

**CITY OF SALISBURY  
PURCHASING DIVISION  
1415 MLK JR. AVE. S.  
SALISBURY, NORTH CAROLINA 28144  
704-638-5306**

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Date: May 21, 2026

**Bid Number: 022-2026**

Subject: Invitation for Bid on the following apparatus, supplies, materials, equipment and/or Services for **Fire Engine Apparatus**

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This letter extends an invitation for the submission of a bid to supply the City with apparatus, supplies, materials, equipment and/or services as indicated above. Unsealed bids for the above will be received at the office of the City of Salisbury Purchasing Officer, 1415 MLK Jr. Ave. S. Salisbury, North Carolina until **12:00 P.M. Thursday, June 4, 2026**, at which time they will be opened. Email bids to [mfiel@salisburync.gov](mailto:mfiel@salisburync.gov). The City of Salisbury reserves the right to reject any and all bids and to waive formalities.

There will be no pre-bid conference scheduled for this bid.

**NOTE: A BID DEPOSIT WILL NOT BE REQUIRED WITH THIS BID.**

Instructions for the preparation and submission of a bid are contained in the attached packet. Please note that specific forms for submission of a bid are required. Bids must be typed or printed in ink.

Any approved changes to the conditions and specifications as presented in this invitation for bid shall be issued by the Purchasing Division, in writing, as an addendum to this document. When an addendum is issued, the bid opening date may be extended at the discretion of the City.

**Any bid submitted which does not acknowledge receipt of an issued addendum will not be considered.** This receipt can be noted in the space provided on the Bid Response Form included in this Invitation for Bid document.

The City of Salisbury has an equal opportunity purchasing policy and seeks to ensure that all segments of the business community has access to supplying the goods and services needed by City programs. The City encourages utilization of minority and women-owned business enterprises in our procurement activities. The City provides equal opportunity for all businesses and does not discriminate against any bidder regardless of race, color, religion, age, sex, national origin or disability. A Minority Business Enterprise (MBE) is defined as a business, owned (51% minimum) and controlled by a person of African-American (BBE), Asian-American (ABE), Native-American (NBE), or Hispanic (HBE) descent. A Woman-Owned Business is one owned (51% minimum) and controlled by a non-minority woman (WBE).

Sincerely,  
Misty Fields- Purchasing Officer

**INSTRUCTION TO BIDDERS**

**1.1 Purpose:** The purpose of this document is to provide general and specific information for use by vendors in submitting a bid to supply the City of Salisbury with apparatus, supplies, materials and equipment, and/or services as listed above. Some bids are governed by Section 143-129, et. seq. of the North Carolina General Statutes.

**1.2 Definitions:**

- (A) Bidder: The Term bidder is used to encompass the party seeking to have or having a contract with the City.
- (B) City: The term is defined as the City of Salisbury Purchasing Division or the designated contact for the City of Salisbury.

**1.3 How to Prepare Bid Responses:** All bid responses shall be:

- (A) Prepared and submitted on the forms enclosed herewith, unless otherwise prescribed.
- (B) Submitted with *ONE (1) copy* of your bid response.
- (C) Typewritten or completed in ink, signed by the bidder, or the bidding firm's authorized representative, with all erasures or corrections initialed and dated by the bidder's authorized representative signing of the Bid Response Form.
- (D) Prior to completion of the bid forms and submittal of a bid, bidders are encouraged to carefully review all provisions contained in this Invitation for Bid document along with any attachments and addendums issued.
- (E) Each bid constitutes an offer and may not be withdrawn except as provided herein. Bid prices are to remain firm for the period stated in the Invitation for Bid specifications.

**1.4 How to Submit Bid Responses:** All bid responses shall be:

- (A) Submitted in email with the following information written on the subject line.
  - (1) The bidder's company name
  - (2) The bid number as indicated on the cover letter to the Invitation for Bid document.
  - (3) Identification of the equipment, supply and/or service for which the bid is submitted as indicated at the top of the cover letter to the Invitation for Bid document.

Email: mfiel@salisburync.gov

(B) Bids not received by the time and date specified in the first paragraph of the letter of invitation **will not be opened or considered**, unless the delay is a result of the negligence of the City, its agents, or assigns.

- 1.5 Failure to Bid:** If a bidder does not desire to offer a bid, bidder should return the Invitation for Bid package and indicate such response by a signature in the space provided on the Bid Response Form. If possible, a reason for not offering a bid should be indicated and whether the bidder desires their company's name be retained or removed from the City's list for vendors to receive future Invitation for Bid documents.
- 1.6 Errors in Bid:** Bidders or their authorized representatives are expected to fully inform themselves as to the conditions, requirements and specifications before submitting bids. Failure to do so will be at the bidders own risk. In case of error in extension of prices in the bid, the unit prices shall govern.
- 1.7 Standards for Acceptance of Bid for Award Contract:** The City reserves the right to reject any or all bids and to waive any irregularities or technicalities in bids received whenever such rejection or waiver is in the best interest of the City. The award shall be made to the lowest responsible bidder or bidders taking into consideration, quality, performance and the time specified in the proposals for the performance of the contract. When the contract is for a service, the award may be made to the responsible bidder or bidders that best meet the needs and interests of the City.
- 1.8 Compliance with Laws:** The bidder shall obtain and maintain all licenses, permits, liability insurance, worker's compensation insurance and comply with any and all other standards or regulations required by federal, state or City statute, ordinances and rules during the performance of any contract between the bidder and the City. Any such requirement specifically set forth in any contract document between the bidder and the City shall be supplementary to this section and not in substitution thereof.

## GENERAL CONDITIONS

- 2.1 Specifications:** Any obvious error or omission in specifications shall not inure to the benefit of the bidder but shall put the bidder on notice to inquire of the City Purchasing Division representative about the error or omission. Whenever mention is made of any article, material or workmanship to be in accordance with laws, ordinances, building codes, underwriter's codes, applicable A.S.T.M. regulations or similar expressions, the requirements of these laws, ordinances, etc., shall be construed to be the minimum requirements of the specifications.
- 2.2 Delivery Point:** Unless otherwise stated, all items shall be quoted and delivered F.O.B. destination (i.e. at a specific City of Salisbury address), and delivery cost and charges (if any) shall be included in bid price.
- 2.3 Payment Procedure:** Standard payment terms will be Net 30 after acceptance and receipt of a correct invoice and receipt of the goods, service, etc. by the City.
- 2.4 Delivery Time:** When delivery time is requested in invitation documents, time shall be of the essence; therefore, the bid shall include the delivery date. In some instances, the City

may specify a maximum number of days for delivery. There are special delivery expectations, including liquidated damages, for automobiles, trucks and truck bodies. This information is normally included in the specification section of the Invitation for Bid.

- 2.5 Multiple/Alternate Bids:** No bidder shall submit more than one bid unless requested to by the City in the Invitation for Bid. Any multiple bid must be brought to the City Purchasing Division's representative attention either during the Pre-Bid Conference or as submitted in writing at least five (5) days prior to the opening of the bid.
- 2.6 Bids for All or Part:** Unless otherwise specified by the City or by the bidder, **the City of Salisbury reserves the right to make award on all or part of the items to be purchased according to the best interest of the City.** The bidder may restrict their bid to consideration in the aggregate by so stating, in writing, and must also include a unit price on each item bid.
- 2.7 Contract types:**
- (A) **Definite Quantity:** A definite quantity contract is a fixed-price contract that provides for delivery of a specified quantity of supplies or services either at specified times or when ordered.
  - (B) **Indefinite Quantity:** An indefinite quantity contract is a contract for an indefinite amount of supplies or services to be furnished at specified times, or as ordered, that establishes unit prices of a fixed-price type. Generally, an approximate quantity or the best information available as to quantity is stated in the Invitation for Bid. The contract may provide a minimum quantity the City is obligated to order and may also provide for a maximum quantity provision that limits the City obligation to order.
- 2.8 Prices to be Firm:** Bidder warrants the bid price(s), terms and conditions quoted in their bid shall be firm for acceptance by the City for a period of sixty (60) days from the bid receipt deadline.
- 2.9 Description of Material:** Proposals for materials, supplies, vehicles, and/or equipment must be accompanied by accurate descriptions of the exact materials, supplies, vehicles, and/or equipment on which a bid(s) is made. When specified in the Invitation for Bid, copies of detailed factory specifications, ratings, technical data, etc. may be required for submittal along with the bidder's response package.
- 2.10 Completeness:** All information required by Invitation for Bid must be completed and submitted to constitute a proper bid.
- 2.11 Quality:** All components used to manufacture or construct any supplies, materials or equipment covered in this Invitation for Bid shall be new (unless otherwise specified), the latest model, of the best quality and highest grade workmanship. Vehicles and/or equipment shall be equipped with such necessary equipment complying with the North Carolina law, but not including licensing. Materials must comply with all applicable Federal and State OSHA requirements in effect at the time this Invitation for Bid is issued.
- 2.12 Guarantee:** Unless otherwise specified by the City, the bidder unconditionally guarantees the materials and workmanship on all material and/or services. If, within the guarantee period any defects occur due to faulty material and/or services, the bidder at their expense, shall repair or adjust the condition, or replace the material and/or services to the complete satisfaction of the City. These repairs, replacements or adjustments shall be made only at

such time as will be designated by the City to ensure the least impact to the operation of City business.

- 2.13 Manufacture or Dealer Advertisement:** No manufacturer or dealer shall advertise on goods delivered to the City without prior approval by the City.
- 2.14 Brand Name:** If and whenever brand names, makes, names of manufacturers, trade names, bidder catalogs or model numbers are stated, they are offered for the purpose of establishing a grade or quality of material only.
- 2.15 OR APPROVED EQUAL Interpretation:** It is the bidder's responsibility to prove to the City that each bid item is equal to the grade or quality of material specified.

On all such bids, the bidder shall indicate clearly the product (brand and catalog or model numbers) on which the bid is based, and shall supply a sample and sufficient data to enable a comparison to be made by the City with the particular brand or manufacturer specified. Failure to submit the required information shall be sufficient grounds for rejection of bid.

The City shall be the sole judge concerning the merits of grade or quality of product specified. If the bidder has questions relative to whether their product is equal to the grade or quality of the product specified, the issue shall be resolved during the pre-bid conference. If the extent of the discussion precludes resolution at the pre-bid conference, the vendor should contact the Purchasing Division representative and resolve the issue prior to submission of their bid.

- 2.16 Certified Test Report:** Each bidder shall provide a copy of a certified test report, at their expense, prior to or with their sealed bids, when specified. The certified test report shall be from a recognized independent testing laboratory or manufacture's quality control laboratory showing all test results and full compliance with the appropriate specification indicated herein. The City will bear the cost of any independent tests or consultant services the City chooses to perform.
- 2.22 Award of Contract:** A contract, if awarded, shall be awarded to the lowest responsible bidder or bidders taking into consideration quality, performance and the execution time specified in the Invitation for Bid. The City alone shall make such determination.
- 2.23 Qualified Bidder:** A Qualified Bidder is defined for purposes of this Invitation for Bid as a party who meets, or by the bid opening deadline can meet, all requirements for licensing, insurance and service contained within this Invitation for Bid.
- 2.24 Compliance with Specifications – Terms and Conditions:** The Invitation for Bid, Legal Advertisement, General Conditions and Instructions to Bidders, Specifications, Special Conditions, Bidder's proposal, Bid Response Forms, Addendum and/or any other pertinent document forms constitute a response to this Invitation for Bid by reference are made part hereof.
- 2.25 Signed Bid:** The signed bid shall be considered an offer on the part of the bidder. It shall be deemed accepted upon approval by the City Council of the City of Salisbury and/or the City Manager or their designee. In case of default on the part of the bidder after such acceptance, the City may take such action as it deems appropriate, including legal action, for damages.

- 3.1 **Bid Bonds:** **NO BID BOND IS REQUIRED WITH THIS BID.**
- 3.2 **City – License Requirement:** A current City of Salisbury Business License is required for bidders who are domiciled in Rowan County.
- 3.3 **Warranty Requirements:** At a minimum, the manufacturer’s standard warranty shall be included in the bid price. Any extended warranty requirement shall be requested in the Invitation for Bid detailed specifications.
- 3.4 **Terms of Contract:**
- \_\_\_\_\_ (A) Unit Price Contract: Contract awarded is for a unit price only where purchases are anticipated based upon indefinite quantities and purchases are anticipated subject to appropriations by City Council and actual identified needs.
- X   (B) One time purchase: Contract awarded is for a specific quantity purchased at one time.
- 3.5 **Contract Type:**
- \_\_\_\_\_ (A) Indefinite Quantity
- X   (B) Definite Quantity
- 3.6 The contract shall be referred to as Bid # 022-2026
- 3.7 **Specifications:** The City of Salisbury reserves the right to determine which specific items on any specification requirements require strict adherence, or are most important, and those that are not, or requiring a lesser degree of importance. Such determination can and will be a basis for evaluating, recommending and making award.  
The City will, at its discretion, assess warranty offered, and utilize life-cycle costing and/or Performance factors as the evaluation method and basis for award. The low bid most closely Meeting specifications is usually the bid given the award, although delivery time is sometimes A necessary factor. **Should a requested specification sheet not be submitted with a bid, this is considered non-responsive and therefore will not be considered.** Please read and respond to specification requirements carefully.
- 3.8 **City Award Criteria:** It is understood by the Bidder that the City reserves the right to reject any and all proposals; to make awards on any or all items according to the best interest of the City; to waive formalities, technicalities and inequalities, to recover and offer again this Invitation for Bid.

**4.0 BID RESPONSE FORM - PRICING**

**Item A:** ONE (1) Fire Engine Apparatus \$ \_\_\_\_\_

Total Bid \$ \_\_\_\_\_

\*\* Delivery After Receipt of Order: \_\_\_\_\_

Name of Manufacturer and Model Number: \_\_\_\_\_

Warranty: \_\_\_\_\_

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Name of Manufacturer and Model Number: \_\_\_\_\_

Warranty: \_\_\_\_\_

## Specification

### Model

The chassis shall be a Pre-2027 Emissions Standard FC-94 model or equivalent. The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred percent of the time.

Delivery date should be twelve (12) months from the issuance of the Purchase Order.

### Model Year

Pre-2027 Emissions Standard

### Country of service

The chassis shall be put in service in the country of the United States of America (U.S.A.).

The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis. This chassis will meet compliance for North Carolina.

### Cab and Chassis Labeling Language

The cab and chassis shall include the applicable caution, warning, and safety notice labels with text to be written in English.

### Apparatus Type

The apparatus shall be a pumper vehicle designed for emergency service use which shall be equipped with a permanently mounted fire pump which has a minimum rated capacity of 1500 gallons per minute. The apparatus shall include a water tank and hose body whose primary purpose is to combat structural and associated fires.

### Vehicle Type

The chassis shall be manufactured for use as a straight truck type vehicle and designed for the installation of a permanently mounted apparatus behind the cab. The apparatus of the vehicle shall be supplied and installed by the apparatus manufacturer.

### Vehicle Angle of Approach Package

The angle of approach of the apparatus shall be a minimum of 8.00 degrees.

NFPA1901 Angel of Approach Definition:

“To determine the angle of approach, place a thin steel strip against the front of the tires where they touch the ground or stretch a tight string from one front tire to the other at the front where they touch the ground. Determine the lowest point (component or equipment) on the vehicle forward of the front tire that would make the smallest angle of approach. Hang a plumb bob from the lowest point and mark the point on the ground where the point of the plumb bob touches. Measure the vertical distance from the ground to the point where the plumb bob was hung (distance). Measure the horizontal distance from the plumb bob point to the steel strip or string running from front tire to front tire (distance H). Divide the vertical distance by the horizontal distance. The ratio of V/H is the tangent of the angle of approach. If the ration is known, the angle of approach can be determined from a table of trigonometric fractions of angles or from a math calculator. The standard requires a minimum angle of approach of 8.00 degrees: since the tangent of 8.00 degrees is 0.1405, if V divided by H is 0.1405 or larger the angle of approach is 8.00 degrees or greater. “

### Axle Configuration

The chassis shall feature a 4x2 axle configuration consisting of a single rear drive axle with a single front steer axle.

### Gross Axle Weight Ratings Front

The front gross axle weight rating (GAWR) of the chassis shall be 18,000 pounds.

This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

### Gross Axle weight Rating Rear

The gross axle weight rating (GAWR) of the chassis shall be 27,000 pounds.

This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

### Pump Provision

The chassis shall include provisions to mount a drive line pump in the middle of the chassis, behind the cab, more commonly known as the midship location. Chassis driveline pump provisions shall include an interlock feature for automatic setting of the park brake when the vehicle is shifted into pump mode while the transmission is in neutral and the transmission output speed translates to less than 1 mph. When the conditions are met the driver side parking brake valve shall activate. Once shifted to road mode the condition for electric automatic brake engagement is no longer present and the driver's parking brake control valve shall function normally.

### Water Tank Capacity

The chassis shall include a carrying capacity of 500 gallons.

The water tank shall be supplied and installed by the apparatus manufacturer.

### Cab Style

The cab shall be a custom, fully enclosed MFD model with a 10.00 inch raised roof over the driver, officer and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to eight seating positions.

The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal: the roof, the rear wall

and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.

The cab shall be constructed using multiple aluminum extrusions in conjunction with aluminum plate, which shall provide proven strength and the truest, flattest body surfaces ensuring less expensive paint repairs if needed. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

All interior and exterior seams shall be sealed for optimum noise deduction and to provide the most favorable efficiency for heating and cooling retention.

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13- & 0.19-inch-thick aluminum extrusions for extreme duty situations. A single formed, one-piece extrusion shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and lower roof skin shall be 0.13 inch thick; the rear wall and raised roof skins shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.

The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 131.10 inches with 54.00 inches from the centerline of the front of the axle to the back of the cab.

The cab interior shall be designed to afford maximum usable interior space and attention to ergonomics with hip and legroom while seated which exceeds industry standards. The crew cab floor shall be flat across the entire walking area for ease of movement inside the cab.

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner in the non-raised roof area and a rear floor to headliner height of 65.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 51.88 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.25 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two cab doors, also large enough for personnel in full firefighting gear. The rear doors shall open a clear opening of 32.25 inches wide X 61.00 inches high, from the cab floor to the top of the door opening.

The cab shall incorporate a progressive two step configuration from the ground to the cab floor at each door opening. The progressive steps are vertically staggered and extend the full width of each step well allowing personnel in full firefighting gear to enter and exit the cab easily and safely,

The first step for the driver and officer area shall measure approximately 11.50 inches deep X 31.13 inches wide. The intermediate step shall measure approximately 8.50 inches deep X 32.50 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

The first step for the crew area shall measure approximately 11.50 inches deep X 20.44 inches wide. The intermediate step shall measure approximately 10.25 inches deep X 22.75 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.80 inches.

#### Cab Front Fascia

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick plate which shall be integral part of the cab.

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the classic design.

The front cab fascia shall include two modules on each side accommodating a total of up to four Hi/Low beam headlights and two turn signal lights of up to four warning lights. Two chrome-plated bezels shall be provided on each side around each set of two lamps.

#### Front Grille

The front fascia shall include a 304 stainless steel front grille.

#### Cab Undercoat

There shall be a rubberized undercoating applied to the underside of the cab that provides abrasion protection, sound deadening and corrosion protection.

#### Cab Side Drip Rail

There shall be a drip rail along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side.

#### Cab Paint Exterior

The cab exterior shall be painted a single color per customers specified paint color following the RFG-SR-001 paint standards

#### Cab Paint Process/Manufacturer

The cab shall be painted with PPG Industries paint prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and maximum in corrosion protection of all metal surfaces.

All metal surfaces on the cab shall be mechanically etched by sanding disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once all imperfections on the exterior surfaces are removed and sanded smooth, body fillers shall be applied to the cab on all surfaces that require a critically aesthetic finish and sanded smooth.

The entire cab shall then be coated with a high quality base primer that is designed to fill any minor surface defects, provide any adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be sanding the cab to a smooth finish followed by sealing the seams with an automotive seam sealer. The minimum thickness of the primer coat after sanding shall be 2.50 mils with a maximum thickness of 5.00 mils.

The cab shall then be painted the specific color designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on an emergency scene. The paint shall have a minimum of 2.5 mils and a maximum of 3.5 mils. The entire cab shall then be baked to speed the curing process of the coatings

#### Cab Paint Color

The color shall be PPG FBCH 75697 red.

#### Cab Paint Warranty

Purchaser shall receive a Paint and Finish (exterior clear coated) One Year limited warranty. The warranty certificate should be included with this proposal.

#### Cab Paint Interior

The visible interior cab structure surfaces shall be painted with a multi-tone silver gray texture finish.

#### Cab Entry Doors

The cab shall include four entry doors; two front doors and two crew doors designed for ease of entering and egress when outfitted with an SCBA. The doors shall be constructed of extruded aluminum with a nominal thickness of 0.13-inch aluminum plate.

The doors shall include a double-rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.

All door hinges shall be hidden within flush mounted cab doors for a pleasant smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38-inch pin and shall be constructed of stainless steel.

#### Cab Insulation

The cab ceiling and wall shall include nonwoven polyester fiber insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

#### Cab Structural Warranty

Purchaser shall receive a cab structure (aluminum) five-year limited warranty

The warranty certificate should be included with this proposal.

#### Cab Test Information

The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation

Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi-Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicle Annex 3 Paragraph 5.

The above test has been witnessed by and attested to by an independent third party. The test results were recorded using cameras, high speed imagers, accelerometers and strain gauges. Documentation of the testing shall be provided upon request.

### Electrical System

The chassis shall include a single starting electrical system which shall include a 12-volt direct current multiplexing system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311-degree Fahrenheit insulation. All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 275 degree Fahrenheit minimum high temperature flame retardant loom. All nodes and sealed Deutsch connectors shall be waterproof.

### Load Management System

The apparatus load management shall be performed by the included multiplex system. The multiplex system shall also feature the priority of sequences and shall shed electrical loads based on priority list specifically programmed.

### Data Recording System

The chassis shall have a Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901 and shall be integrated with the Multiplex electrical system. 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, Time and 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 B USB connection point, remotely mounted in the left side foot well.

### Accessory Power

The electrical distribution panel shall include two power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One power stud shall be capable of carrying up to a 40 amp battery direct load. One power stud shall be capable of carrying up to a 15 amp ignition switched load. The two power studs shall share one #10 ground stud. A 225 amp battery direct power and ground stud shall be provided and installed on the chassis near the left-hand battery box for OEM body connections.

### Exterior Electrical Terminal Coating

All terminals exposed to the elements will be sprayed with a high visibility protective rubberized coating to prevent corrosion.

### Electrical System Warranty

Purchaser shall receive an Electrical System one year or 18,000 miles limited warranty.

This warranty certificate should be included with this proposal

### Engine

The chassis engine shall be a Cummins L9 engine. The L9 engine shall be an in-line six cylinder, four -cycle diesel powered engine. The engine shall offer a rating of 450 horsepower at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250-foot pounds of torque at 1200 RPM with 543 cubic inches of displacement.

The L9 engine shall feature a VGT Turbocharger, a high-pressure common rail fuel system, fully integrated electronic controls with an electronic governor and shall be EPA certified to meet the 2021-26 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.

The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall

include Citgo brand Citgard 500, or equivalent SAE 15W40 CK-4 low ash engine oil which shall be utilized for proper engine lubrication.

A wiring harness shall be supplied ending at the back of the cab. The harness shall include a connector which shall allow an optional harness for the pump panel. The included circuits shall be provided for an tachometer, oil pressure, engine temperature, hand throttle, high idle and PSG system. A circuit for J1939 data link shall also be provided at the back of the cab.

#### Cab Engine Tunnel

The cab interior shall include an integrated engine tunnel constructed of 5052 H32 Marine grade, 0.19 of an inch thick aluminum. The tunnel shall be a maximum of 41.50 inches wide X 25.50 inches high.

#### Diesel Particulate Filter Controls

There shall be two controls for the diesel particulate filter. One control shall be for regeneration, and one control shall be for regeneration inhibit.

#### Engine Programming High Idle Speed

The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.

#### Engine High Idle Control

The vehicle shall be equipped with an automatic high-idle speed control which shall be pre-set to operate the engine at a specified RPM to increase alternator output if the system voltage drops to 12.5 volts with multiplex weird chassis and 12.8 volts using load manager with conventional wiring. This device shall automatically operate only when the engine is running, the transmission is in neutral, and with the parking brake set. The automatic high idle will stay engaged for a minimum ten minutes and until the system, voltage has reached 13.0 volts. Application of the service brake will override the automatic high idle and reset timer. The vehicle shall be equipped with a high-idle speed rocker switch. It shall be pre-set so when activated, it will operate the engine at a specified RPM to increase alternator output. This device shall operate only when the engine is running, the transmission is in

neutral, and with the parking brake set. When automatically engaged the high idle shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually or automatically re-engage when the brake pedal is released, or when the transmission is placed in neutral. Switch shall not override automatic high idle between voltage parameters during timed cycle.

#### Engine Programming Road Speed Governor

The engine shall include programming which will govern the top speed of the vehicle.

#### Auxiliary Engine Brake

A compression brake, for a six cylinder engine shall be provided. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine compression brake shall active upon 0% accelerator when in operation mode and actuate the vehicle's brake lights.

The engine shall utilize a variable geometry turbo (VGT) as an integrated auxiliary engine brake to offer a variable rate of exhaust flow, which when activated in conjunction with the compression brake shall enhance the engine's compression braking capabilities.

#### Auxiliary Engine Brake Control

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all the following conditions are simultaneously detected: A valid gear ration is detected, the driver has requested or enabled engine compression brake option, 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 through an on/off switch and a low /medium/high selector switch.

#### Electronic Engine Oil Level Indicator

The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.

### Fluid Fills

The engine oil, coolant, transmission, and power steering fluids fills shall be located under the cab. The windshield washer fill shall be accessible through the front left side mid step.

### Engine Drain Plug

The engine shall include an original equipment manufacturer installed oil drain plug.

### Engine Warranty

The Cummins engine shall be warranted for a period of five years or 100,000 miles, whichever comes first.

### Remote Throttle Harness

An apparatus interface wiring harness for the engine and transmission pump interlocks shall be supplied with the chassis. The harness shall include a connector for connection to a chassis pump panel harness supplied by the body builder and shall terminate in the left frame rail behind the cab for connection by the body builder. The harness shall include circuits deemed for a pump panel and shall contain circuits for a hand throttle, and a multiplexed gauge. Separate circuits shall also be included for a pump control switch. "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, clean power, customer ignition, air horn solenoid switch, high idle switch and high idle indicator light. The harness shall contain interlocks that will prevent shifting to road or pump mode unless the transmission output speed translates to less than one mph and the transmission is in neutral. The shift to pump mode shall also require the park brake be set.

### Engine Programming Remote Throttle

The engine ECM (electronic control module) discreet wire remote throttle circuit shall be turned off of use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

### Engine Programming Idle Speed

The engine low idle speed will be programmed at 700 rpm.

### Engine Air Intake

The engine air intake system shall include an ember separator. This ember separator shall be designed to protect the downstream air filter from embers using a combination of unique flat and crimped metal screens packaged in a heavy-duty galvanized steel frame. This multilayered screen shall trap embers and allow them to burn out before passing through the pack.

The engine air intake system shall also include an air cleaner mounted above the radiator. This air cleaner shall utilize a replaceable dry type filter element designed to prevent dust and debris from being ingested into the engine a service cover shall be provided on the housing, reducing the chance of contaminating the air intake system during air filter service.

The air intake system shall include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

### Engine Fan Drive

The engine cooling system fan shall incorporate a thermostatically controlled, Horton fully variable type fan drive with SmartClutch J-1939 CAN controller.

The variable speed fan clutch only engages at the amount needed for proper cooling to 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. The fan speed shall include a J-1939 Can clutch controller to receive signal from the engine control module to activate at variable rates of speed. Variable speeds shall be set through thermostatic and engine speed signals to run as efficiently and quietly as required to maintain temperature.

## Engine Cooling System

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

The cooling system shall be comprised of a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, a charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.

The radiator shall be a down flow design constructed with aluminum cores, plastic end tanks and steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall include a one piece injected molded polymer fan with a three piece fiberglass fan shroud.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and rearward oriented sight glass to observe coolant in the system. A cold fill and observation line shall be included within the frame mounted translucent recovery bottle to monitor the level of coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements and allows for expansion and recovery of coolant into a separate integral expansion chamber.

All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance.

The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicon hump hose and stainless-steel constant torques style clamps meeting the engine manufacturer's requirements.

The radiator and charge air cooler shall be removable through the bottom of the chassis.

#### Engine Cooling System Protection

The engine cooling system shall include a recirculation shield designed to act as a light duty skid plate below the radiator to provide additional protection for the engine cooling system from light impacts, stones and road debris.

#### 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 Fahrenheit.

Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.

#### Electronic Coolant Level Indicator

The instrumental panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of low coolant incident.

#### Coolant Hoses

The cooling systems hose shall be formed silicon hose and formed aluminized steel tubing and include stainless steel constant torque band clamps.

#### Engine Coolant Overflow Bottle

A remote engine coolant overflow expansion bottle shall be provided in the case of overfilling the coolant system. The overflow bottle shall capture the expansion fluid or overflow rather than allow the fluid to drain on the ground.

#### Engine Pump Heat Exchanger

A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant. This shall allow the use of water from the discharge side of the pump to assist in cooling the engine.

### Engine Exhaust System

The exhaust system shall include an end-in end-out horizontally mounted single module after treatment device, and downpipe from the charge air cooled turbo. The single module shall include four temperature sensors, diesel particulate filter (DPF, urea dosing module (UL2), and a selective catalytic deduction (SCR) catalyst to meet current EPA standards. The selective catalytic reduction catalyst utilizes a diesel exhaust fluid solution consisting of urea and purified water to convert NOx into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be mixed and injected into the system through the DPF and SCR.

The system shall utilize 0.07 inch thick stainless steel exhaust tubing between the engine turbo and the DPF. Zero leak clamps seal all system joints between the turbo and DPF.

The single module after treatment through the end of the tailpipe shall be connected with zero leak clamps. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires.

The exhaust system after treatment module shall be mounted below the frame in the outboard position.

### Diesel Exhaust Fluid Tank

The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of six usable gallons and shall be mounted on the left hand side of the chassis frame behind 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.

The tank fill tube shall be routed under the rear of the cab with the fill neck and splash guard accessible in the top rear step.

### 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.

### 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.

The exhaust flex joint shall not include the thermal exhaust wrap.

### Emissions System Warranty

Purchaser shall receive a regulated emissions system five years or 100,000 miles limited warranty.

### Transmission

The drive train shall include an Allison model EVS3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two 10-bolt PTO pads located on the converter housing.

The transmission shall include two internal oil filters which shall offer Allison formulated Castrol TranSynd synthetic transmission fluid which shall be utilized in the lubrication of the transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

Transmission gear ratios shall be:

1<sup>st</sup> 3.49:1

2<sup>nd</sup> 1.86:1

3<sup>rd</sup> 1.41:1

4<sup>th</sup> 1.00:1

5<sup>th</sup> 0.75:1

6<sup>th</sup> 0.65:1 (if applicable)

Rev 5.03:1

### Transmission Mode Programming

The transmission, upon start up, will select the fifth speed operation without the need to press the mode button.

### Transmission Feature Programming

The Allison GenV/VI-E transmission group package number 127 shall contain the 198 vocational package in consideration of the duty of 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. This requires re-selecting 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. These circuits shall be used allowing the vehicle to operate in the fourth range lockup while operating the pump mode due to the one to one ration 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 transmission interface connector shall be provided in the cab. This package shall contain the following input/output circuits to the transmission control module. The Gen V/VI-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

Function ID	Description	Wire Assignment
Inputs		
C	PTO Request	142
J	Fire Truck Pump Mode (4 <sup>th</sup> Lockup)	122/123

## Outputs

C	Range Indicator	145 (4 <sup>th</sup> )
G	PTO Enable Output	130
	Signal Return	103

### Transmission Shift Selector

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall have a graphical Vacuum Fluorescent Display (VFD) capable of displaying two lines of text. The shift selector shall provide mode indication and prognostic indicator (wrench symbol) on the digital display. The prognostics monitor various operating parameters shall alert you when a specific maintenance function is required.

### Electronic Transmission Oil Level Indicator

The transmission fluid shall be monitored electronically.

### Transmission Pre-Select with Auxiliary Brake

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed assisting the secondary braking system and slowing the vehicle.

### 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.

### Transmission Drain Plug

The transmission shall include an original equipment manufacturer installed magnetic transmission fluid drain plug.

### Transmission Warranty

The Allison series transmission shall be warranted for a period of five years with unlimited mileage. Parts and labor included in the warranty.

### PTO Location

The transmission shall have two power take off (PTO) mounting locations, one in the 8:00 o'clock position and one in the 4: o'clock position

### Driveline

All drivelines shall be heavy duty metal tube and equipped with MSI 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®. The drivelines shall include Meritor brand u-joints with thrust washers.

### Midship Pump/Gearbox

A temporary jackshaft driveline shall be installed by the chassis manufacturer to accommodate the midship split shaft pump as specified by the apparatus manufacturer.

### Midship Pump/Gearbox Model

The midship pump/gearbox provisions shall be for a Hale QMAX-XS Pump.

### Midship Pump Gearbox Drop

The Hale pump gearbox shall have an “L” (long) drop length.

#### Midship Pump Ratio

The ratio for the midship pump shall be 2.28:1 (23).

#### Midship Pump Location C/L Suction to C/L Rear Axle

The midship pump shall be located so the dimension from the centerline of the suction to the centerline of the rear axle is 120.00 inches.

#### Pump Shift Controls

The air pump shift control panel shall be located on the left hand side of the engine tunnel, integrated with the shifter pod. The following shall be provided on the panel: a three position control lever; an engraved PUMP ENGAGED identification light; and an engraved OK TO PUMP identification light. The pump shift control panel shall be black with a yellow border outline and shall include pump instructions. An instruction plate describing the transmission shift selector position used for pumping shall be provided and located so it can be read from the driver’s position per NFPA 16.10.1.3. The road mode shall be selected when the control lever is in the forward position and pump mode shall be selected when the control lever is in the rearward position.

The control lever center position shall exhaust air from both pump and road sides of the pump gear box shift cylinder.

#### Pump Shift Control Plumbing

Air connections shall be provided from the air supply tank to the pump shift control valve and from the pump shift control valve to the frame mounted bracket. The frame mounted bracket shall include labeling identifying the pump and road connection points with threaded 0.25 inch NPT fittings on the solenoid for attaching the customer installed pump. The air supply shall be pressure protected from service brake system

#### Fuel Filter/Water Separator

The fuel system shall have a Fleetguard FS20121 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.

### Fuel Lines

The fuel system supply and return lines installed from the fuel tank to the engine shall be reinforced nylon tubing rated for diesel fuel. The fuel lines shall be brown in color and connected with brass fittings.

### Electric Fuel Primer

Integral to the engine assembly is an electric lift pump that serves the purpose of re-filter fuel priming.

### Fuel Tank

The fuel tank shall have a capacity of fifty gallons and shall measure 35.00 inches in width X 15.00 inches in height X 24.00 inches in length.

The baffled tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without “blow-back” and a roll over check ball bent for temperature related fuel expansion and draw.

The tank is designed with dual draw tubes and sender flanges. The tank shall have a 2.00-inch NPT fill ports for right- or left-hand fill. A 0.50-inch NPT drain plug shall be centered in the bottom of the tank.

The fuel tank shall be mounted below the frame, behind the rear axle. Two three-piece strap hanger assemblies with “U” straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the upper tank mounting brackets. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

### Fuel Tank Material and Finish

The fuel tank shall be constructed of 12 gauge aluminized steel. The exterior of the tank shall be powder coated black and then painted to match the frame components.

All powder coatings and paint shall be compatible with all metals pretreatments and primers used. The cross-hatch adhesion test per ASTM D3359 Method B, results to be 5B minimum. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of H-2H. The direct impact resistance test per ASTM D2794, results to be 5B minimum

Any proposals offering painted fuel tanks with variations from the above process shall not be accepted. The fil thickness of vendor supplied parts shall also be sufficient to meet the performance standards stated above.

### Fuel Tank Strap Material

The fuel tank straps shall be constructed of ASTM A-36 steel. The fuel tank straps shall be powder coated black and then painted to match the frame components if possible.

### Fuel Tank Fill Port

The fuel tank fill ports shall be offset with the left fill port located in the rearward position and the right fill port located in the middle position on the fuel tank.

### Fuel Tank Drain Plug

A 0.5 inch NPT magnetic drain plug shall be centered in the bottom of the fuel tank.

### Front Axle

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-18. The axle shall include a 3.74-inch drop and a 71.00-inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle. The weight capacity for the axle shall be rated at 18,000 pounds.

### Front Axle Warranty

The front axle shall be warranted by Meritor for five years with unlimited miles under the general service application

### Front Wheel Bearing Lubrication

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs.

### Front Shock Absorbers

Two 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.

### Front Suspension

The front suspension shall include a four leaf spring pack consisting of 54.00 inch long and 4.00 inch wide taper leaf springs and shall feature a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication

counter bore and lubrication land off cross bore with grease fittings. The spring capacity shall be rated at 18,000 pounds.

#### Steering Column/Wheel

The cab shall include a Douglas Autotech steering column which shall include a seven position tilt, and 2.25 inch telescopic adjustment, and an 18.00 inch two spoke steering wheel located at the driver's position. The steering wheel shall be covered with black polyurethane foam padding.

The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

#### Electronic Power Steering Fluid Level Indicator

The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

#### Power Steering Pump

The hydraulic power steering pump shall be a TRW PS and shall be gear driven from the engine. The pump shall be balanced, positive displacement, sliding vane type. The power steering system shall include an oil to air passive cooler.

#### Power Steering Gear

The power steering gear shall be a TRW model TAS 85

#### 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 to-in set on the front tires by the chassis manufacturer.

### Rear Axle

The rear axle shall be a Meritor model RS-25-160 single drive axle. The axle shall include precision forged single reduction differential gearing and shall have a fire service rated capacity of 27,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.63 of an inch for extra strength and rigidity and rigid differential case for high axle strength and reduced maintenance.

The axle shall have heavy duty Hypoid gearing for longer life, greater 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 will be used.

### Rear Axle Warranty

The rear axle shall be warranted by Meritor for five years with unlimited miles under the general service application.

### Rear Axle Differential Lubrication

The rear axle differential shall be lubricated with oil

### Rear Wheel Bearing Lubrication

The rear axle wheel bearings shall be lubricated with oil.

### Vehicle Top Speed

The top speed of the vehicle shall be approximately 68 MPH +/- 2 MPH at governed engine RPM

### Rear Suspension

The single rear axle shall feature a Recyo 79KB vari-rate, self leveling captive slipper type conventional multi leaf spring suspension, with 57.50 inch X 3.00 inch springs. One adjustable and one fixed torque rod shall be provided.

The rear suspension capacity shall be rated from 21,000 to 31,500 pounds.

### Tire Intermittent Service Rating

The chassis shall be rated using Intermittent Service ratings provided to the emergency vehicle market by the tire manufacturers as the basis for determining the maximum vehicle load and speed.

### Front Tire

The front tires shall be Michelin 315/80R-22.5PR "L" tubeless radial XZUS 2 regional tread.

The front tire stamped load capacity shall be 20,000 pounds per axle with a nominal speed rating of 65 miles per our when properly inflated to 130 pounds per square inch.

The Michelin Intermittent Service Rating maximum load capacity shall be 21,400 pounds per axle with a maximum speed of 65 miles per hour when properly inflated to 130 pounds per square inch.

The Michelin Intermittent Service Rating maximum speed Capacity shall be 20,000 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 130 pounds per square inch.

The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to no more than fifty miles of continuous operation under maximum recommended payload, or without stopping for at least twenty minutes. The emergency vehicle must reduce its speed to no more than 50 MPH after the first fifty miles of travel.

### Rear Tire

The rear tires shall be Michelin 12R-22.5 16PR "H" tubeless radial XDN2 all-weather tread.

The rear tire stamped load capacity shall be 27,120 pounds per axle with a nominal speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Intermittent Service Rating maximum load capacity shall be 29,020 pounds per axle with a maximum of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Intermittent Service Rating maximum speed capacity shall match the nominal speed rating.

The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to not more than fifty miles of continuous operation under maximum recommended payload, or without stopping for at least twenty minutes. The emergency vehicle must reduce its speed to no more than 50 MPH after the first fifty miles of travel.

#### Rear Axle Ratio

The rear axle ratio shall be 5.13:1

#### Tire pressure Indicator

There shall be electronic chrome LED valve caps shipped loose for installation by the OEM which shall illuminate with a red LED when tire pressure drops 8 psi provided. The valve caps are self-calibrating and set to the pressure of the tire upon installation.

#### Front Wheel

The front wheels shall be Alcoa hub piloted, 22.50-inch x 9.00 inch aluminum wheels featuring a mirror polish on the outer face. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

#### Rear Wheel

The outer rear wheels shall be Alcoa hub piloted, 22.50-inch X 9.00-inch aluminum wheels with a mirror polished outer surface. The inner rear wheels shall be Alcoa hub piloted 22.50-inch X 9.00 inch aluminum wheels with bright machine finish. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

## Hub & Lug Covers

Supply and install hub and lug covers on the front and rear wheels.

## Brake System

A rapid build-up air brake system shall be provided. The air brakes shall include, at a minimum, a two-air tank, three reservoir system with a total 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. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss. 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 sensor, four 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.

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the single rear axle. The ATC system shall apply the ABS when the drive wheels lose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

A momentary rocker styler switch shall be provided and properly labeled "mud/snow". When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light and the light on the rocker switch shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, and integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

### Front Brakes

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00-inch vented rotors.

### Rear Brakes

The rear brakes shall be Meritor 16.50-inch X 8.63-inch S-cam drum type. The brakes shall feature a cast iron shoe.

### 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 Control

The Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake.

The parking brake actuation valve shall be mounted to the left side of the engine tunnel integrated into the transmission shift pod console within easy access of the driver.

### 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 can inadvertently be backed off and threaded grease fitting for easy serviceability.

#### Air Dryer

The brake system shall include a Wabco System Saver 1200 air dryer with an integral 100-watt heater with a Metri-pack sealed connector. The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and the air dryer purge valve during the compressor “unload” cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be located on the right-hand frame rail forward of the front wheel behind the right-hand cab step.

#### Front Brake Chambers

The front brakes shall be provided with MGM type 24 long stroke brake chambers.

#### Rear Brake Chambers

The rear axle shall include TSE 30/36 brake chambers which shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE Type 36 brake chamber has a 36.00 square inch effective area.

#### 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 17.7 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.

### 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 located on the air dryer bracket.

### Moisture Ejectors

Manual pet-cock type drain valves shall be installed on all reservoirs of the air supply system.

### Air Supply Lines

The air system on the chassis shall be plumbed with color coded reinforced nylon tubing air lines. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Push to connect type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

### Wheelbase

The chassis wheelbase shall be 195.00 inches.

### Rear Overhang

The chassis rear overhand shall be 80.00 inches

### Frame

The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep upper and lower flanges X 0.38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low

alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100-inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

Proposals calculating the frame strength using the “box method” shall not be considered.

Proposals including heat-treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at required yield strength prior to forming the rail.

A minimum of seven fully gusseted 0.25-inch-thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The bolt heads shall be flanged type, held in place by distorted thread flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25-inch-thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.

Any proposals not including additional reinforcement for each cross member shall not be considered.

All relief areas shall be cut in with a minimum 2.00-inch radius at intersection points with the edges ground to a smooth finish to prevent any stress concentration point.

#### Frame Paint

The frame shall be powder coated black prior to any attachment of components.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten squares. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils.

Any proposals offering painted frame with variations from the above process shall not be accepted. The film thickness of vendor supplied parts shall also be sufficient to meet the performance standards as stated above.

#### Frame Assembly Structural

Purchaser shall receive a Frame Assembly Structural five-year warranty.

#### Frame Rail Corrosion

Purchaser shall receive a Frame Rail Corrosion (Powder Coat) three years or 48,000 miles limited warranty.

#### Frame components Corrosion

Purchaser shall receive a Frame Components Corrosion (Powder Coat) one year 18,000-mile limited warranty.

#### Front Bumper

A one-piece two-rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10-gauge 304 stainless steel, 12.00 inches high and 99.00 inches wide.

#### Front Bumper Extension Length

The front bumper shall be extended approximately 24.00 inches ahead of the cab.

#### Front Bumper Apron

The 24.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.

#### Front Bumper Discharge

The chassis shall include frame mounted 2.00 inch diameter plumbed pipe intended for use as a discharge trash line. The discharge pipe shall be routed from the left hand front splay rail area behind the bumper to the area rear of the front axle, ahead of the battery box.

The discharge shall pipe shall be a, 2.00 inch stainless steel schedule 10 tube. The discharge shall include a Victaulic groove for connecting to the pump and discharge hose plumbing on each end of the tube.

The apparatus manufacturer shall plumb the discharge pipe to the pump and shall provide all valves as required.

#### Front Bumper Compartment Center

The front bumper shall include a compartment in the bumper apron located in the center between the frame rails which may be used as a hose well. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment shall be the full size of available space in the apron from the cab fascia to the bumper and 38.00 inches wide X 12.00 inches deep. The clear opening shall be 37.75 inches wide. The front edge of the compartment shall include a rolled edge and angled deflector to prevent hose and couplings from catching along the front edge of the compartment. The compartment shall also include a cover constructed of 0.19 inch thick bright embossed aluminum tread plate.

#### Front Bumper Compartment Cover Hardware

The front bumper compartment shall have a black net style cover to contain the hose, etc. that will be stored in the extended front bumper compartment.

#### Mechanical Siren

The front bumper shall include an electro mechanical Federal Q2B siren, which shall be streamlined chrome-plated and shall produce 123 decibels of sound at 10.00 feet. The Q2B siren produces a distinctive warning sound that is recognizable at long distance. A unique clutch design provides a longer coast down sound while reducing the amp draw to 100 amps. The siren shall measure 10.50 inches wide x 10.00 inches high x 14.00 inches deep. The siren shall include a pedestal mount to surface mount on a horizontal surface.

#### Mechanical Siren Location

The siren shall be pedestal mounted on the bumper apron on the furthest outboard section of the bumper on the driver side.

### Air Horn

The front bumper shall include two (2) Hadley brand E-Tone air horns which shall measure 21.00 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish on the exterior and a painted finish deep inside the trumpet.

### Air Horn Location

The air horns shall be recess mounted in the front bumper face, on (1) on the right side of the bumper in the inboard position relative to the right hand frame rail and one (1) on the left side of the bumper in the inboard position relative the left hand frame rail.

### Air Horn Reservoir

One (1) air reservoir, with a 1200 cubic inch capacity, 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.

### Electronic Siren Speaker

There shall be one (1) Cast Products Inc. model SA4301, 100 watt speaker provided. The speaker shall measure 6.20 inches tall x 7.36 inches wide x 3.06 inches deep. The speaker shall include a flat mounts flange which shall be polished aluminum.

### Electronic Siren Speaker Location

The electronic siren speaker shall be located on the bumper face on the right side outboard of the frame rail in the far outboard position.

### Front Bumper Tow Hooks

Two (2) heavy duty tow hooks, painted to match the frame components, shall be installed below the front bumper in the forward position, bolted directly to the underside of each chassis frame rail with grade 8 bolts.

Fabricate and install tow hooks plates mounted to the chassis frame rail extension and extend up through the top of the extended front bumper filler panel. The tow hook plates will be painted red to match the color of the chassis

### Cab Tilt System

The entire cab shall be capable of tilting approximately 45- degree to allow for easy maintenance of the engine and transmission. The cab tilt pump assembly shall be located on the right side of the chassis above the battery box.

The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation.

It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit.

Two (2) spring-loaded hydraulic hold down locks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks.

Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90 inch ball and be anchored to frame brackets with 1.25 inch diameter studs.

A steel safety channel assembly, painted safety yellow shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.

### Cab Tilt Control Receptacle

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap.

The remote control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote control pendant shall be shipped loose with the chassis.

#### 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 with the parking brake released.

#### Cab Windshield

The cab windshield shall have a surface area of 2825.00 square inches and be of a two (2) piece wraparound design for maximum visibility.

The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs.

Each windshield shall be installed using black self locking window rubber.

#### Glass Front Door

The front cab doors shall include a window which is 27.00 inches in width x 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished using electric actuation. The left and right front door windows shall be controlled using a switch on each respective side inner door panel. The driver's door shall include a switch for each powered door window in the cab.

There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom x 26.00 inches in height, more commonly known as "cozy glass" ahead of the front door roll down windows.

The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on line exterior.

#### Glass Tint Front Door

The windows located in the left and right front doors shall have a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

#### Glass Rear Door RH

The rear right hand side door shall include a window which is 27.00 inches in width x 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

#### Glass Tint Rear Door Right Hand

The window located in the right hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

#### Glass Rear Door LH

The rear left hand side door shall include a window which is 27.00 inches in width x 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

#### Glass Tint Rear Door Left Hand

The window located in the left hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

#### Glass Side Mid RH

The cab shall include a window on the right side behind the front and ahead of the crew door which shall measure 16.00 inches wide x 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

#### Glass Tint Side Mid Right Hand

The window located on the right hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

#### Glass Side Mid LH

The cab shall include a window on the left side behind the front door and ahead of the crew door and above the wheel well which shall measure 16.00 inches wide x 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

#### Glass Tint Side Mid Left Hand

The window located on the left hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

#### Cabin Air Filtration System

An Active Air Purification system will be installed in the cab. The system utilizes RGF's Photohydroionization® Cell (PHI-Cell) technology which produces hydro-peroxides and hydroxide ions, reducing airborne mold, bacteria, viruses, and odors up to 99%.

The system shall include a stainless-steel housing approximately 7.50 inches high x 16.13 inches wide x 6.6 inches deep in a trapezoid shape and shall be located at the upper portion of the rear wall mounted in a horizontal orientation. The system shall be 12V DC and shall be active either when the ignition power is on, or when the shoreline is connected.

#### Climate Control

The cab shall include a 57,500 BTU @425 CFM front overhead heater/defroster which shall be provided and installed above the windshield between the sun visors.

The cab shall also include a combination heater air-conditioning unit mounted on the engine tunnel. This unit shall offer eight (8) adjustable louvers, four (4) forward facing and four (4) rearward facing, a temperature control valve and two (2) blowers offering three (3) speeds which shall be capable of circulating 550 cubic feet of air per minute. The unit shall be rated for 42,500 BTU/Hr of cooling and 36,000 BTU/Hr of heating.

All defrost/heating systems shall be plumbed with one (1) seasonal shut off valve at the front corner on the right side of the cab.

The air conditioner lines shall be a mixture of custom bend zinc coated steel fittings and Aeroquip flexible hose with Aeroquip EZ clip fittings.

#### Climate Control Drain

The climate control system shall include a gravity drain for water management. The gravity drain shall remove condensation from the air conditioning system without additional mechanical assistance.

#### Climate Control Activation

The heating and defrosting controls shall be located on the front overhead climate control unit. There shall be additional heating and air conditioning controls located on the engine tunnel mounted climate control unit.

#### A/C Condenser Location

A roof mounted A/C condenser shall be installed centered on the cab forward of the raised roof against the slope rise.

#### A/C Compressor

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32,000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

#### Under Cab Insulation

The underside of the cab tunnel surrounding the engine shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments.

The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

The engine tunnel insulation shall measure approximately 0.30 inch thick including a multi-layer foil faced glass cloth and polyester fiber layer. The foil surface acts as protective against heat, moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by acrylic pressure sensitive adhesive.

#### Interior Trim Floor

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25 inch thick sound absorbing closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and a cast aluminum trim piece at each cab door opening. All exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention.

#### Interior Trim

The cab interior shall include trim on the front ceiling, rear crew ceiling, and the cab walls. It shall be easily removable to assist in maintenance. The trim shall be constructed of insulated vinyl over a hard board backing.

#### Rear Wall Interior Trim

The rear wall of the cab shall be trimmed with vinyl.

#### Header Trim

The cab interior shall feature header trim over the driver and officer dash constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum.

#### Trim Center Dash

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge of the electrical access cover for ventilation.

#### Trim LH Dash

The left hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate for a perfect fit around the instrument panel. For increased occupant protection the extreme duty left hand dash utilizes patent pending break away technology to reduce rigidity in the event of a frontal crash. The left hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.

#### Trim RH Dash

The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size with a measure 14.00 inches wide x 6.38 inches high x 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

#### Engine Tunnel Trim

The cab engine tunnel shall be covered with a multi-layer mat consisting of 0.25 inch closed foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The mat shall be held in place by pressure sensitive adhesive. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.

#### Power Point Dash Mount

The cab shall include a 12 volt cigarette lighter type receptacle in the cab dash to provide a power source for 12 volt electrical equipment. The cab shall also include one (1) Blue Sea

dual universal serial bus (USB) charging receptacle in the cab dash switch panel to provide a power source for USB chargeable electrical equipment. The USB port shall be capable of a 5 Volt-4.8 amp total output. The receptacles shall be wired battery direct.

### Step Trim

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of polished 5052 H32 aluminum Grip Strut grating with angled outer corners. The grating shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in 0.08 inch thick 3003-H22 embossed aluminum tread plate.

### Under Cab Access Door

The cab shall include an access door in the left crew step riser constructed of DA finished aluminum with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.

### Interior Door Trim

The interior trim on the doors of the cab shall consist of an aluminum panel constructed of Marine Grade 5052-H32 0.13 of an inch thick aluminum plate. The door panels shall include a painted finish.

### Cab Door Trim Reflective

The interior of each door shall include high visibility reflective tape. A white reflective tape shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes. The chevron tape shall measure 6.00 inches in height.

### Interior Grab Handle "A" Pillar

There shall be two (2) rubber covered 11.00 inch grab handles installed inside the cab, one on each "A" post at the left and right door openings. The left handle shall be located 7.88 inches above the bottom of the door window opening and the right handle shall be located 2.88 inches above the bottom of the door window opening. The handles shall assist personnel in entering and exiting the cab.

#### Interior Grab Handle Front Door

Each front door shall include one (1) ergonomically contoured 9.00 inch cast aluminum handle mounted horizontally on the interior door panels. The handles shall feature a textured black powder coat finish to assist personnel entering and exiting the cab.

#### Interior Grab Handle Rear Door

A black powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door. A 30.00 inch long handle shall extend horizontally the width of the window just above the window sill. The handle shall assist personnel in exiting and entering the cab.

#### Interior Soft Trim Color

The cab interior soft trim surfaces shall be gray in color.

#### Interior Trim Sunvisor

The header shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded vinyl trim.

#### Interior Floor Mat Color

The cab interior floor mat shall be gray in color.

#### Cab Paint Interior Door Trim

The inner door panel surfaces shall be painted with multi-tone silver gray texture finish.

#### Header Trim Interior Paint

The metal surfaces in the header area shall be coated with multi-tone silver gray texture finish.

#### Trim Center Dash Interior Paint

The entire center dash shall be coated with multi-tone silver gray texture finish. Any accessory pods attached to the dash shall also be painted this color.

#### Trim LH Dash Interior Paint

The left hand dash shall be painted with a multi-tone silver gray texture finish.

#### Trim Right Hand Dash Interior Paint

The right hand dash shall be painted with a multi-tone silver gray texture finish.

#### Dash Panel Group

The main center dash area shall include three (3) removable panels located one (1) to the right of the driver position, one (1) in the center of the dash and one (1) to the left of the officer position. The center panel shall be within comfortable reach of both the driver and officer.

#### Switches Center Panel

The center dash panel shall include twelve (12) rocker switch positions in a single row across the top of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank

switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

#### Switches Left Panel

The left dash panel shall include twelve (12) switches. There shall be six (6) in a single row and six (6) additional switches in a separate row. One row shall be rocker type and the left three (3) switches shall be the windshield wiper/washer control switch, instrument lamp dimmer switch, and headlight switch. The additional row shall be all rocker switch type.

A rocker switch with a blank legend installed directly above shall be provided for any position not designated by a specific option. The non-designated switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

#### Switches Right Panel

The right dash panel shall include no rocker switches or legends.

#### Seat Belt Warning

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 a digital seat position indicator with a seat position legend and integrated audible alarm in the switch panel.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds and the corresponding seat belt remains unfastened. The warning system shall also activate when any seat is occupied and the corresponding seat belt was fastened in an incorrect sequence. Once activated, the visual indicators and applicable audible alarm shall remain active until all occupied seats have the seat belts fastened.

#### Seat Material

The Bostrom FireFighter seats shall include a covering of extra high strength, wear resistant fabric made of durable low seam Durawear Plus ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Durawear Plus meets or exceeds specification of the common trade name Imperial 1800. The material meets FMVSS 302 flammability requirements. *If applicable, Theatre style seats located in the cab shall be high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV ray and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.*

### Seat Color

All seats supplied with the chassis shall be gray in color. All seats shall include red seat belts.

### Seat Back Logo

The seat back shall include the "MFG" logo. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

### Seat Driver

The driver's seat shall be an HO Bostrom 400 Series Firefighter Sierra model seat. The seat shall feature eight-way electric positioning. The eight positions shall include up and down, for and aft with 8.00 inches of travel, back angle adjustment and seat rake adjustments. The seat shall feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel.

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a

simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.

The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMV88 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

#### Seat Back Driver

The driver's seat shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest.

#### Seat Mounting Driver

The driver's seat shall be installed in an ergonomic position in relation to the cab dash.

#### Seat Officer

The officer's seat shall be an H.O. Bostrom 300 Series Firefighter model seat. The seat shall feature two-way manual adjustment and shall include a tapered and padded seat cushion. The seat shall also feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the state load tests by FMVSS 207, 209, 210 and 302 in effect at the time of manufacturer. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

### Seat Back Officer

The officer's seat shall feature a SecureAll™ SCBA locking system which shall be one bracket model and store most US and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustable points shall utilize similar hardware, and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

### Seat Mounting Officer

The officer's seat shall be installed in an ergonomic position in relation to the cab dash.

### Power Seat Wiring

The power seat or seats installed in the cab shall be wired directly to battery power.

### Seat Belt Orientation Crew

The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip.

### Seat Forward Facing Center Location

The crew area shall include two (2) forward facing center crew seats with both located at the center of the rear wall.

### Seat Crew Forward Facing Center

The crew area shall include a seat in the forward facing center position which shall be a HO Bostrom 300 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion. The seat and cushion shall be hinged and compact in design for additional room and shall remain in the stored position until occupied.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95<sup>th</sup> percentile hybrid III male weighing 225 pounds rather than the 50<sup>th</sup> percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

### Seat Back Forward Facing Center

The forward facing center seat shall feature a SecureAll self contained breathing apparatus (SCBA) locking system which shall be one bracket model and store most US and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All

adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

#### Seat Frame Forward Facing

The forward facing center seating positions shall include an enclosed seat frame located and installed on the rear wall. The seat frame shall measure 42.38 inches wide x 12.38 inches high x 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The seat box shall be painted with the same color as the remaining interior.

#### Seat Frame Forward Facing Storage Access

There shall be two (2) access points on the side of the storage area, one (1) on the driver side, and one (1) on the officer side.

#### Seat Mounting Forward Facing Center

The forward facing center seats shall be installed facing the front of the cab.

### Additional Rear Crew Seat

Supply and install a H.O. Bostrom Rear Facing seat in the rear crew area on the passenger side (#213021-01852F TKR 350/ABTS RHS® SLS+ H24 CAV LOW). Connect the wiring from the seat to the pre-existing wiring of the Chassis.

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### Windshield Wiper System

The cab shall include a triple arm linkage wiper system which shall clear the windshield of water, ice, and debris. There shall be two (2) windshield wipers, each shall be affixed to a radial arm. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

### Electronic Windshield Fluid Level Indicator

The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the yellow "Check Message Center" indicator light on the instrument panel shall illuminate and the message center in the dual air pressure gauge shall display a "Check Washer Fluid level" message.

### Cab Door Hardware

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of a fiber reinforced plastic composite with a black mat finish.

The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel. All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout.

### Door Locks

Each cab entry door shall include a manually operated door lock. Each door lock may be actuated from the inside of the cab by means of a red knob located on the paddle handle of

the respective door or by using a TriMark key from the exterior. The door locks are designed to prevent accidental lock out.

#### Grab Handles

The cab shall include on (1) 18.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of SAE 304 stainless steel and be 1.25 inch diameter to enable non-slip assistance with a gloved hand.

#### Rearview Mirrors

Retrac Aerodynamic West Coast style dual vision mirror heads model 613295 shall be provided and installed on each of the front cab doors.

The mirrors shall be mounted via 1.00 inch diameter tabular stainless steel arms to provide a rigid mounting to reduce mirror vibration.

The mirrors shall measure 8.00 inches wide x 19.00 inches high and shall include integral convex mirrors installed in the mirror head below the flat glass to provide a 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 mirror shall be constructed of a vacuum formed chrome plated ABS plastic housing that is corrosion resistant and shall include the finest quality non-glare glass.

#### Cab Fender

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Fender shall consist of an inner liner 16.00 inches wide made of ABS composite and an outer fenderette 3.50 inches wide made of polished aluminum.

#### Cab Exterior Front & Side Emblems

The cab shall include one (1) MFG emblem installed on the front grille.

#### Cab Exterior Model Nameplate

The cab shall include MFG nameplates on the front driver and officer side doors.

### Ignition

A master battery system with a keyless start ignition system shall be provided. There shall be a three-position rocker switch with off, battery, and ignition positions as well as a stainless-steel etched engine start push-button. The engine start button shall include an illuminated LED halo ring. Both switches shall be mounted to the left of the steering wheel on the dash.

The engine start switch shall only operate when the master battery and ignition switch is in the "ignition" position.

### Battery

The single start electrical system shall include three (3) Harris BCI 31 925 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541.

### Battery Tray

The batteries shall be installed on a steel battery tray located on the left side of the chassis, securely bolted to the frame rails. The battery tray shall be coated with the same material as the frame.

The battery tray shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mate made by Dri-Dek shall be installed in the bottom of the tray to allow for air flow and help prevent moisture build up.

### Battery Box Cover

The battery box shall include a steel cover which protects the top of the batteries on the left hand side of the vehicle. The cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.

### Battery Cable

The starting system shall include cables which shall be protected by 275 degrees F. minimum high temperature flame retardant loom, sealed at the ends with heat shrink and sealant.

The battery terminals shall not be utilized for auxiliary connections. The only acceptable auxiliary connections shall be for the cross over link from the left bank to the right bank, power for jumper studs and starter cables. All other auxiliary connections will use remote studs mounted in the battery box area. There shall be four (4) remote studs labeled as Common Power, Common Ground, Clean Power, and Clean Ground.

#### 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, 8.00 inches apart. 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.

#### Alternator

The charging system shall include a 270 amp Leece Neville 12 volt alternator. The alternator shall include a self-excited integral regulator.

#### Starter Motor

The single start electrical system shall include a Delco brand starter motor.

#### Battery Conditioner

A Kussmaul Auto Charge Chief 4012 battery conditioner shall be supplied. The battery conditioner shall provide a 40 amp output for the chassis batteries and a 20 amp output circuit for accessory leads. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position and shall include a battery temperature sensor.

#### Battery Conditioner Display

A Kussmaul battery conditioner display with a digital status center display shall be integrated into the electrical inlet.

#### Auxiliary Air Compressor

A Kussmaul Pump 12V air compressor shall be supplied. The air compressor shall be installed under the dashboard on the right hand side, forward of the officer's seating position. The air compressor shall be plumbed to the air brake system to maintain air pressure. The air compressor shall include an auto drain as an extra precaution to prevent moisture from entering the air system. The automatic moisture drain shall be plumbed into the system between the auxiliary air compressor pump and the air tanks.

#### Electrical Inlet Location

An electrical inlet shall be installed on the left hand side of cab over the wheel well.

#### Electrical Inlet

A Kussmaul 20 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to.

#### AMP Draw Reference List

Kussmaul 40 LPC Charger- 5 amps

Kussmaul Chief 4012 Charger- 5.7 amps

Kussmaul 80 LPC Charger- 13 amps

Kussmaul Chief 6012 Charger-9 amps

Blue Sea P12 7532-7.5 amps

Iota DLS-45/1Q4-11 amps

1000 W Engine Heater- 8.33 amps

1500 W Engine Heater- 12.5 amps

120 V Air Compressor- 4.2 amps

120 V Dometic HVAC- 15 amps

### Electrical Inlet Connection

The electrical inlet shall be connected to the battery conditioner.

### Electrical Inlet Color

The electrical inlet connection shall include a yellow cover.

### Headlights

The cab front shall include four (4) rectangular LED headlamps with separate high and low beams mounted in bright chrome bezels. Each lamp shall include a heating system that de-ices the headlight.

### Front Turn Signals

The front fascia shall include two (2) Whelen model 600 4.00 inches x 6.00 inches programmable amber LED turn signals which shall be installed in an outboard position within the front fascia chrome bezel.

### Headlight Location

The headlights shall be located on the front fascia of the cab directly below the front warning lights.

### Side Turn/Marker Lights

The sides of the cab shall include two (2) Tecniq S170 LED side marker lights which shall be provided just behind the front cab radius corners. The lights shall be amber with chrome bezels.

### Marker and ICC Lights

In accordance with FMVSS, there shall be five (5) marker lamps on the front of the vehicle designating identification and clearance. There shall be five (5) face mounted lights integrated into the scene light.

### Headlight And Marker Light Activation

The headlights and marker lights shall be controlled through a rocker switch within easy reach of the driver. There shall be a dimmer switch within easy reach of the driver to adjust the brightness of the dash lights. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights when the ignition switch is in the "On" position and the parking brake is released.

### Interior Overhead Lights

The cab shall include a LED dome lamp located over each door. The lights shall include push switches on each lamp to activate both the clear and red portions of the light individually.

### Interior Overhead Light Activation

The clear portion of each lamp shall be activated by opening the respective door.

### Lightbar Provision

There shall be one (1) light bar installed on the cab roof. The light bar shall be provided and installed by the chassis manufacturer. The light bar installation shall include a lowered mounting that shall place the light bar just above the junction box and wiring to a control switch on the cab dash.

### Cab Front Lightbar

The lightbar provisions shall be one (1) Whelen brand Freedom IV LED lightbar mounted centered on the front of the cab roof. The lightbar shall be 72.00 inches in length. The

lightbar shall feature six (6) red LED light modules and two (2) clear LED light modules. The entire lightbar shall feature a clear lens. The clear lights shall be disabled with park brake engaged. The cable shall exit the lightbar on the right side of the cab.

#### Lightbar Switch

The light bar shall be controlled by a rocker switch located on the switch panel. This switch shall be clearly labeled for identification.

#### Front Scene Lights

The front of the cab shall include one (1) HiViz model FireTech FT-B-72-ML-B LED scene light installed on the brow of the cab. The light shall feature five (5) integrated marker lights.

The housing shall be powder coated black.

#### Front Scene Light Location

There shall be one (1) scene light mounted center on the front brow of the cab.

#### Front Scene Lights Activation

The front scene lighting shall be activated by individual rocker switches for each of the three (3) separate scene lighting circuits. Each circuit shall be activated independently and shall include rocker switches labeled "Front Scene", "Front Flood", and "Front Spotlight".

#### Side Scene Lights

The side of the cab shall include two (2) Whelen 900 EZ scene lights, one (1) each side which shall be surface mounted with a chrome bezel.

#### Side Scene Light Location

The scene lighting located on the left and right sides of the cab shall be mounted rearward of the cab "B" pillar in the 10.00 inch raised roof portion of the cab between the front and rear crew doors.

### Side Scene Activation

The scene lights shall be activated by two (2) rocker switches located in the switch panel, one (1) for each light, and by opening the respective side cab doors.

### Ground Lights

Each door shall include a Tecniq T44 LED ground light mounted to the underside of the cab step below each door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life.

### Ground Lights

The ground lighting shall be activated when the parking brake is set.

### Lower Cab Step Lights

The middle step located at each door shall include a Tecniq T44 LED light which shall activate with the opening of the respective door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life.

### Intermediate Step Lights

The intermediate step well area at the front doors shall include a TecNiq D06 LED light within a chrome housing. The front egress step lights shall provide visibility to the step well area for the first step exiting the vehicle. The Egress step lights shall activate with entry step lighting.

### Engine Compartment Light

There shall be a LED NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall activate automatically when the cab is tilted.

### Do Not Move Apparatus Light

The front headliner of the cab shall include a flashing red TecNiq K50 LED light clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated.

The flashing red light shall be located centered left to right for greatest visibility.

The light and alarm 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.

### Master Warning Switch

A master switch shall be included in the main rocker switch panel. The switch shall be a rocker type, red in color and labeled "Master" for identification. The switch shall feature control over all devices wired through it. Any warning device switch left in the "On" position shall automatically power up when the master switch is activated.

### Inboard Front Warning Lights

The cab front fascia shall include two (2) Whelen 600 series Super LED front warning lights in the left and right inboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

### Inboard Front Warning Lights Color

The warning lights mounted on the cab front fascia in the inboard positions shall be red.

### Front Warning Switch

The front warning lights shall be controlled via rocker switch on the panel. This switch shall be clearly labeled for identification.

### Intersection Warning Lights

The chassis shall include two (2) Whelen 600 series Super LED intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.

#### Intersection Warning Lights Color

The intersection lights shall be red.

#### Intersection Warning Lights Location

The intersection lights shall be mounted on the side of the bumper in the rearward position.

#### Side and Intersector Warning Switch

The side and intersector warning lights shall be controlled by a rocker switch on the switch panel. This switch shall be clearly labeled for identification.

#### Siren Control Head

A Whelen 295HFS2 electronic siren control head with remote amplifier shall be provided and flush mounted in the switch panel with a location specific to the customer's needs. The siren shall feature 200-watt output, hands free mode and shall be in "standby" mode awaiting instruction. The siren shall offer radio broadcast, public address, wail, yelp, or piercer tones and hands free operation which shall allow the operator to turn the siren on and off from the horn ring if a horn/siren selector switch option is also selected.

#### Steering Wheel Horn Button Selector Switch

A rocker switch shall be installed in the switch panel between the driver and officer to allow control of either the electric horn or the air horn from the steering wheel horn button.

#### Audible Warning LH Foot Switch

A foot switch wired to actuate the mechanical siren(s) shall be supplied for installation in the front section of the cab for driver actuation.

#### Mechanical Siren Foot Switch LH

The mechanical siren foot switch shall be a Linemaster model 491-S.

#### Mechanical Siren Foot Switch LH Location

The mechanical siren foot switch shall be located on the left hand side accessible to the driver between the steering column and the door.

#### Mechanical Siren Foot Switch LH Position

The mechanical siren foot switch shall be positioned outboard of any other foot switch, if applicable.

#### Audible Warning LH Foot Switch Bracket

A 30.00 degree angled foot switch bracket, wide enough to accommodate two (2) foot switches, shall be installed outboard of the steering column for specified driver accessible foot switch activations.

#### Air Horn Auxiliary Activation

The air horn activation shall be accomplished by a black momentary push button on the switch panel, an air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

#### Mechanical Siren Brake/Auxiliary Activation

The mechanical siren shall be actuated by a black push button in the switch panel on the dash. A red push button siren brake control shall be provided in the switch panel on the dash.

#### Mechanical Siren Interlock

The siren shall only be active when master warning switch is on to prevent accidental engagement.

### 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.

### Instrumentation

An ergonomically designed instrument panel shall be provided. Each gauge shall be backlit with LED lamps. Stepper motor movements shall drive all gauges. The instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring.

A twenty eight (28) icon lightbar message center with integral LDC odometer/trip odometer shall be included. The odometer shall display up to 999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD message center screen shall be capable of custom configuration by the users for displaying certain vehicle status and diagnostic functions.

The instrument panel shall contain the following gauges:

One (1) three movement gauge displaying vehicle speed, fuel level, and Diesel Exhaust Fluid (DEF) level. The primary scale on the speedometer shall read from 0 to 100 mph, and the secondary scale on the speedometer shall read from 0 to 160 km/h. The scale on the fuel and DEF level gauges shall read from empty to full as a fraction of full tank capacity. Red indicator lights in the gauge and an audible alarm shall indicate low fuel or low DEF at 1/8<sup>th</sup> tank level.

One (1) three movement gauge displaying engine RPM, and primary and secondary air system pressures shall be included. The scale on the tachometer shall read from 0 to 3000 RPM. The scale on the air pressure gauges shall read from 0-150 pounds per square inch (PSI) with a red line zone indicating critical levels of air pressure. Red indicator lights in the gauge and an audible alarm shall indicate low air pressure.

One (1) four movement gauge displaying engine oil pressure, coolant temperature, voltmeter, and transmission temperature shall be included. The scale on the engine oil pressure gauge shall read from 0 to 100 pounds PSI with a red line zone indicating critical levels of oil pressure. A red indicator light in the gauge and audible alarm shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 100 to 250

degrees F with a red line zone indicating critical coolant temperatures. A red indicator light in the gauge and audible alarm shall indicate high coolant temperature. The scale on the voltmeter shall read from 9 to 18 volts with a red line zone indicating critical levels of battery voltage. A red indicator light in the gauge and an audible alarm shall indicate below 11.8 volts for more than 120 seconds in accordance with the requirements of NFPA 1901. The scale on the transmission temperature gauge shall read from 100 to 300 degrees F with a red line zone indicating critical temperatures. A red indicator light in the gauge and an audible alarm shall indicate a high transmission temperature.

The light bar portion of the message center shall include twenty eight (28) LED backlit indicators. The lightbar shall be split with fourteen (14) indicators on each side of the LCD message screen. The lightbar shall contain the following indicators and produce the following audible alarms when supplied in conjunction with applicable configurations:

#### Red Indicators

Stop Engine- indicates critical engine fault

Air Filter Restricted- indicates excessive engine air intake restriction

Park Brake- indicates parking brake is set

Seat Belt- indicates a seat is occupied and corresponding seat belt remains unfastened

Low Coolant- indicates critically low engine coolant

Cab Tilt Lock- indicates the cab tilt system locks are not engaged

#### Amber Indicators

Malfunction Indicator Lamp (MIL)- indicates an engine emission control system fault

Check Engine- indicates engine fault

Check Transmission- indicates transmission fault

Anit-Lock Brake System (ABS)- indicates anti-lock brake system fault

High exhaust system temperatures- indicates elevated exhaust temperatures

Water in Fuel- indicates presence of water in fuel filter

Wait to Start- indicates active engine air preheat cycle

Windshield Washer Fluid- indicates washer fluid is low

DPF restriction- indicates a restriction of the diesel particulate filter

Regen Inhibit- indicates regeneration of the DPF has been inhibited by the operator

Range Inhibit- indicates a transmission operation is prevented and requested shift request may not occur

SRS- indicates a problem in the supplemental restraint system

Check Message- indicates a vehicle status or diagnostic message on the LCD display requiring attention

### Green Indicators

Left and Right turn signal indicators

ATC- indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system

High Idle- indicates engine high idle is active

Cruise Control- indicates cruise control is enabled

OK to Pump- indicates the pump is engaged and conditions have been met for pump operations

Pump Engaged- indicates the pump transmission is currently in pump gear

Auxiliary Brake- indicates secondary braking device is active

### Blue Indications

High Beam indicator

### Audible Alarms

Air Filter Restriction

Cab Tilt Lock

Check Engine

Check Transmission  
Open Door/Compartment  
High Coolant Temperature  
High or Low System Voltage  
High Transmission Temperature  
Low Air Pressure  
Low Coolant Level  
Low DEF Level  
Low Engine Oil Pressure  
Low Fuel  
Seatbelt Indicator  
Stop Engine  
Water in Fuel  
Extended Left/Right Turn Signal On  
ABS System Fault

#### Backlighting Color

The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting.

#### Camera Rear

One (1) Audiovox Voyager heavy duty box shaped HD camera shall be shipped loose for OEM installation in the body to afford the driver a clear view to the rear of the vehicle.

The camera system shall include a one way communication device that shall be integral part of the rear camera for the use of voice commands directly to the driver. The rear camera display shall activate when the vehicle's transmission is placed in reverse.

### Camera Display

The camera system shall be wired to a 7.00 inch flip down HD monitor which shall include a color display and day and night brightness modes installed above the driver position.

### Communication Antenna

An antenna base, for use with an NMO type antenna, shall be mounted on the right hand front corner of the cab roof so not to interfere with the light bars or other roof mounted equipment installed by chassis builder. The antenna base shall be an Antenex model MABVT8 made for either a 0.38 inch or 0.75 inch receiving hole in the antenna and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base design provides the most corrosion resistance and best power transfer available from a high temper all brass construction and gold plated contact design. The antenna base shall be chassis builder supplied.

### Communication Antenna Cable Routing

The antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

### Fire Extinguisher

A 2.50 pound DOT approved fire extinguisher with BC rating shall be shipped loose with the cab.

### Door Keys

The cab and chassis shall include a total of four (4) door keys for the manual door locks.

### Warranty

Purchaser shall receive a Custom Chassis One (1) year or 18,000 miles limited warranty in accordance with, and subject to, warranty certificate RFW0101. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

### Chassis Operation Manual

There shall be two (2) digital copies of the chassis operation manual provide with the chassis. The digital data shall include a parts list specific to the chassis model.

### Engine And Transmission Operation Manuals

The following manuals specific to the engine and transmission models ordered will be included with the chassis in the ship loose items:

- (1) Hard copy of the Engine Operation and Maintenance manual with digital copy
- (1) Digital copy of the Transmission Operator's manual
- (1) Digital copy of the Engine Owner's manual

### CAB/Chassis As Built Wiring Diagrams

The cab and chassis shall include two (2) digital copies of wiring schematics and option wiring diagram.

### Paint Confirmation

There shall be a paint confirmation letter sent to the body manufacturer with paint spray outs to confirm the cab primary paint color or primary and secondary paint color as specified by the paint options.

### Sales Terms

The sale of the chassis shall be governed by the terms contained on the Sales Terms-Acceptance of Purchase Order document, a copy of which is attached to this option.

## Body

(1) The body is to be comprised of two compartment modules.

- The **driver's module** is to include rescue style compartments, one compartment front of the rear wheels approximately 84" high x 61" wide x 27" deep, one compartment over the rear wheels approximately 72" wide x 27" deep x 48" high and one compartment behind the rear wheels approximately 84" high x 39" wide x 27" deep.
- The **curb side module** is to include rescue style compartments, one compartment front of the rear wheels approximately 84" high x 61" wide x 27" deep in the lower section and 14" deep in the upper section, one compartment over the rear wheels approximately 72" wide x 14" deep x 48" high and one compartment behind the rear wheels approximately 84" high x 39" wide x 27" deep in the lower section and 14" deep in the upper section.

(2) Compartment wall material will be 3/16" thick 3003 smooth aluminum to be break pressed into shape for better strength and weather seal with welds on the inside and outside of compartments. All top surfaces will be 3/16" or 1/8" thick bright aluminum tread plate. The top surface covering the compartments will be reinforced where needed. The outer edge will be turned down to form a drip rail.

(3) Compartment floors will be 3/16" thick 3003 smooth aluminum reinforced with 3" x 1" aluminum channel running down the center, end to end underneath the floor plate. The floors will be the sweep-out design.

(4) The wheel opening panel will be 72" long x 36" high and will be painted.

- A. Supply and install two (2) polished stainless steel fenderettes (#TH4033), one at each body rear wheel opening.
- B. Supply and install a brushed stainless door in the driver's side wheel well opening panel for the chassis fuel filler pipe to connect.
- C. Fabricate and install inner fender liners in the body rear wheel opening on the driver side and curb side with 1/8" Black ABS Haircel Plastic cut to fit. These will mount on the fabricated mounting tabs built into the body.

(5) The body "Side Packs" are to be supported and isolated by a mounting system that consists of 3/4" thick rubber pads that are a minimum of 20" long and 2.5" wide; and 2 1/2" X 2 1/2" X 1/4" square tubing that runs across the truck frame from one extreme side of body to the opposite side. This system shall have a minimum of 12 pads and 6 cuffs.

There shall be three (3) sets of this type on the driver's side and three (3) sets of this type on the curb side of the body for support. The rubber pads are placed on top and on bottom of the square

tubing and is cuffed and bolted to the supporting cabinet wall. The cuff is to be made up of 1/4" channel with 90-degree flanges that sandwich the steel tubing and rubber pads to the cabinet wall. The steel tubing is to have steel flanges that are welded to the tubing and bolted to the chassis. The steel tubing is to be supported by gussets that reach from the cabinet wall to the frame. The steel tubing will be reinforced where needed. This method is designed to reduce metal/aluminum fatigue and to give a limited *Lifetime Warranty*.

(6)

A. Each compartment will have swing open doors with a painted finish.

(7) All swing door compartments will have LED lights mounted one on each side of the door opening that will activate with a door switch when the rollup door is in the open position. The red lights will face towards the rear of the truck and the clear lights will face towards the front of the truck.

(8) There will also be a door open alarm and light system in cab of chassis in center console. This system will be activated when the park brakes are released and there is a compartment door open.

(9) The 3/16" thick front-end wall of the body "Side Packs" will be capped with 16-gauge aluminum tread plate.

(10) The driver's side "Rescue Style" compartments will be the following sizes:

- L1 (front of rear wheels) will be approximately 61" wide x 84" high inside overall with 27" deep top to bottom. The door opening will be approximately 58" wide x 71" high.
- L2 (over rear wheels) will be approximately 72" wide x 48" high x 27" deep. The door opening will be approximately 66" wide x 38" high.
- L3 (compartment behind the rear wheels) will be approximately 39" wide x 84" high inside x 27" deep top to bottom. The door opening will be approximately 36" wide x 71" high.

(11) The curb side "Rescue Style" compartments will be the following sizes:

- R1 (front of rear wheels) will be approximately 61" wide x 84" high inside overall with the lower compartment area being 36" high x 27" deep and the upper compartment area being 48" high x 14" deep. The door opening will be approximately 58" wide x 71" high.

- R2 (over the rear wheels) will be approximately 72" wide x 48" high x 14" deep. The door opening will be approximately 66" wide x 38" high.
- R3 (compartment behind the rear wheels) will be approximately 39" wide x 84" high inside overall with the lower compartment area being 36" high x 27" deep and the upper compartment area being 48" high x 14" deep. The door opening will be approximately 36" wide x 71" high.

(Note: All compartments will be of the sweep-out design and a natural aluminum interior finish).

**Note: The body will be 100" wide. With the rub rails and rear fender flares, the overall width will be 102". There will need to be filler panels on top of the tank to the side walls to keep hose from falling between the tank and body.**

(12) There shall be an ATP front crossover wall that will be bolted in place at the front upper section of the body in front of the water tank.

(13) Fabricate and install ATP catwalk covers for both tops of the compartments driver's and curb side. This will be fabricated from anti-slip ATP 1/8" thick materials and will bolt in place with stainless bolts and caulked on the perimeter.

(14)

- A. Supply and install a steel tailboard framework at the rear of the body. This will be fabricated from 2½" x 2½" x 3/16" square tubing, 2" x 2" x ¼" angles, 2" x 2" x 1/8" angles and ½" thick flat bars. This framework will be bolted to the chassis frame. The steel tailboard framework will be covered with 1/8" thick ANTI-SLIP bright aluminum tread plate and will be approximately 13" deep.
- B. Fabricate and install two rear tow eyes that will be **mounted to the chassis frame rails and will come through the rear wall of the body**, one on the driver's side and one on the curb side. These will bolt to the end of the chassis framework with grade 8, ½" bolts. Both tow eyes will be fabricated from 1" thick x 10" wide steel materials and will extend **through the rear wall of the body**. (*All steel frame body supports will be properly prepared and painted black*).

(15)

- A. Supply and install four (4) lighted Stationary Surface Mount Steps (CPI #SP2012-1-D) at the rear of the body, two on each side. The lower stepping surface will be 16" from the rear tailboard surface and the upper stepping surface will be 16" above the lower step's stepping surface. All four lighted step lights will activate when the park brakes are set.
- B. Fabricate and install one (1) anti-slip cross-over step at the rear of the body on the center Chevron panel approximately 15 ½" down from the hose bed floor level. This step will be approximately 35" long x 8 ½" wide with two cut out grab handles, one on

each side of this step. This step will be bolted in place with stainless bolts and will have the necessary support for personnel to be able to stand on this cross-over step while loading hose in the hose bed area. The Directional Bar Light and Rearview Camera eye will be mounted under the step on the back plate of the step.

- C. Supply and install two (2) LED step lights above the crossover step activated when the park brakes are set.
  - D. Supply and install one (1) vertically mounted 48" long NFPA lighted grab bar on the driver's side rear of the body, above the top surface mount step, in order to help personnel with access to the hose bed area. The lights will be activated when the park brakes are set.
  - E. Supply and install four (4) lighted Folding Chrome Steps (CPI # SP4401-1CH-BL-A) at the front of the body, driver's side in order to access the top of the pump module and front of the hose bed area. The lighted step lights will activate when the park brakes are set.
  - F. Supply and install one (1) 12" long NPFA lighted grab bar with end stanchions on top of the driver's side compartments front. The light will activate when the park brakes are set.
- 

### **Trays in Compartments**

(16)

- A. (L1)
  - Supply and install four (4) adjustable aluminum tracks in the end walls of this compartment that will extend from the floor up to the bottom of the rollup door in the front section and rear section.
  - Fabricate and install one (1) adjustable tray in this compartment full width x full depth in the lower section with a natural aluminum finish fabricated from 3/16" smooth aluminum with a 2" lip turned up on the perimeter.
  - Fabricate and install one (1) pullout tray full width x full length in the floor of this compartment. This pullout will have a 300 lb. capacity, 100% extension and a gas shock operator to hold in place when in both the stored and deployed position.  
This tray will be fabricated from 3/16" thick smooth aluminum and will be 2" deep with a natural aluminum finish.
- B. (L2)
  - Supply and install horizontal aluminum adjustable tracks on both end walls and on the rear wall. This will be two sets of tracks.
- C. (L3)
  - Supply and install four (4) adjustable aluminum tracks on the end walls of this compartment that will extend from the compartment floor up to the rollup door in the front section and rear section.

- This compartment will have one (1) full width x full depth adjustable tray in the upper section.
  - D. (R1)
    - Supply and install two (2) adjustable aluminum tracks in the upper section of this compartment from the offset up to the rollup door.
    - Fabricate and install one (1) adjustable tray approximately 33" long x half depth in the upper section fabricated from 3/16" thick smooth aluminum x 2" deep with a natural aluminum finish.
  - E. (R2)
    - Supply and install two (2) adjustable aluminum tracks, one on each end wall that will extend from the floor up to the rollup door.
    - Fabricate and install one (1) adjustable tray full width x half depth from 3/16" thick smooth aluminum x 2" deep with a natural aluminum finish.
  - F. (R3)
    - Supply and install two (2) adjustable tracks at the front full height and two adjustable tracks at the rear from floor to the offset roof.
    - Fabricate and install one (1) adjustable tray full width x half depth in upper section from 3/16" thick smooth aluminum 2" deep with a natural aluminum finish.
  - G. Supply and install black turtle tiles in each tray and floor panels of the compartments that do not have pullout trays.
- 

## **Body Paint**

(17) The aluminum body and all related parts will be chemically treated to remove all contaminants. Surfaces will be sanded and coated with DP40 and DP48. This is PPG sealer type

materials. Then a PPG two-part poly primer is used. This material is scuffed, and block sanded. A final triple coating of PPG Delfleet One Urethane, color coded to match chassis color and then two coats of PPG Concept Clear is applied. The interior shall have a natural aluminum finish.

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## **Electrical & Wiring**

(18) All wiring will be function or color coded, 12 gauge (or greater) and will be protected by wire loom with a temperature rating of 345 degrees F. Rubber grommets will be inserted in all areas where wire passes through walls or panels. The complete electrical system on the body will be protected by bolt-on type automatic reset circuit breakers.

(19) Master Switch, this is included in the chassis spec.

(20) Loud sounding backup alarm included on the chassis backup lights to signal when the vehicle is in reverse, this is on the Chassis.

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### **Battery Charging System**

(21)

- A. This is included in the chassis spec.
  - B. Supply and install an Air Auto Eject (part # 091-28) in the driver's doorstep area of the cab. This will be connected to the air system of the chassis as per the Kussmal specifications.
- 

### **DOT lighting**

(22)

- A. Rear DOT lights will be Whelen 600 series; two (2) LED red stop & taillights (604BTT), two (2) LED amber arrow turn signals (604T), two (2) LED clear backup lights (604BU) with (2) four light chrome housing (PLAST4VL). There will also be one (1) chrome tag light and the necessary marker lights and reflectors.
  - B. Fabricate and install external removable DOT light panels that will be bolted to the rear wall of each side rear compartment with ¼" rubber insulation. These panels will be approximately 73" high x 13" wide x 1" leg broke toward the compartment wall in order to create a void between this light panel and the rear wall of the body for the DOT wiring harness to be installed in the void. This design eliminates all of the wiring harness from the interior of the two rear compartments. This design also allows any service work that may be needed to perform in the future on the wiring harness and/or DOT and warning light to be performed by removing these light panels from the body without having to remove any equipment that may be stored in the two rear compartments. The wiring harness for the lights that are mounted on these light panels will have plugs incorporated in the harness in order to completely remove these panels from the body.
  - C. The Chevron stripes will also be installed on both of the removable light panels.
- 

### **Ground Lights & Side Backup Lights**

(23)

- A. The chassis will have step/ground lights on the cab and chassis.
  - B. Supply and install two (2) body side backup lights, one on each rear wheel opening panel that will activate when the chassis transmission is placed in reverse (#ZQL-SS-LED).
  - C. Supply and install two (2) LED lights, one under each side of the pump module running boards.
  - D. Supply and install two (2) LED lights, one under each side front compartment.
  - E. Supply and install two (2) LED lights, one under each side rear compartment.
  - F. Supply and install one (1) LED light under the center of the rear tailboard.
  - G. The ground lights under the body will also be TECNIQ T44 LED lights (#T44-WDOB-1) and rubber grommet (#T40-0G00-1) and will be wired to activate when the park brakes are set.
- 

### **Deck Light**

(24) Supply and install three (3) LED lights (#E10-W000-1) mounted at the front riser of the hose bed and front storage area of the hose bed. The lights will activate when the park brakes of the chassis are set.

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### **Rearview Camera**

(25) This comes with the chassis.

*Note: AREVS will mount the camera eye on the back wall of the body under the Directional Bar Light that will be mounted under the rear crossover step on the back plate.*

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### **Light & Siren Package**

(26) Emergency Warning Equipment includes the following:

- A. *(Chassis supplied)* There will be two (2) Whelen 600 series red Super-LED lights with clear red and chrome trim mounted on the front of the cab beside the turn lights.
- B. *(Chassis supplied)* There will be two (2) Whelen 600 series red Super-LED lights with red lens and chrome trim, one mounted at each end of the bumper extension.

- C. Supply and install two (2) Whelen 600 series red Super-LED lights with red lens (60R02FRR) and chrome trim (6EFLANGE), one on each side pump panel lower section.
- D. Supply and install two (2) Whelen 600 series red Super-LED lights with red lens (60R02FRR), one on each side rear of the body in the four-light housing below the DOT lights.
- E. Supply and install two (2) Whelen Micro Freedom Super-LED lights (#MCFLED2R), both red lens and red LED, at the top rear of the body. Each light shall be mounted on top of the body cat walk at the rear most part of the body.
- F. (*Chassis supplied*) There will be a bar light on the roof of the cab. This will be a Whelen model F4N72 QLED. This light bar will be 72" long and will feature eight (8) customizable pods, 6 red and 2 clear.
- G. All warning lights will be controlled from the switch panel in the dash of the cab.
- H. (*Chassis supplied*) There will be one siren control in the cab. This will be a Whelen #295HFS2. This siren will be supplied by Chassis MFG in the cab's spec.
- I. (*Chassis supplied*) There will be one (1) 100-watt speaker through the front bumper of the chassis.
- J. Supply and install four (4) 600 series Super LED red lights with red lens (#60R02FRR) and chrome flange (#6EFLANGE), two at the top front and two at the top rear of the driver's side and curb side body header.
- K. Supply and install two (2) 600 series Super LED red lights with red lens (#60R02FRR) and chrome flange (#6EFLANGE) that will mount at the top of the rear light panel, one on each side.
- L. Supply and install six (6) 900 EZ series LED clear scene lights (#904SLC) *to match the side of the cab*, with chrome flange. Two will mount on the driver's side body header beside the red warning lights, two will mount on the curb side body header beside the red warning lights and two will mount at the top of the rear light panel.
- M. Supply and install a push button switch on the pump panel in order to activate the chassis air horns, complete with ID tags.

### **Directional Bar Light**

(30) Supply and install an LED Whelen (#TAL65) 36" long, 6 lamp amber directional bar light with a 55' cable (#WHESTA255) on the rear of the body mounted under the cross over step, complete with control box mounted in the console in the cab.

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### **Whirl-E-Bird**

(31) Supply and install a HiViz Lighting chrome Whirl-E-Bird rotating warning light with Red/Red/White LED lights mounted on the front of the cab. The Whirl-E-Bird will be wired in three separate circuits: one for the motor, one for the single white light bucket and one for the two red light buckets, all of which will be wired to be interlocked to the park brake per the User's Manual. The motor is not designed to spin when the truck is parked on the scene and per NFPA, the white light cannot be flashing when the truck is parked on the scene. This light will be wired to a switch or a switch in the control box mounted in the cab.

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### **UPF Poly Tank**

(27)

- A. Supply and install a UPF Poly tank. The tank capacity shall be approximately 500 gallons.  
*\*\*This tank has a Lifetime Warranty for the service life of the original vehicle and is transferable within the United States & Canada.*
- B. The bottom and sides shall be constructed of a minimum of 3/4" black UV stabilized copolymer polypropylene. The top shall be of 1/2" black UV stabilized copolymer material.
- C. Baffles, both longitudinal and latitudinal shall be interlocking and welded to minimize water surge during travel. Openings in the baffles shall allow water flow during filling or pumping operations. The tank shall be mounted on hard rubber cushions to isolate the tank from road shock and vibration. The tank shall be completely removable from the apparatus body structure.
- D. The water tank shall have a 3.0" diameter clean out plug installed in center of the 8" square sump.
- E.
- F. The tank shall have a combination vent and anti-surge fill tower. The tank overflow/vent shall be 8" diameter and shall dump behind the rear wheels. This tower shall have a hinged cover and screen.
- G. The tank will have a 3" tank to pump connection with the necessary UPF specified flex joints.
- H. There will be a 2" NPTF fitting in the front wall of the tank for a front tank filler / bypass valve.

(28) Incorporated in the top of the UPF poly tank will be a grooved hose bed made of texture polypropylene machined into the tank cover. It will have run off channels (grooves) to help keep the hose bed dry.

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### **Hose Bed**

(29)

- A. Fabricate and install a hose bed which will be a groove in the cover of the tank hose bed floor and will be approximately 43" wide x 126" long. The top cover of this tank will have grooves incorporated by UPF in order to create a hose bed floor. This design will allow for an approximately 20 ½" deep hose bed.
  - B. Fabricate and install a divider wall from side wall to side wall in the hose bed area that will create a dunnage area on top of the tank in the hose bed around the anti-surge fill tower approximately 46" long (front to rear) x 43" wide (side to side) x 20 ½" deep mounted approximately 44" back from the front of the body hose bed. This will be fabricated from 1/8" thick smooth aluminum with a natural finish.
  - C. Fabricate and install one (1) full length hose bed divider for the hose bed area. This will be fabricated from 3/16" thick aluminum material single paneled with scalloped cut outs to help with loading the hose. This divider will have 3/16" thick adjustable mounting plates at front and rear for the adjusting of this divider on the hose bed adjustable tracks. This divider will be installed with ¼" stainless bolts.
  - D. Fabricate hand holds in the ends of the hose bed divider to act as grab handles.
- 

### **Hose Bed & Crosslay Covers**

(30)

- A. Fabricate and install a 3/16" thick anti-slip ATP cover for the front of the hose bed area that will be approximately 45" wide (side to side) x 30" long (front to rear).
  - B. Supply and install a continuous stainless hinge at the front of this cover that will bolt to the 2<sup>nd</sup> crossover wall above the tank just to the rear of the anti-surge tower. This will bolt in place with stainless bolts.
  - C. Supply and install two (2) gas shock operators on this cover in order to hold in place when in the raise position while loading hose in the hose bed area.
  - D. Supply and install a 2" square tube that will mount on top of the high side wall of the body at the rear in order to hang a black vinyl net containment for the hose. The containment net will have two quick release buckles with a pull strap at the top and three (3) footman loop anchors at the bottom.
  - E. Supply and install two (2) cross-lay cover nets with quick release buckles, one at each side of the crosslay that can be completely removed.
-

## Tank Water Level Gauge

(31)

- A. There will be five (5) water level gauges. There will be one water level gauge on the driver's side pump panel which is supplied and installed by Hale Products.
  - B. Supply and install three (3) additional water level gauges (#PSTANK2), one on the curb side of the pump module as high as possible (*on the panel beside the crosslays*), one on the driver's side of the pump model as high as possible (*on the panel beside the crosslays*) and one at the rear of the body in the best location for visibility. This will have the necessary sending units and wiring harness in order to connect to the water level gauge that comes on the pump module.
  - C. Install a Mini-water level gauge in the cab, in the best location possible. This mini-water level gauge is priced with the pump module and will ship loose when the module is shipped.
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## Pump & Plumbing

(32)

- A. Supply and install a Hale QMax-XS (1,500 GPM ) 40" wide side mount pump module with the following:
  - Pump Ratio: Hale to Determine
  - Mechanical Pump Seal
  - Interlock Neutral: Interlock Module (AIR) and no VPS (*already in the cab*)
  - Priming System: Cutout only – for OEM supplied/installed Trident Auto AirPrime 3 Barrel with gauge, single location (31.011.3)
  
  - Warranty: Standard 5 year
  - Anode: Alloy Anode – Q-series; qty 3
  - TRV: TRV 120-L
  - TRV Additional: Buzzer Kit for TRV-L
  - Intake relief valve: Intake relief 2.5" NST
  - Pressure Control: **SPECIAL – Manual operated pressure relief valve, ENFO IV Informaiton Center/Display, Twister Throttle Control, 2 Master Gauges (1 Suction, 1 Pressure)**
  - Water Level Gauge: Water Level – ITL40 (Multi-Color) Modules
  - Module Width: Module width panel to panel -72"
  - Module Length change – additional 6" (34" + 6" = 40" pump module)
  - Module Area: 34" long, double 2" crosslays (Option Dunnage)
  - Dunnage Area (a portion of this space will be where the Hose Reel Mounts)
  - Running Board width: 98"

- Running Board, LH: Running Board w/ Hose Tray (**Special** - Floating)
- Running Board, RH: Running Board w/ Hose Tray (**Special** - Floating)
- Pump Panel Material: 14 gauge brushed stainless steel
- Line Gauge Indications: Class 1 2.5" (400 psi)
- Master Intake Gauge Indication; Class 1 4.5" master gauge -30 to 400 psi
- Master Pressure Gauge Indication: Class 1 4.5" master gauge 0-400 psi
- Drain Handle: Lift Up
- Additional Options: Remote 4-light tank level light driver module for use with ITL-40 gauge
- Additional Options: 10' Pigtail for 21-pin main module harness (115531)
- Discharge 1: Disch 2.5" left hand front #1 rack & sector – SM Q-series modules
- Discharge 2: Disch 2.5" left hand rear #2 rack & sector – SM Q-series modules
- Discharge 3: Disch 2.5" right hand front #3 w/ push pull – SM Q-series modules
- Discharge 4: Disch 3.0 right hand rear #4 w/ 4" NH w/ push pull – SM Q-series modules
- Discharge, Left Rear: Disch left rear 2.5" w/ push pull – SM Q-series modules
- Discharge, Right Rear: Disch right rear 2.5" w/ push-pull – SM Q-series modules
- Hose Reel #1: Disch Hose Reel 1.5 #1 (Push Pull) SM modules (*plumbed to passenger side*)
- Hose Reel #1 – Additional: Blow-Out for Hose Reel
- Jump Line: Disch Jump 2.0" w/ push pull – SM Q-series modules (*plumbed to driver side*)
- Jump Line Additional: Blow-out for Jump Line
- Deck Gun: Disch Deck 3.0" w/ push pull – SM Q-series modules
- Tank Fill: Tank fill 2.0" 90 degree VIC – push pull – SM Q-series modules
- Tank to Pump: Tank to pump 3.0" w/ push pull – 3" female NPT – SM Q-series modules
- Aux Intake, Left Front: Intake 2.5" Left Hand FRT swing handle -SM Q-series modules
- Aux Intake, Right Front: Intake 2.5" Right Hand FRT swing handle – SM Q-series modues
- Crosslay Plumbing XL1: Disch Crosslay 2.0" #1 w/ push pull – SM modules
- Crosslay Plumbing XL2: Disch Crosslay 2.0" #2 w/ push pull – SM modules
- Special Request: Upper module area: 40" module with two crosslays (both 2") and dunnage area
- Special Request – Running Boards – floating LH & RH

- Special Request – Deck Gun – stub out approximately 3” with 3” NST
  - Special Request - Pressure Control system
  - Shipped Loose - Mini-Water Level Gauge (AREVS to install on the lid of the console)
- B. Supply and install a Trident Auto AirPrimer 3 Barrel with gauge (12-Volt) (#31.011.3) on the driver’s side pump panel in the cut out opening that Hale supplied. Also supply and install a Pressure Protection Valve (#30.053.0) and connect to the air system of the chassis.
- C. (*Front Jump Line Connection*) Supply and install 2” stainless piping from the 2” valve on the Hale Pump Module to the front bumper of the chassis for a front discharge. This will mount on the driver’s side, on top of the front bumper extension filler panel with a swivel and will have the necessary flex joints and will end under the front bumper on the driver’s side with a chrome 90 degree swivel elbow with 2.5” FNPT x 2.5” MNST. This will have the necessary ID tags at the driver’s side pump panel remote handle and at the front bumper.
- D. (*Driver Side Rear Discharge in Hose Bed Connection*) Supply and install 2 ½” flex hose, stainless piping and fittings from the pump’s left rear discharge valve to the driver’s side front of the hose bed and end with a 2 ½” NSTM adapter in the hose bed area.
- E. (*Passenger Side Rear Discharge in Hose Bed Connection*) Supply and install 2 ½” flex hose, stainless piping and fittings from the pump’s right rear discharge valve to the passenger side front of the hose bed and end with a 2 ½” NSTM adapter in the hose bed area.

(33) Supply and install an aluminum Hannay hose reel (#SBESF18-30-31-10.5 LT) in the dunnage area of the pump module above the pump.

- A. This reel will be connected to the hose reel valve of the pump module with a 1” high pressure flex hose with crimped on stainless ends.
- B. This reel will be connected to the 12-volt system of the chassis for the 12-volt rewind motor and will have a rewind button on the curb side pump panel complete with ID tags.
- C. There will be one stainless hose roller mounted on the top of the pump module wall in front of the reel on the curb side.
- D. This reel has the capability of carrying a capacity of 150 ft. of 1” light weight booster hose.
- E. Supply and install 150 ft. of Niedner 1” lightweight booster hose, installed on reel. (#F3210E05AFABXXS)
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## Ladder Rack, Pike Pole Storage & Hard Hose Trays

(34)

- A. Fabricate and install a storage compartment for the ladders, pike poles and hard suction hose from 3/16" thick smooth aluminum.  
This compartment will be installed on the back side of the curb side compartments and will be approximately 13" wide x 48" high x 172" long. This compartment will bolt in place with stainless bolts to the back side of the curb side compartment module. The front-end wall will also bolt in place with stainless bolts in order to be removable for access to the interior of this compartment. The rear of this compartment will also bolt to the rear wall of the body that will have an opening incorporated of approximately 13" wide x 48" high in order to install and deploy equipment.
- B. Fabricate and install a smooth aluminum 3/16" thick swing open door for the rear of this compartment that will have a continuous stainless hinge, two push button chrome latches and rubber door seal.
- C. Fabricate and install a ladder slide track from stainless materials with a plastic slide panel for two ladders, one 24 ft. extension and one 14 ft. roof ladder. This ladder rack will be approximately 10" wide total x 171" long total and will bolt in place with stainless bolts in this new compartment floor at both rear and front of the compartment.
- D. Fabricate and install a stainless slide tray with plastic slide panel for a 10 ft. attic ladder. This will also bolt in place, exact location to be determined at time of application by the Fire Department and AREVS in this compartment.
- E. Fabricate and install three (3) aluminum storage boxes for a 10 ft., 8 ft. and 6 ft. **New York Hook**. This will mount in a location to be determined at time of application in this compartment.
- F. Fabricate and install two (2) trays from 1/8" thick smooth aluminum that will be approximately 13" wide x 120" long and spaced approximately 9" apart up and down in the top section of this compartment for two sections of 6" light weight suction hose. Both trays will have a protective plastic plate installed in the bottom of each tray in order to protect the suction hose and to help with the storing and deployment of the hose. Both trays will bolt in place with stainless bolts.

(35) Ladders:

- A. Supply and install one 24 ft. Extension 2-section ladder (ALCPEL-24).
- B. Supply and install one 14 ft. Roof ladder (ALCPRL-14).
- C. Supply and install one 10 ft. folding Attic ladder (ALCFL-10).
- D. Supply and install three NY Hooks HiViz Lime Powder Coat with Chisel End, one (1)

OAL 10 ft. (#NYHL-10), one (1) 8 ft. (#NYHL-8) and one 6 ft. (#NYHL-6).

- E. Supply and install two (2) 10 ft. sections of light weight suction hose (#HAIHSH-60NHRL-10).

(36)

- A. Fabricate and install a 3-section SCBA spare air bottle compartment in the front section of the driver's side rear wheel opening panel.
  - B. Fabricate and install a 2-section SCBA spare air bottle compartment in the rear section of the driver's side rear wheel opening panel.
  - C. Fabricate and install one storage compartment in the front section of the curb side rear wheel opening panel for one 2 ½ gallon Water Can Extinguisher.
  - D. Fabricate and install one storage compartment in the rear section of the curb side rear wheel opening panel for one 20 lb. ABC Extinguisher.
  - E. All of the SCBA and Extinguisher compartments will have a rubber mat installed in the bottom of the compartment.
  - F. All of these compartments will have a containment strap in each compartment for the bottles and extinguishers.
- G. Fabricate and install four (4) brushed stainless steel doors, one for each compartment with continuous stainless hinge, with a 4" D-ring handle and latch along with rubber door seals. The doors will be designed and sized to cover each style of each storage compartment.

(37) Compartment In the Cab:

- A. Fabricate and install one compartment from 1/8" ATP materials that will be approximately 18" deep x 20" wide x 45" high on the outside dimensions and will mount in the cab of the chassis to the rear of the Driver's seat.
- B. This compartment will have a Hansen Rollup door with a satin finish and a compartment LED strip light on one side of the door opening.
- C. This compartment will have four aluminum adjustable tracks, two on each side wall interior for adjustable tray.
- D. Fabricate and install one adjustable tray in the compartment that will be fabricated from 3/16" thick smooth aluminum with a natural finish. This tray will be approximately 18" long x 18" wide x 2" deep and will be installed with stainless bolts and adjustable clips.
- E. Install the compartment in the rear of the cab with stainless bolts and connect the wiring harness from the LED compartment lights to the 12-volt system of the chassis through the necessary sized wiring harness and auto-reset breakers.

NOTE: All wiring harnesses will be installed in a high-heat protective loom.

(38) Supply and install one single black mud flap behind rear chassis wheels that will mount with fabricated brackets and stainless bolts to the body.

(39)

- A. Supply and install red/yellow 6" wide high intensity reflective stripes on the rear of the body in a Chevron pattern. This includes the ladder, pike pole and suction hose compartment rear door.
  - B. Supply and install red/yellow 6" wide high intensity reflective stripes on the chassis front bumper on the flat surface between the top and bottom lip.
  - C. Supply and install 3M reflective red/white conspicuity DOT tape on the front of all trays and extendable shelves.
  - D. Supply and install at least 96" square inches of reflective materials on each cab door interior door panel.
  - E. Supply and install 3M reflective stripe on the body, rollup doors and cab sides and front in a 1" – 6" – 1" stripe combination pattern. The red part of the cab and body will have white reflective and the satin doors will have red reflective. The exact design and layout will be determined at the time of installation.
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### Warranty

(40) All labor and parts installed are guaranteed for a period of one (1) year. The structural integrity of the body has a limited **LIFETIME WARRANTY**. Manufacturer's warranties apply to other components on the cab/chassis and apparatus.

(41) There will be a 3<sup>rd</sup> Party Pump Acceptance Test performed with test results to be given to the Fire Department.

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### Miscellaneous

(42)

- A. Supply and install four (4) Survivor lights with 12-volt charges (#90503) in a location to be determined at the time of installation. These will be wired to the 12-volt system of the chassis through the necessary sized harness and breakers.
  - B. Supply and install two (2) Fire Vulcan lights with 12-volt chargers (#44451) in a location to be determined at time of installation. Both will be wired to the 12-volt system of the chassis through the necessary sized harness and breakers.
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