seal shall not be visible from the exterior to maintain a clean appearance of door. The slats shall have interlocking joints with a folding locking flange to provide security and prevent penetration by sharp objects. |  |  |  |
| The track shall be a one (1) piece aluminum assembly that has an attaching flange and finishing flange incorporated into the design that facilitates installation and provides a finished look to the door without additional trim or caulking. A low-profile side seal shall be utilized to maximize usable compartment space. |  |  |  |
| A drip rail designed to prevent water from dripping into the compartment shall be provided. The drip rail shall have a built in replaceable non-contacting seal to eliminate scratching of the surface of the door. |  |  |  |
| Bottom rail extrusion must have smooth back to prevent loose equipment from jamming the door and have “V” shaped double seal to prevent water and debris from entering the compartment. The door latch system shall be a full width one (1) piece lift bar that enables the user to operate with one hand. |  |  |  |
| The roll mechanism shall have a clip system that connects the curtain slats to the operator drum to allow for easy tension adjustment without tools. A four (4) inch diameter counterbalanced operator drum to shall be incorporated to assist in lifting the door. |  |  |  |
| An aluminum drip pan / protector plate shall be provided on each roll up door. |  |  |  |
| Six (6) elastic nylon straps shall be provided and installed on each roll up door. The straps shall be secured to the side wall of the interior compartment in a way that will allow the EZ-Pull strap to contract automatically and tuck inside the compartment when closed to prevent the strap from dangling and hindering closing of the door. When the door is the open position, the straps shall be installed so that they are fully extended as to not interfere with removing items from the compartment. For the ease of locating, the straps shall be bright orange in color. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BODY CONFIGURATION:**

The modular aluminum apparatus body shall be 168" long: front: 60 / mid: 70 / rear: 38 |  |  |  |
| The body compartments shall be 72" in height. |  |  |  |
| The compartments shall be the configured the same on both side of the body. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AHEAD OF REAR WHEELS COMPARTMENT(L1 / R1):**
 |  |  |  |
| There shall be one (1) full height compartment module located ahead of the rear wheels. The compartment module shall be equipped with a full height painted roll up door and shall be 59" wide.  |  |  |  |
| The compartment shall be equipped with the following: |  |  |  |
| A removable louvered vent shall be provided in the compartment. |  |  |  |
| **ADJUSTABLE SHELVING TRACKS**The compartments shall be equipped with four (4) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting. |  |  |  |
| **ADJUSTABLE SHELF**One (1) adjustable shelf shall be constructed of .188” smooth aluminum plate with 1.5” formed vertical lip front & back. Shelf supports on each side to be constructed of .188” aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8” bolts and spring-loaded cam locks. If shelf is longer than 40” a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf. |  |  |  |
| One (1) roll-out equipment tray shall be installed in the compartment. The tray with telescoping slides and cam follower bearings shall be rated to a maximum load of 500 lbs. The tray shall have a gas shock to hold the tray extended or closed. There shall be a lock to prevent movement, when the tray is in the closed position.  |  |  |  |
| The tray shall be formed of .188" smooth aluminum plate, fabricated with two (2) inch sides. Reflective material measuring 1” x 6” shall be installed on each front corner both on the face and side of tray for firefighter safety. |  |  |  |
| The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 9/16" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant. The turtle tile shall be red in color |  |  |  |
| Two (2) ROM vertically mounted roll-up compartment LED V3 door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening. |  |  |  |
| The lights shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup. |  |  |  |
| The compartment light shall be controlled by a heavy-duty roller switch, located on each compartment lower door jamb area. The switch shall be constructed with a die cast zinc housing. The cable connections and switch terminals are encapsulated in an epoxy compound, offering superior resistance to harsh conditions. |  |  |  |

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| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **OVERWHEEL COMPARTMENT (L2 / R2) :**

There shall be one (1) compartment module above the rear wheels. The compartment module shall be equipped with a painted roll up door and shall be 70" wide |  |  |  |
| The compartment shall be equipped with the following: |  |  |  |
| A removable louvered vent shall be provided in the compartment |  |  |  |
| **ADJUSTABLE SHELVING TRACKS**The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting. |  |  |  |
| **SWING-OUT ALUMINUM TOOL BOARD**One (1) swing-out vertical tool board assembly constructed of .188" smooth aluminum shall be provided with locks for holding it in the "in" and "out" positions.  |  |  |  |
| The tool board shall have a grab handle, for easy access with a gloved hand. |  |  |  |
| The floor area of the compartment shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 9/16" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant. The turtle tile shall be red in color. |  |  |  |
| Two (2) ROM vertically mounted roll-up compartment LED V3 door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening. |  |  |  |
| The lights shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup. |  |  |  |
| The compartment light shall be controlled by a heavy-duty roller switch, located on each compartment lower door jamb area. The switch shall be constructed with a die cast zinc housing. The cable connections and switch terminals are encapsulated in an epoxy compound, offering superior resistance to harsh conditions. |  |  |  |
| 1. **AFTER THE REAR WHEELS COMPARTMENT (L3 / R3) :**
 |  |  |  |
| There shall be one (1) full height compartment module located after of the rear wheels. The compartment module shall be equipped with a full height painted roll up door and shall be 37" wide |  |  |  |
| The compartment shall be equipped with the following: |  |  |  |
| A removable louvered vent shall be provided in the compartment. |  |  |  |
| **ADJUSTABLE SHELVING TRACKS**The compartments shall be equipped with four (4) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting. |  |  |  |
| **ADJUSTABLE SHELF**One (1) adjustable shelf shall be constructed of .188” smooth aluminum plate with 1.5” formed vertical lip front & back. Shelf supports on each side to be constructed of .188” aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8” bolts and spring-loaded cam locks. If shelf is longer than 40” a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf. |  |  |  |
| One (1) roll-out equipment tray shall be installed in the compartment. The tray with telescoping slides and cam follower bearings shall be rated to a maximum load of 500 lbs. The tray shall have a gas shock to hold the tray extended or closed. There shall be a lock to prevent movement, when the tray is in the closed position.  |  |  |  |
| The shelf/tray shall be fitted with removable vinyl Turtle Tile matting. The matting shall be interlocking modules approximately 12" square by 9/16" thick. This material shall be resistant to heat, cold, ultra-violet radiation, mechanical impacts, chemical actions and is corrosion resistant. The turtle tile shall be red in color |  |  |  |
| Two (2) ROM vertically mounted roll-up compartment LED V3 door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening. |  |  |  |
| The lights shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup. |  |  |  |
| The compartment light shall be controlled by a heavy-duty roller switch, located on each compartment lower door jamb area. The switch shall be constructed with a die cast zinc housing. The cable connections and switch terminals are encapsulated in an epoxy compound, offering superior resistance to harsh conditions. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **LADDER MOUNTING SYSTEM:**

One (1) hydraulic powered end mount ladder mounting system shall be provided. The bracket assembly shall be mounted on the side of the apparatus body and shall comply with all applicable |  |  |  |
| The location of the ladder mounting assembly shall be located on the right-hand side of the apparatus body. |  |  |  |
| The controls for the ladder rack shall be mounted on the rear body face, on the same side as the ladder rack. |  |  |  |
| An exterior mounting shall be provided for the specified folding attic ladder. |  |  |  |
| New ground ladders shall be provided by the body bidder. |  |  |  |
| Two (2) tube shall be provided for pike pole mounting. The tube shall have a 2" interior diameter and shall be mounted inside of the apparatus body. |  |  |  |
| One (1) Duo Safety Model 775-A, 14-foot aluminum roof ladder with folding steel roof hooks on one end and steel spikes on the other end shall be provided on the apparatus. The ladder shall meet or exceed all latest NFPA Standards. |  |  |  |
| One (1) Duo-Safety Model 900-A, 24 foot two (2) section aluminum extension ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA standards. |  |  |  |
| One (1) Duo Safety Model 585-A, 10-foot folding aluminum ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA Standards. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HARD SUCTION COMPARTMENTS:**

One (1) hard suction hose compartment shall be provided above the compartments, on the left side. The design shall allow the hose to be individually removed from the rear of the apparatus. The compartment shall be constructed of smooth peinted aluminium. The hard-suction hose compartment shall have a hinged door with push to latch door catches. |  |  |  |
| One (1) hard suction hose compartment shall be provided below the upper "T" of the booster tank, on the right side. The design shall allow the hose to be individually removed from the rear of the apparatus. The hard suction hose compartment shall have a hinged door with push to latch door catches. |  |  |  |
| The hinged door shall be constructed of smooth material, with chevron striping applied to match the rear of the apparatus body. |  |  |  |
| Two (2) new 6in suctions hoses shall be provided. |  |  |  |
| Light weight aluminum couplings shall be provided on the suction hose. A long handle female swivel shall be provided on one end and a rocker lug male shall be provided for the other end. |  |  |  |
| One (1) barrel strainer shall be provided. The strainer shall be constructed from aluminum.The strainer shall be provided with a 6.0" NST female rocker lug coupling. |  |  |  |
| Two (2) tubes shall be provided for 10 ft pike poles storage. The tube shall have a 2" interior diameter and shall be mounted inside of the hard suction hose compartment provided below the upper "T" of the booster tank, on the right side apparatus body. |  |  |  |
|  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **STOKE BASKET COMPARTMENT:**

One (1) stoke basket vertically mounted enclosed compartment shall be provided above the rear main hose bed compartment, on the left side. The design shall allow the stoke basket to be easily removed from the rear of the apparatus. The compartment shall be constructed of smooth peinted aluminum material. The stoke basket compartment shall have an aluminum tread plate hinged door with push to latch door catches. |  |  |  |
| Stoke basket dimension: 25" width X 86" long X 8.5" height. |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FOLDING STEPS LEFT SIDE FRONT:**

Four (4) folding steps of die cast high-strength zinc/aluminum alloy, plated with a superior automotive grade chrome finish shall be provided. The greater than 42 sq. in. serrated non-skid step traction area also offers an oversized non-slip grasp hand-hold. A heavy duty stainless steel spring design firmly holds the step in the open or closed positions. A rubber stop prevents any transit noise and rattles in the closed position. Step lighting shall be from a LED light mounted above the step. |  |  |  |
| The step has been third part tested to assure conformation of NFPA 1901 and FHA, 49CFR specifications for stepping surfaces and handhold. |  |  |  |
| The step shall be installed on the left side front compartment face. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HANDRAIL TOP OF BODY SIDES:**

Two (2) extruded aluminum non-slip handrails, approximately 12" in length, shall be provided and mounted, one (1) each side at the top of the body sides, at the front of the apparatus body. |  |  |  |
| The hand rails shall have intergraded LED lighting. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BODY PROTECTION PANELS:**

Aluminum tread plate overlays and panels shall be installed on the front of the body compartment from the lower edge to the top of the compartment doors.The panels shall be covered in LINE- X black in color. |  |  |  |
| The rear body panels of the body shall be a smooth material, to allow for the proper application and installation of a "Chevron" stripe on the rear. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **POLISHED COMPARTMENT TOP WELDS:**

The compartment top welds to be polished. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR STEP - 16” BOLT-ON:**

A 16" deep step surface shall be provided at the rear of the apparatus body, bolted in place and easily removable for replacement or repair. The tailboard shall be constructed of .188" aluminum diamond plate or equal non-slip surface in compliance with NFPA #1901 standards. |  |  |  |
| A label shall be provided warning personnel that riding on the rear step while the apparatus is in motion is prohibited. |  |  |  |
| The rear step shall be provided with a multi-directional aggressive gripping surface incorporated into the aluminum diamond plate rear step and shall comply with NFPA #1901 standards.The step shall be covered in LINE- X black in color |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR INTERMEDIATE STEP:**

An intermediate fixed step shall be provided at the rear of the apparatus body, bolted in place and easily removable for replacement or repair. The intermediate step shall be constructed of .188” aluminum diamond plate or equal non-slip surface in compliance with NFPA #1901 standards and be approximately 8” deep x 48” wide.The step shall be covered in LINE- X black in color |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FULL WIDTH FOLD DOWN REAR STEP:**

A full width, fold down rear step shall be furnished on the rear of the apparatus. The fold down step shall have a specially designed off set, eccentric type bracket and be attached with stainless steel fasteners on each side. The step shall not protrude past the rear tailboard when in the upper stowed position. In the down position, the step shall reduce the height of the first step approximately 8"-10". Step shall have slip resistant surface.The step shall be covered in LINE-X black in color. |  |  |  |
| There shall be a swing out and down access ladder supplied and installed on the apparatus, for accessing the top of the apparatus. It shall be of an all aluminum design and shall incorporate treads six (6") inches deep and no more than eighteen (18") inches apart. The ground to the first step dimension, on level ground, shall be no more than twenty-four (24") inches. When in the deployed position the ladder shall have an angle of approximately 75-degrees to facilitate ascending and descending the ladder. The ladder shall be retained in the stowed and deployed position by two (2) gas cylinders and shall not require the use of lathes to hold it in position.The swing-out and down step shall be covered in LINE-X black in color. |  |  |  |
| Two (2) extruded aluminum non-slip handrails with offset brackets shall be installed on the EZ-Climb access ladder, one (1) on each side. |  |  |  |
| The hand rails shall have intergraded LED white lighting. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **HANDRAIL REAR STEP AND BELOW THE HOSE BED:**

Two (2) extruded aluminum non-slip handrails, approximately 30" in length, shall be provided and vertically mounted on the rear of the apparatus, one (1) on each side of the body. |  |  |  |
| One (1) extruded aluminum non-slip handrail, approximately 48” in length, shall be provided and horizontally mounted below the hosebed on the rear of the apparatus. |  |  |  |
| The hand rails shall integrate amber LED lighting. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **EXTRUDED ALUMINUM RUB RAILS:**

Full body length aluminum rub rails shall be bolted in place on the lower right and left body sides. The side rub rails shall be a heavy extruded aluminum "C" channel. There shall also be a bolt on aluminum corner casting on each rear corner to blend the rear tail board assembly with the side rub rails.The rub rails shall be covered in LINE- X black in color. |  |  |  |
| There shall be nylon spacers provided between the rubrail and the body. This shall allow wash out and replacement in the event of damage. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **WHEEL WELL PROVISIONS LOCATION:**

The wheel well provisions shall be located on the left side of the apparatus, ahead of the rear wheels. |  |  |  |
| Two (2) breathing air cylinder storage compartment for four (4) SCBA cylinders (not supplied) shall be provided and located in the rear wheel well of the apparatus body. Bottle dimension: 7.5" diam X 24.5" long |  |  |  |
| The cylinder storage compartments shall be constructed entirely of aluminum. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement. |  |  |  |
| Compartment shall be provided with SCBA cylinder scuff protection. A painted aluminum door shall be installed. |  |  |  |
| Four (4) one-inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment and shall hang within one-inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **WHEEL WELL PROVISION LOCATION:**

One (1) storage compartment for floor dry shall be provided and located in the rear wheel well of the apparatus body on the right side. The storage compartment shall be constructed of aluminum, mounted on slides, to allowing the compartment to pull out for filling. The door assembly shall be provided with a gasket between the door and the body side, bolted in place and removable for repair or replacement. A painted aluminum door, with D-ring, shall be provided. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **FUEL FILL DOOR:**

A black aluminum fuel fill enclosure door shall be installed in the left side rear wheel well. A label indicating DIESEL FUEL ONLY shall be applied. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **BODY PAINT PROCESS:**

All bright metal fittings, if unavailable in stainless steel shall be heavily chrome plated. Iron fittings shall be copper plated prior to chrome plating. If applicable, any and all accessory times shall be removed from the body prior to cleaning and painting. Any accessory items that are to be painted, shall be painted separately and installed after the body is painted and cured.  |  |  |  |
| All seams shall be caulked both inside and along the exterior edges with a urethane automotive sealant to prevent moisture from entering between any body panel. |  |  |  |
| The body and all parts shall be thoroughly washed with a grease cutting solvent prior to any sanding. After the body has been sanded and the weld marks and minor imperfections are filled and sanded, the body shall be washed again with to remove any contaminants on the surface. |  |  |  |
| One (1) two (2) ounce bottle of touch-up paint shall be furnished with the completed truck at final delivery. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **INTERIOR COMPARTMENT FINISH:**

Six (6) apparatus side compartment interiors are to be painted with a yellow LINE- X material. The compartments shall be cleaned with a grease remover, and then the surface sanded and prepared for painting.  |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **UNDERCOATING:**

The entire underside of the single axle apparatus body is to be cleaned and properly prepared for application of a sprayed on automotive type undercoating for added corrosion resistance. Undercoating is to be a solvent based, rubberized coating, black in color. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **SIMULATED GOLD LEAF LETTERING:**

The lettering shall be applied in simulated gold leaf material, shaded in black and encapsulated in clear Mylar. |  |  |  |
| A quantity of fifty (50), four (4) inch letters are to be placed on the cab and on the body as directed by fire department. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **KEEP BACK SIGN:**

"KEEP BACK 500 FEET/METERS" sign with reflective lettering shall be provided and installed on the rear of the vehicle as directed by the Fire Department. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **STRIPING:**

Mylar gold leaf striping shall be applied at the paint break line on the apparatus cab. |  |  |  |
| A 6" wide 3M brand Scotchlite #680-10 reflective stripe shall be affixed to the perimeter of the vehicle. Striping shall be placed up to 60" above ground level and shall conform to the applicable NFPA reflectivity requirements. At least 50% of the perimeter length of each side and width of the rear and at least 25% of the perimeter width of the front of the vehicle shall have reflective stripe. |  |  |  |
| The color of the 3M brand striping material shall be white on the painted surfaces. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **REAR CHEVRON STRIPING:**

The entire rear portion of the body shall have 3M Diamond Grade reflective red and yellow striping installed. The chevron style striping shall be applied at a 45-degree upward angle pointing towards the center upper portion of the rear panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **WHEEL CHOCKS:**

Two (2) wheel chock holders shall be mounted in the apparatus body. |  |  |  |
| Two (2) large aluminum wheel chocks shall be provided. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ELECTRIC SIREN AND CONTROL:**

One (1) Whelen model #295SLSA1 electronic siren shall be mounted in the cab. This unit shall feature an electronic air horn, wail, yelp, hi-lo and shall have a hard-wired PA microphone. |  |  |  |
| One (1) Federal Signal DynaMax 100-watt speaker, Model #ES100, shall be installed. The speaker shall feature a Neodymium driver and a high strength composite housing that is chemical resistant and maintains rigidity at high temperatures. |  |  |  |
| One (1) stainless steel grille shall be installed on the speaker. Speaker Cover shall be finished with flat black paint. |  |  |  |
| The siren speaker shall be installed on the apparatus bumper extension, as determined by the body manufacturer. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **EMERGENCY LIGHTING:**

One (1) Whelen Edge Freedom F4R7 Rotating Super LED Technology light bar shall be included with the apparatus cab. The light bar shall be mounted on the roof of the cab, towards the front, above the windshield. |  |  |  |
| The light bar shall feature: |  |  |  |
| * A 72" light bar designed for high performance
 |  |  |  |
| * Both ends of the bar shall be red
 |  |  |  |
| * One module in the center shall be white and be in operation only when the vehicule is in responding mode.
 |  |  |  |
| * Clear hard coated lenses to provide extended life/luster protection against UV & chemical stresses
 |  |  |  |
| * Designed in accordance with NFPA Zone A requirements
 |  |  |  |
| The front upper light bar shall be activated through the Weldon Vista screen "E-Master" red button and through a separate virtual switch located within the "Warning Lt Menu". |  |  |  |
| Three (3) pairs of Whelen M9 emergency lights shall be installed.One (1) pair on the front top part of the body, on the left and right side.One (1) pair on the rear top part of the body, on the left and right side.One (1) pair on the reat of the top rear of the body.They shall be mounted on a black bracket. |  |  |  |
| One (1) pair of Whelen model M6 LED warning lights shall be installed, one each side one the front of the chassis cab upper wing area. The dimensions of the lights shall be 4-5/16" x 6-3/4 |  |  |  |
| Each light shall be mounted on a black braket. |  |  |  |
| One (1) pair of Whelen model M6 LED red warning lights shall be installed, one each side one the front of the chassis cab, in the inboard warning light position. The dimensions of the lights shall be 4-5/16" x 6-3/4". |  |  |  |
| Each light shall be mounted on a black braket. |  |  |  |
| One (1) pair of Whelen model M6V2 LED red warning lights shall be installed, one each side one the front of the chassis cab, on bumper sides. The dimensions of the lights shall be 4-5/16" x 6-3/4".The white portion of the light shall turn on when the park brake is applied.The white portion of th light shall turn on when the signal light is turned on. |  |  |  |
| Each light shall be mounted on a black bracket |  |  |  |
| One (1) pair of Whelen model M6 LED red warning lights shall be installed one each side of the chassis cab, above the chassis wheels. The dimensions of the lights shall be 4-5/16" x 6-3/4". |  |  |  |
| Each light shall be mounted on a black braket |  |  |  |
| One (1) pair of Whelen model M2 mounted super LED red warning lights shall be installed, one each side of the apparatus, mid-body rub rail. The dimensions of the lights shall be 1-5/8" |  |  |  |
| Each light shall be mounted on a black bracket |  |  |  |
| One (1) pair of Whelen model M2 mounted Super LED red warning lights shall be installed, one each side of the apparatus body rub rail, towards the rear of the body.  |  |  |  |
| Each light shall be mounted on a black braket |  |  |  |
| One (1) pair of Whelen model M6 LED red warning lights shall be installed, one each side on the lower rear of the apparatus body. The dimensions of the lights shall be 4-5/16" x 6-3/4". |  |  |  |
| Each light shall be mounted on a black braket |  |  |  |
| One (1) pair of Whelen model M6 Led warning lights shall be installed, one each side of the body on top of the rear axle. |  |  |  |
| Each light shall be mounted on a black bracket |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **GREEN STAR IDLE REDUCTION TECHNOLOGY (IRT) :**
 |  |  |  |
| A Green Star idle reduction technology system shall be supplied with the apparatus that will significantly reduce the amount of diesel exhaust soot, NOx and CO2 emissions into the atmosphere. Diesel engines contain pollutants that negatively impact human health and the environment. Diesel engine exhaust contains particulate (black soot), hydrocarbons, carbon monoxide and nitrogen oxides. |  |  |  |
| The Green Star IRT system shall be supplied with the apparatus that will significantly reduce fuel consumption and the amount of diesel exhaust particulates (black soot), hydrocarbons, carbon monoxide and nitrogen oxides released into the atmosphere. IRT has been verified by the U.S. EPA to reduce emissions from diesel powered vehicles.A Green Star IRT will reduce idle time, fuel consumption and release of toxic pollutants through use of an auxiliary power unit (APU) in conjunction with automatic chassis engine controls. An APU is U.S. EPA listed as a method to reduce emissions. The automatic chassis engine controls will shut down the chassis diesel engine during times not requiring the chassis diesel engine. When the chassis diesel engine is not required a timer will start. When the timer has nearly expired the APU will be engaged and the chassis diesel engine will be shut down. The chassis is protected against low chassis battery voltage. If during the idle reduction the chassis battery voltage drops below a safe level, the automatic engine controls will restart the chassis engine. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **AUXILIARY POWER UNIT :**
 |  |  |  |
| A Kubota D1105-BG EPA and CARB tier 4 rated diesel generator engine with a power rating of 7.9 KW will be provided. The Kubota engine will drive a Mecc Alte NPE32-B/4 industrial duty 4 pole, 60Hz, 120/240VAC, brushless, digitally regulated generator. The Mecc Alte generator will have a continuous rating of 10.5KW. The engine and generator will run 1800RPM. This lower RPM leads to substantially longer life and less maintenance compared to other APU systems. Total standard 12VDC power output is 270AMPS. An APU on/off switch will be provided in the chassis cab to start and stop the APU on demand.A remote oil filter kit is to be installed up to 3 feet from the diesel APU to improve access to the diesel APU oil filter. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DIESEL APU AUXILIARY HEATER :**
 |  |  |  |
| The diesel APU shall have a coolant loop connected to it. The coolant loop shall transport heated APU engine coolant from the APU to a fan forced heater in the pump compartment. Then to a fan forced heater in the chassis cab. Then back to the APU. |  |  |  |
| A single switch shall be provided in the chassis cab to enable the auxiliary heat. When this switch in "ON" and after the diesel APU coolant is 100-degrees F, heater fans shall automatically turn on and a circulating pump shall automatically turn on. This can be enabled anytime and does not require the chassis to be in idle reduction. |  |  |  |
| The heaters shall each be rated at 16,000 BTU's. This system does not connect into the chassis engine coolant. Ball valves shall be provided at the APU to turn off the coolant. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **DIESEL APU COVER :**
 |  |  |  |
| An 1/8" formed aluminum cover shall be provided. The cover exterior shall be coated in Black LINE-X. |  |  |  |
| The cover shall wrap around the diesel APU providing a protection from weather related elements and the sun. The top of the cover shall be easily removed for inspection and service. One full width and full height side cover can be removed for inspection and service. Behind this side cover is the fuel filter, fuel pump, oil filter, fuel sight bowl, oil dipstick and auxiliary a/c compressor belt. |  |  |  |
| The cover shall have a tag indicating, "THIS IS NOT A STEP". |  |  |  |
| The generator shall be installed in the front section of the hosebed. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **CIRCUIT BREAKER BOX :**
 |  |  |  |
| One (1) circuit breaker box for single phase voltage equipment shall be provided capable of holding twelve (12) breakers. The circuit breaker box shall be installed in an outside L1 body compartment.The instrument panel for the generator shall be installed next to the breaker panel. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **POWER DISTRIBUTION STRIP :**
 |  |  |  |
| One (1) power distribution strip with six (6) straight blade receptacles shall be provided. The unit shall have a 20 amp capacity and an integral on/off switch. The strip shall be located in crew cab area and will be powered by the chassis shore line power. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **120 VOLT ELECTRIC RECEPTACLES :**
 |  |  |  |
| Four (4) 120-volt 20 amp twist lock (NEMA L5-20) receptacle with spring loaded weatherproof cover shall be provided.* One (1) on the left front face of the exterior body
* One (1) on the right front face of the exterior body
* Two (2) on the exterior rear face of the body one (1) each side.
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **LINE VOLTAGE TRANSFER SWITCH :**
 |  |  |  |
| One (1) automatic transfer switch shall be installed that allows components normally powered by the 120-volt shore power connection to be automatically powered by the on board generator upon startup of the generator. |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **ADDITIONAL EQUIPEMENT SUPPLIED WITH THE APPARATUSES:**

The following equipment shall be supplied with each apparatus. |  |  |  |
| * 400 Feet of 1-3/4 in double jacket hose in 50ft lengths with NH couplers.
 |  |  |  |
| * 800 Feet of 2-1/2 in double jacket hose in 50ft lengths with QST couplers
 |  |  |  |
| * 400 Feet of 4 in rubber supply hose with Storz couplers
 |  |  |  |
| * One (1) 6in bottom strainer
 |  |  |  |
| * One (1) 6in floating strainer
 |  |  |  |
| * Two (2) 4-foot pike poles with D handle with a pair of bracket
 |  |  |  |
| * 2 8-foot pike poles
 |  |  |  |
| * 2 10-foot pike pole
 |  |  |  |
| * 3 Protek model 326 nozzles or equivalent
 |  |  |  |
| * One (1) 6lb flat head axe with Handle Lock brackets installed
 |  |  |  |
| * One (1) 6lb pick head axe with Handle Lock brackets installed
 |  |  |  |
| * Three (3) Haligan bars with brackets installed
 |  |  |  |
| * One (1) 4foot pry bar with brackets installed
 |  |  |  |
| * 6 Streamlight model Survivor LED with 12 volt chargers installed inside of the cab
 |  |  |  |
| * One (1) 5 gallons’ water extinguisher with vehicle bracket installed
 |  |  |  |
| * Two (2) hydrant wrenches with bracket installed
 |  |  |  |
| * Four (4) combination spanner wrenches with brackets installed
 |  |  |  |
| * Sixteen (16) Pac Tool model 1004 handle lock brackets non installed
 |  |  |  |
| * One (1) 5 gas detector MSA Altair 5 with a Galaxy automated test system or equivalent c/w dock station and calibration gas cylinder.
 |  |  |  |
| * One (1) thermal imager MSA 6000x with 12-volt charger (Shall be installed in the cab of the truck) or equivalent.
 |  |  |  |
| * One (1) 65cc chain saw with 18 bar and carbide chain.
 |  |  |  |
| * One (1) K960 Husqvarna circular saw with demo blade
 |  |  |  |
| * Two (2) ABS 30lbs dry chemical extinguishers
 |  |  |  |
| * Three (3) 2.5-gallon water extinguishers
 |  |  |  |
| * Three (3) 10x10 heavy duty tarps
 |  |  |  |
| * Six (6) SCBA standard brackets. (shall be installed in the truck)
 |  |  |  |
| **Technical Specifications** | **Conform****Yes No** | **Comments** |
| 1. **WARRANTY:**

The bidder shall warranty each new motorized fire apparatus for a period of ONE YEAR from the date of delivery, except for chassis and other components noted herein.  |  |  |  |
| The warranty on the chassis and chassis supplied components, storage batteries, generators, electrical lamps and other devices subject to deterioration is limited to the warranty of the manufacturer there of and adjustments for the same are to be made directly with the manufacturer by the customer. |  |  |  |
| This warranty will not apply to any fire apparatus that has been repaired or altered outside our factory in any way, which in our opinion might affect its stability or reliability. |  |  |  |
| This warranty shall not apply to those items that are usually considered normal maintenance and upkeep services: including, but not limited to, normal lubrication or proper adjustment of minor auxiliary pumps or reels. |  |  |  |
| This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on our part. We neither assume nor authorize any person to assume for us any liability in connection with the sales of our apparatus unless made in writing by the bidder |  |  |  |
| The warranties shall be: |  |  |  |
| * aluminum body warranty: five (5) year
 |  |  |  |
| * Body subframe: Lifetime
 |  |  |  |
| * Cab and body paint: Five (5) years
 |  |  |  |
| * Pump: five (5) years
 |  |  |  |
| * Stainless steel plumbing: Ten (10) years
 |  |  |  |
| * Engine Five: (5) years
 |  |  |  |
| * Transmission: Five (5) years
 |  |  |  |
| * Front axle and rear differential: two (2) years
 |  |  |  |
| * All other components and accessories shall be warrantied by their specific manufactures.
 |  |  |  |