CITY OF SAN ANTONIO

FINANCE DEPARTMENT - PURCHASING DIVISION

FORMAL REQUEST FOR OFFER ("RFO") NO.: 6100013327

SAFD-PURCHASE OF LADDER TRUCKS

Date Issued: October 5, 2020

RESPONSES MUST BE RECEIVED **NO LATER** THAN:
10:00 AM, CENTRAL TIME, OCTOBER 12, 2020

Responses may be submitted by any of the following means:
Electronic submission through the Portal

Bid Bond: None Performance Bond: None Payment Bond: None Other: None

See Supplemental Terms & Conditions for information on these requirements.

Affirmative Procurement Initiative: None DBE / ACDBE Requirements: None

See Instructions for Offerors and Attachments sections for more information on these requirements.

Pre-Submittal Conference * NO

Staff Contact Person: STEPHANIE CRIOLLO, PROCUREMENT SPECIALIST III, P.O. Box 839966, San Antonio, TX 78283-3966
Email: STEPHANIE.CRIOLLO@SANANTONIO.GOV

SBEDA Contact Information: None

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003 - INSTRUCTIONS FOR OFFERORS

Submission of Offers.

Submission of Electronic Offers Through the Portal. Submit one offer electronically by the due date provided on the Cover Page. All times stated herein are Central Time. Any offer or modification received after the time and date stated on the Cover Page shall be rejected. All forms in this solicitation which require a signature must have a signature affixed thereto, either by manually signing the document, prior to scanning it and uploading it with your submission, or affixing it electronically.

Submission of Offers by Email. Submit one document by email to the Staff Contact Person, by the due date provided on the Cover Page. All times stated herein are Central Time. Any offer or modification received after the time and date stated on the Cover Page shall be rejected.

Modified Offers. Offers may be modified provided such modifications are received prior to the time and date set for submission of offers, and submitted in the same manner as original offers. For electronic offers submitted through the portal, a modified offer will automatically replace a prior offer submission. See below for information on submitting Alternate Offers.

City shall not be responsible for lost or misdirected offers or modifications.

For electronic offers, Offeror's electronic submission, with accompanying affirmations, constitutes a binding signature for all purposes. Offers sent by fax must be manually signed prior to submission. Offers sent by email must be a PDF document reflecting a manual signature.

For offers submitted though the portal, Offerors are cautioned that they are responsible for the security of their log on ID and password, since unauthorized use could result in Offeror being held liable for the submission.

Certified Vendor Registration Form. If Offeror has not completed City's Certified Vendor Registration (CVR) Form, Offeror is required to do so prior to the due date for submission of offers. The CVR form may be accessed at: http://www.sanantonio.gov/purchasing. Offerors must identify the correct name of the entity that will be providing the goods and/or services under the contract. No nicknames, abbreviations (unless part of the legal title), shortened or short-hand names will be accepted in place of the full, true and correct legal name of the entity.

Alternate Offers. Alternate offers may be allowed at the sole discretion of City.

Electronic Alternate Offers Submitted Through the Portal. All alternate offers are recorded with original offers when submitted electronically.

Email Alternate Bids. Alternate bids submitted by email must include a cover letter identifying the submission as an alternate bid. Each alternate bid must be designated as Alternate Bid No. 1, 2, etc. Failure to follow instructions may result in rejection of a bid.

Catalog Pricing. (This section applies to offers using catalog pricing, unless this is a cooperative purchase.)

The offer will be based on manufacturer's latest dated price list(s). Said price list(s) must denote the manufacturer, latest effective date and price schedule.

Offerors shall be responsible for providing one copy of the manufacturer's catalog for each manufacturer for which an offer is submitted. Offeror shall provide said catalog at the time of submission of its offer. Manufacturers' catalogs may be submitted in any of the following formats: paper copy or CD ROM for offers submitted on paper, or PDF file for offers submitted electronically.

Offerors may submit price lists other than the manufacturer's price list. Said price list(s) must denote the company name, effective date and price schedule. These price lists are subject to approval of City's Purchasing & General Services Department.

Specified items identified herein, if any, are for overall offer evaluation and represent the commonly and most used items. Net prices entered for those specified items must reflect the actual price derived from quoted price list less all discounts offered.

Restrictions on Communication.

Offerors are prohibited from communicating with: 1) City officials, as defined by §2-62 of the City Code of the City of San Antonio, regarding the RFO or offers from the time the RFO has been released until the contract is posted for consideration as a City Council agenda item during a meeting designated as an "A" session; and 2) City employees from the time the RFO has been released until the contract is awarded. These restrictions extend to "thank you" letters, phone calls, emails and any contact that results in the direct or indirect discussion of the RFO and/or offer submitted by Offeror. Violation of this provision by Offeror and/or its agent may lead to disqualification of the offer from consideration.

Exceptions to the restrictions on communication with City employees include:

Offerors may ask verbal questions concerning this RFO at the Pre-Submittal Conference.

Offerors may submit written questions, or objections to specifications, concerning this RFO to the Staff Contact Person listed on the Cover Page on or before the date offers are due. Questions received after the stated deadline will not be answered. Questions submitted and City's responses will be posted with this solicitation. All questions shall be sent by e-mail or through the portal.

Offerors may provide responses to questions asked of them by the Staff Contact Person after responses are received. The Staff Contact Person may request clarification to assist in evaluating the Offeror's response. The information provided is not intended to change the offer response in any fashion. Such additional information must be provided within two business days from City's request.

Pre-Submittal Conference.

If a Pre-Submittal Conference is scheduled, it will be held at the time and place noted on the Cover Page. Offerors are encouraged to prepare and submit their questions in writing in advance of the Pre-Submittal Conference in order to expedite the proceedings. City's responses to questions received prior to the conference may be distributed at the Pre-Submittal Conference and posted with this solicitation. Attendance at the Pre-Submittal Conference is optional, but highly encouraged.

This meeting place is accessible to disabled persons. Call the Staff Contact Person for information on the location of the wheelchair accessible entrance, or to request an interpreter for the deaf. Interpreters for the deaf must be requested at least 48 hours prior to the meeting. For other assistance, call (210) 207-7245 Voice/TTY.

Any oral response given at the Pre-Submittal Conference that is not confirmed in writing and posted with this solicitation shall not be official or binding on City.

Changes to RFO.

Changes to this RFO made prior to the offer due date shall be made directly to the original RFO. Changes are captured by creating a replacement version each time the RFO is changed. It is Offeror's responsibility to check for new versions until the offer due date. City will assume that all offers received are based on the final version of the RFO as it exists on the day offers are due.

No oral statement of any person shall modify or otherwise change or affect the terms, conditions or specifications stated in the RFO.

Preparation of Offers.

All information required by the RFO must be furnished or the offer may be deemed non-responsive and rejected. Any ambiguity in the offer as a result of omission, error, unintelligible or illegible wording shall be construed in the favor of City.

Correct Legal Name. If Offeror is found to have incorrectly or incompletely stated the name of the entity that will provide goods and/or services, the offer may be rejected.

Line Item Offers. Any offer that is considered for award by each unit or line item, must include a price for each unit or line item for which Offeror wishes to be considered. All offers are awarded on the basis of low line item, low total line

items, or in any other combination that serves the best interest of City, unless City designates this solicitation as an "all or none" offer in the Supplemental Terms & Conditions.

All or None Offers. Any offer that is considered for award on an "all or none" basis must include a price for all units or line items. In an "All or None" offer, a unit price left blank shall result in the offer being deemed nonresponsive and disqualified from consideration. An "All or None" offer is one in which City will award the entire contract to one offeror only.

Delivery Dates. Proposed delivery dates must be shown in the offer form where required and shall include weekends and holidays, unless specified otherwise in this RFO. Proposed delivery times must be specific. Phrases such as "as required", "as soon as possible" or "prompt" may result in disqualification of the offer. Special delivery instructions, if any, may be found in the Specifications / Scope of Services section of this document, or in the Purchase Order.

Tax Exemption. The City of San Antonio is exempt from payment of federal taxes, and State of Texas limited sales excise and use taxes. Offerors must not include such taxes in offer prices. An exemption certificate will be signed by City where applicable upon request by Offeror after contract award.

Samples, Demonstrations and Pre-award Testing. If requested by City, Offeror shall provide product samples, demonstrations, and/or testing of items offered to ensure compliance with specifications prior to award of the contract. Samples, demonstrations and/or testing must be provided within 7 calendar days of City's request. Failure to comply with City's request may result in rejection of an offer. All samples (including return thereof), demonstrations, and/or testing shall be at Offeror's expense. Samples will be returned upon written request. Requests for return of samples must be made in writing at the time the samples are provided. Otherwise, samples will become property of City at no cost to City. Samples that are consumed or destroyed during demonstrations or testing will not be returned.

Estimated Quantities for Annual Contracts.

Designation as an "annual" contract is found in the contract's title on the Cover Page of this document. The quantities stated are estimates only and are in no way binding upon City. Estimated quantities are used for the purpose of evaluation. City may increase or decrease quantities as needed. Where a contract is awarded on a unit price basis, payment shall be based on the actual quantities supplied.

Offerors shall thoroughly examine the drawings, specifications, schedule(s), instructions and all other contract documents.

Offerors shall make all investigations necessary to thoroughly inform themselves regarding plant and facilities for delivery of material and equipment, or conditions and sites/locations for providing goods and services as required by this RFO. No plea of ignorance by Offeror will be accepted as a basis for varying the requirements of City or the compensation to Offeror.

Confidential or Proprietary Information. All offers become the property of City upon receipt and will not be returned. Any information deemed to be confidential by Offeror should be clearly noted; however, City cannot guarantee that it will not be compelled to disclose all or part of any public record under the Texas Public Information Act, since information deemed to be confidential by Offeror may not be considered confidential under Texas law, or pursuant to a Court order. Pricing shall not be considered proprietary or confidential.

Costs of Preparation. Offeror shall bear any and all costs that are associated with the preparation of the Offer, attendance at the Pre-Submittal conference, if any, or during any phase of the selection process.

Rejection of Offers.

City may reject any and all offers, in whole or in part, cancel the RFO and reissue the solicitation. City may reject an offer if:

Offeror misstates or conceals any material fact in the offer; or

The offer does not strictly conform to law or the requirements of the offer;

The offer is conditional; or

Any other reason that would lead City to believe that the offer is non-responsive or Offeror is not responsible.

City, in its sole discretion, may also waive any minor informalities or irregularities in any offer, such as failure to submit sufficient offer copies, failure to submit literature or similar attachments, or business affiliation information.

Changes to Offer Form. Offers must be submitted on the forms furnished. Offers that change the format or content of City's RFO may be rejected.

Withdrawal of Offers. Offers may be withdrawn prior to the due date. Written notice of withdrawal shall be provided to the Staff Contact Person. Offers submitted electronically may be withdrawn electronically.

Evaluation and Award of Contract.

City reserves the right to make an award on the basis of City's best interests. Award may also be made based on low line item, low total line items, or in any other combination that serves the best interest of City, unless City designates this solicitation as an "all or none" offer in the Supplemental Terms & Conditions.

A written award of acceptance and Purchase Order furnished to Offeror results in a binding contract without further action by either party. Offeror must have the Purchase Order before making any delivery.

City reserves the right to delete items prior to the awarding of the contract, and purchase said items by other means.

Inspection of Facilities/Equipment. Depending on the nature of the RFO, Offeror's facilities and equipment may be a determining factor in making the offer award. All Offerors may be subject to inspection of their facilities and equipment.

Prompt Payment Discount.

Provided Offeror meets the requirements stated herein, City shall take Offeror's offered prompt payment discount into consideration. The evaluation will not be based on the discount percentage alone, but rather the net price as determined by applying the discount to the offer price, either per line item or total offer amount. However, City reserves the right to reject a discount if the percentage is too low to be of value to City, all things considered. City may also reject a discount if the percentage is so high as to create an overly large disparity between the price City would pay if it is able to take advantage of the discount and the price City would pay if it were unable to pay within the discount period. City may always reject the discount and pay within the 30 day period, at City's sole option.

City will not consider discounts that provide fewer than 10 days to pay in order to receive the discount.

For example, payment terms of 2% 5, Net 30 will NOT be considered in offer evaluations or in the payment of invoices. However, payment terms of 2% 10, Net 30 will result in a two percent reduction in the offer price during offer evaluation, and City will take the 2% discount if the invoice is paid within the 10 day time period.

Prohibited Financial Interest.
The Charter of the City of San Antonio and the City of San Antonio Code of Ethics prohibit a City officer or employee, as those terms are defined in § 2-42 and § 2-52 of the Code of Ethics, from having a direct or indirect financial interest in any contract with City. An officer or employee has a "prohibited financial interest" in a contract with City or in the sale to City of land materials, supplies or service, if any of the following individual(s) or entities is a party to the contract or sale:

- A City officer or employee; his or her spouse, sibling, parent, child, or other family member within the first degree of consanguinity or affinity;
- An entity in which the officer or employee, or his or her parent, child or spouse directly or indirectly owns (i) 10% or more of the voting stock or shares of the entity, or 10% or more of the fair market value of the entity; or
- An entity in which any individual or entity listed above is (i) a subcontractor on a City contract, (ii) a partner or (iii) a parent or subsidiary entity.

By submitting a proposal, Respondent warrants and certifies, and a contract awarded pursuant to this RFO is made in reliance thereon, that it, its officers, employees and agents are neither officers nor employees of the City.

State of Texas Conflict of Interest.
Questionnaire (Form CIQ). Chapter 176 of the Texas Local Government Code requires that persons, or their agents, who seek to contract for the sale or purchase of property, goods, or services with the City, shall file a completed Form CIQ with the City Clerk if those persons meet the requirements under §176.006(a) of the statute.

By law this questionnaire must be filed with the City Clerk not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. *See* Section 176.006(a-1), Texas Local Government Code.

Form CIQ is available from the Texas Ethics Commission by accessing the following web address:

https://ethics.state.tx.us/forms/conflict/

In addition, please complete the **City's Addendum to Form CIQ (Form CIQ-A)** and submit it with Form CIQ to the Office of the City Clerk. The Form CIQ-A can be found at:

http://www.sanantonio.gov/atty/ethics/pdf/OCC-CIQ-Addendum.pdf

When completed, the CIQ Form and the CIQ-A Form should be submitted together by mail to the Office of the City Clerk. Please mail to:

Office of the City Clerk, P.O. Box 839966, San Antonio, TX 78283-3966.

Certificate of Interested Parties (Form 1295)

The Texas Government Code §2252.908, and the rules issued by the Texas Ethics Commission found in Title 1, Sections 46.1, 46.3 and 46.5 of the Texas Administrative Code, require a business entity to submit a completed Form 1295 to the City before the City may enter into a contract with that business entity.

Form 1295 must be completed online. It is available from the Texas Ethics Commission by accessing the following web address:

https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm.

Print and sign your completed Form 1295. Submit your signed Form 1295 with your response to this solicitation. Where requested to provide the name of the public entity with whom you are contracting, insert "City of San Antonio". Where requested to provide the contract number, provide the solicitation number shown on the cover page of this solicitation (e.g. IFB 6100001234, RFO 6100001234 or RFCSP 6100001234).

The following definitions found in the statute and Texas Ethics Commission rules may be helpful in completing Form 1295.

"Business entity" includes an entity through which business is conducted with a governmental entity or state agency, regardless of whether the entity is a for-profit or nonprofit entity. The term does not include a governmental entity or state agency. (NOTE: The City of San Antonio should never be listed as the "Business entity".)

"Controlling interest" means: (1) an ownership interest or participating interest in a business entity by virtue of units, percentage, shares, stock, or otherwise that exceeds 10 percent; (2) membership on the board of directors or other governing body of a business entity of which the board or other governing body is composed of not more than 10 members; or (3) service as an officer of a business entity that has four or fewer officers, or service as one of the four officers most highly compensated by a business entity that has more than four officers. Subsection (3) of this section does not apply to an officer of a publicly held business entity or its wholly owned subsidiaries.

"Interested party" means: 1) a person who has a controlling interest in a business entity with whom a governmental entity or state agency contracts; or (2) an intermediary.

"Intermediary," for purposes of this rule, means a person who actively participates in the facilitation of the contract or negotiating the contract, including a broker, adviser, attorney, or representative of or agent for the business entity who:

(1) receives compensation from the business entity for the person's participation;

(2) communicates directly with the governmental entity or state agency on behalf of the business entity regarding the contract; and

(3) is not an employee of the business entity or of an entity with a controlling interest in the business entity.

Publicly traded business entities, including their wholly owned subsidiaries, are exempt from this requirement and are not required to submit Form 1295.

004 - SPECIFICATIONS / SCOPE OF SERVICES

4.1 **BACKGROUND:** The City of San Antonio is soliciting an offer from Siddons Martin Emergency Group to furnish an estimated 4 ladder trucks with platforms. Trucks provided shall be the current model year chassis or newer. This contract will provide all ladder trucks required by the City of San Antonio Fire Department from October 1, 2020 until November 30, 2021, from the specifications identified herein; and in the following estimated quantities:

Item	Description	FY 2021	FY 2022
1	Pierce Velocity® Ladder Truck with Platform	3	1

4.2 **GENERAL CONDITIONS:** The following general conditions shall apply to all items within this bid unless specifically excluded within any item.

4.2.1 City of San Antonio reserves the right to increase or decrease quantity of units being purchased up to the production "cut-off" date submitted on the bid for the particular item, depending on availability of funds. Prices may not be increased during this period; however, the City should benefit from any price decrease. Additional units may be purchased on an "as needed" basis. Successful vendor is required to notify the City of all production "cut-off" dates necessary for order submission. Vehicles shall be year model 2020 or newer and be the current model year chassis or newer.

4.2.2 All components shall be installed new, unused, standard production model, and equipment is to be serviced in accordance with manufacturer's recommended pre-delivery check list, and ready for operation upon delivery, and shall include all manufacturers' standard equipment unless otherwise specified or replaced therein. Equipment offered under the below listed specifications will be considered unacceptable if for any reason its long term availability on the U.S. Market or in the local area is in doubt.

4.3 **WARRANTY**: All items bid shall include the standard manufacturer's warranty, including both parts and labor, for all components and attachments. All warranties must be for a minimum period of twelve months. The warranty shall begin on the date the vehicle is placed in service, not on the delivery date. **Vendor shall attach a copy of the manufacturer's warranty to Vendor's bid.** City will notify Vendor by letter of the in-service date for each item by serial number. Warranty service and parts must be available within a 50 mile radius of San Antonio City Hall from a factory authorized dealer. Included minimum warranties are as follows:

4.3.1 ONE (1) YEAR MATERIAL AND WORKMANSHIP ON APPARATUS
4.3.2 THREE (3) YEAR MATERIAL AND WORKMANSHIP ON CHASSIS
4.3.3 FIVE (5) YEAR LIMITED ENGINE WARRANTY (WA0180)
4.3.4 THREE (3) YEAR STEERING GEAR WARRANTY (Sheppard)
4.3.5 FIFTY (50) YEAR STRUCTURAL INTEGRITY ON FRAME AND CROSS MEMBERS (WA0038)
4.3.6 FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY (WA0050)
4.3.7 REAR AXLE TWO (2) YEAR MATERIAL AND WORKMANSHIP WARRANTY (WA0046)
4.3.8 ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY (WA0232)
4.3.9 TEN (10) YEAR CUSTOM CAB LIMITED STRUCTURAL INTEGRITY (WA0012)
4.3.10 TEN (10) YEAR PRO-RATED PAINT AND CORROSION (WA0055)
4.3.11 FIVE (5) YEAR MATERIAL AND WORKMANSHIP PIERCE COMMAND ZONE ELECTRONICS LIMITED WARRANTY CERTIFICATE (WA0014)
4.3.12 FIFTY-FOUR MONTH WARRANTY CAMERA SYSTEM WARRANTY
4.3.13 COMPARTMENT LIGHT WARRANTY (WA0203)

4.3.14 FIVE (5) YEAR/UNLIMITED TRANSMISSION WARRANTY EXCLUDING TRANSMISSION COOLER - five (5) year/unlimited mileage warranty covering 100 percent parts and labor. The warranty will be provided by Allison Transmission.

4.3.15 TRANSMISSION COOLER - The transmission cooler will carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). Collateral damage warranty will also be in effect for the first three (3) years of the warranty coverage and will not exceed $10,000 per occurrence.

4.3.16 TEN (10) YEAR STRUCTURAL INTEGRITY ON APPARATUS BODY (WA0009)

4.3.17 ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY

4.3.18 A Gortite roll-up door limited warranty will be provided. The mechanical components of the roll-up door will be warranted against defects in material and workmanship for the lifetime of the vehicle. (WA0185)

4.3.19 TEN (10) YEAR PUMP PLUMBING WARRANTY (WA0035)

4.3.20 A six (6) year limited warranty will be provided on painted and satin roll up doors.

4.3.21 TWENTY (20) YEAR AERIAL DEVICE STRUCTURAL INTEGRITY WARRANTY (WA0052)

4.3.22 FIVE (5) YEAR AERIAL SWIVEL LIMITED WARRANTY

4.3.23 FIVE (5) YEAR HYDRAULIC SYSTEM COMPONENTS WARRANTY

4.3.24 THREE (3) YEAR HYDRAULIC SEAL WARRANTY

4.3.25 TEN (10) YEAR AERIAL WATERWAY LIMITED WARRANTY

4.3.26 FOUR (4) YEAR PRO-RATED PAINT AND CORROSION ON AERIAL DEVICE (WA0047)

4.3.27 FIVE (5) YE COMMAND ZONE ELECTRONIC WARRANTY (WA0014)

4.3.28 SIX (6) YEAR GENERATOR MATERIAL AND WORKMANSHIP WARRANTY(WA0285)AR

4.3.29 TEN (10) YEAR PRO-RATED PAINT AND CORROSION ON TRUCK BODY (WA0057)

4.3.30 ONE (1) YEAR MATERIAL AND WORKMANSHIP ON GRAPHICS FADING AND DETERIORATION (WA0168).

4.4 **DELIVERY:** The apparatus will be delivered under its own power to ensure proper break-in of all components while the apparatus is still under warranty. All deliveries are to be made inside the City limits of San Antonio. Vendor must deliver equipment to a location specified by the Fleet Acquisitions Dept. at (210) 207-4603 or (210) 207-4601. **Delivery to a non-specified location shall result in non-acceptance of the equipment by the City. All deliveries must be pre-arranged with a minimum 24-hour notification, NO EXCEPTIONS**. **Vehicles shall not be accepted after 3:00 P.M. CST. All vehicles are required to have a full tank(s) of fuel when delivered to City specified location.**

4.5 **EQUIPMENT MANUALS:** Two operator manuals will be provided per purchase order, which shall include a paper parts and maintenance manual or two USB drives detailing the equipment, accessories, and components as well as construction drawings complete with wiring diagrams.

4.6 **REQUIRED DOCUMENTS AT DELIVERY:** The Manufacturer's Statement of Origin (MSO), Dealer Temporary license plates/tags, proper Invoice, signed 130U form, Vehicle Inspection Report, and State Weight Certificate/slip (for trucks over one ton) are required upon delivery of each unit and are required before payment can be processed. Any of these missing items shall delay the payment process.

4.7 **MINIMUM VEHICLE ACCESSORIES:** All units to be equipped at the factory with maximum capacity cooling system offered by manufacturer, full headliner, fresh air heater and defroster units, minimum AM/FM OEM radio, power windows, power door locks and manual tilt steering wheel. All units to be equipped with steering column mounted gear selector unless otherwise specified. Each unit shall have a minimum three keys. All accessories and equipment shall be OEM. The manufacturer shall rate all equipment provided as low emission on all models available. Vehicles to be equipped with OEM tinted glass.

4.8 **INCOMPLETE VEHICLES:** All bodies and components in this bid shall be installed in accordance with the appropriate Incomplete Vehicle Data Manual. Certification of compliance shall be posted on the left door post of the vehicle. Except for manufacturer's data plates (maximum 4" x 6"), vendor or manufacturer's identifying markings (decals and plates) shall not be applied to the vehicle or mounted components. Installation shall be completed in compliance with Federal Motor Vehicle Department of Transportation Standards and Texas State Highway requirements. Installation of body and accessories on City furnished vehicles shall be accomplished by drilling holes in the frame. Welding on or cutting of frame is not authorized forward of the rear spring hanger or support. Bidders shall be responsible for the relocation of any truck components to facilitate installation of the body and equipment. Such relocation must be included as part of the basic bid.

4.9 **BUILD SHEET INSTRUCTIONS:** Upon contract award, vendor shall provide written acknowledgement of order placement. A copy of the finalized build sheet with a San Antonio Fire Department Representative signature confirming equipment build out shall be provided to the City prior to equipment delivery. The delivery date for the completed unit shall be communicated when the build sheet is finalized. Electrical wiring schematics that include lighting and air conditioning systems for body shall be provided at time of delivery. Electrical wiring schematics and finalized build sheet shall be provided in paper in Adobe PDF format.

4.10 **VEHICLE INSPECTION:** The vendor shall have each vehicle (except cab and chassis units delivered without bodies) properly inspected in compliance with Texas motor vehicle laws.

4.11 **CHECK-IN INSPECTION:** The City shall check the vehicle upon delivery to ensure compliance with this specification and any other specific requirements. The vendor shall deliver with the vehicle a manufacturer's invoice, and MSO or any official documentation to verify the fact that ordered options, GVWR rating, and other requirements have been met. Failure to provide required documentation as listed may cause the delay of payment. Acceptance shall not be made, nor payment initiated on vehicles failing to meet specifications (unless they are brought into full compliance), and all necessary documents (i.e. MSO, odometer statement, etc.) are received by the City.

The City shall have a maximum of 20 working days to complete this inspection.

4.12 **NON COMPLIANT VEHICLES:** Vendor shall remove noncompliant vehicle(s) from City premises within 5 working days after receiving written notification from Fleet Acquisition staff. If vehicle is not removed by vendor within the specified time frame, the City may arrange for vehicle to be removed and secured by a local towing and storage facility. Vendor shall be responsible for payment of all related towing and storage charges. The City shall not be responsible or liable for damage or loss of noncompliant vehicles which remain on City premises, or which are removed by towing company, 5 working days after vendor notification.

4.13 **ELECTRICAL:** Heavy duty battery and alternator offered by manufacturer for models being bid. All units to be equipped with oil pressure, water temperature, and volt or amp gauges.

4.14 **No dealership nameplates, markings or decals shall be permitted on the vehicles.**

4.15 *Reserved*.

4.16 **INFORMATION:** a permanent plate shall be mounted in the driver's compartment specifying the quantity and type of fluids required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.

4.17 **SAFETY VIDEO:** At the time of delivery Pierce shall also provide one (1) 39-minute, professionally produced apparatus safety video, in DVD format. This video shall address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus, including the following: vehicle pre-trip inspection, chassis operation, aerial operation, and safety during maintenance.

4.18 **PERFORMANCE TESTS:** A road test shall be conducted with the apparatus fully loaded and a continuous run of no less than ten (10) miles. During that time the apparatus shall show no loss of power nor shall it overheat. The transmission drive shaft or shafts and the axles shall run quietly and be free of abnormal vibration or noise. The

apparatus shall meet NFPA 1901 acceleration requirements and NFPA 1901 braking requirements. The apparatus when fully loaded shall not have less than 25 percent or more than 50 percent on the front axle and not less than 50 percent or more than 75 percent on the rear axle.

4.19 **NFPA 2016 STANDARDS:** Apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications shall be indicated in the proposal as "non-NFPA".

4.19.1 All vehicles this unit shall comply with the NFPA standards effective January 1, 2016, except for fire department directed exceptions. These exceptions shall be set forth in the statement of exceptions.

4.19.2 To assure the vehicle is built to current NFPA standards, the apparatus, in its entirety, shall be third-party, audit-certified through Underwriters Laboratory (UL) that it is built and complies to all applicable standards in the current edition of NFPA 1901. The certification shall include: all design, production, operational, and performance testing of the apparatus, and all of the components that are installed on the apparatus.

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

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

4.20.2 A placard shall be affixed in the driver's side area stating the third party agency, the date, the standard and the certificate number of the whole vehicle audit.

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

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

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

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

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

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

4.23 **BREATHING AIR TEST:** if the unit has breathing air, pierce manufacturing shall draw an air sample from the air system and certify that the air quality meets the requirements of NFPA 1989, *standard on breathing air quality for fire and emergency services respiratory protection.*

4.24 **INSPECTION TRIP(S):** the bidder shall provide three (3) factory inspection trip(s) for preconstruction mid-point and final inspection by City representative(s) per purchase order. The inspection trip(s) shall be scheduled at times mutually agreed upon between the manufacturer's representative and the customer. All costs such as travel, lodging and meals shall be the responsibility of the bidder.

4.25 **PRODUCT CHANGES AND IMPROVEMENTS:** components and processes, as described in the proposal document, shall be as accurate as known at the time of bid submission, but may be subject to change for the purpose of product or process improvements, or changes in industry standards providing the change does not affect the meaning or definition of the bid specifications.

4.26 **AFTERMARKET SUPPORT WEBSITE:** pierceparts.com shall provide Pierce authorized dealer access to comprehensive information pertaining to the maintenance and service of their customer's apparatus. This tool shall provide the Pierce authorized dealer the ability to service and support their customers to the best of their ability with factory support at their fingertips.

Pierceparts.com is also accessible to the end user through the guest login. Limited access is available and vehicle specific parts information accessible by entering a specific VIN number. All end users should see their local authorized Pierce dealer for additional support and service.

4.27 **APPROVAL DRAWING:** A drawing of the proposed apparatus shall be prepared by vendor and provided to the City for approval before construction begins. The Pierce sales representative shall also be provided with a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

Any "revised" approval drawing of the apparatus shall be prepared and submitted by Pierce to the City showing any changes made to the approval drawing.

4.28 **ELECTRICAL WIRING DIAGRAMS:** One (1) USB drive copy and one (1) paper copy of the electrical wiring diagrams, prepared for the model of chassis and body, shall be provided.

4.29

ITEM	Quantity	Description
1	4	Pierce Velocity Platform Ladder

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

4.29.2 WHEELBASE – Minimum 248.50”

4.29.3 GVW RATING – Minimum 80,800.

4.29.4 FRAME - The chassis frame shall be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails shall have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to 10.75" over the rear axle. Each rail shall have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 in-lb over the critical regions of the frame assembly, with a section modulus of

18.96 cubic inches with an rbm of 2,275,200 in-lb over the rear axle. The frame rails shall be constructed of 120,000 psi yield strength heat-treated 0.38" thick steel with 3.50" wide flanges.

4.29.5 FRAME REINFORCEMENT - A mainframe inverted "l" liner shall be provided. It shall be heat-treated steel measuring 12.00" x 3.00" x 0.25". Each liner shall have a section modulus of 7.795 cubic inches, yield strength of 110,000 psi, and rbm of 857,462 in-lb. Total rbm at wheelbase center shall be 4,391,869 in-lb.

4.29.6 The frame liner shall be mounted inside of the chassis frame rail and extend the full length of the frame.

4.29.7 FRONT NON DRIVE AXLE - The Oshkosh TAK-4® front axle shall be of the independent suspension design with a ground rating of 22,800 lb. Upper and lower control arms shall be used on each side of the axle. Upper control arm castings shall be made of 100,000-psi yield strength 8630 steel and the lower control arm casting shall be made of 55,000-psi yield ductile iron. The center cross members and side plates shall be constructed out of 80,000-psi yield strength steel. Each control arm shall be mounted to the center section using elastomer bushings. These rubber bushings shall rotate on low friction plain bearings and be lubricated for life. Each bushing shall also have a flange end to absorb longitudinal impact loads, reducing noise and vibrations. There shall be nine (9) grease fittings supplied, one (1) on each control arm pivot and one (1) on the steering gear extension. The upper control arm shall be shorter than the lower arm so that wheel end geometry provides positive camber when deflected below rated load and negative camber above rated load. Camber at load shall be 0 degrees for optimum tire life. The ball joint bearing shall be of low friction design and be maintenance free. Toe links that are adjustable for alignment of the wheel to the center of the chassis shall be provided. The wheel ends shall have little to no bump steer when the chassis encounters a hole or obstacle. The steering linkage shall provide proper steering angles for the inside and outside wheel, based on the vehicle wheelbase. The axle shall have a third party certified turning angle of 45 degrees. Front discharge, front suction, or aluminum wheels shall not infringe on this cramp angle.

4.29.8 FRONT SUSPENSION - Front Oshkosh TAK-4™ independent suspension shall be provided with a minimum ground rating of 22,800 lb. The independent suspension system shall be designed to provide maximum ride comfort. The design shall allow the vehicle to travel at highway speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicle's crew compartment. Each wheel shall have torsion bar type spring. In addition, each front wheel end shall also have energy absorbing jounce bumpers to prevent bottoming of the suspension. The suspension design shall be such that there is at least 10.00" of total wheel travel and a minimum of 3.75" before suspension bottoms. The torsion bar anchor lock system allows for simple lean adjustments, without the use of shims. One can adjust for a lean within 15 minutes per side. Anchor adjustment design is such that it allows for ride height adjustment on each side. The independent suspension was put through a durability test that simulated 140,000 miles of inner city driving.

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

4.29.10 FRONT OIL SEALS - oil seals with viewing window shall be provided on the front axle.

4.29.11 FRONT TIRES -front tires shall be Michelin 425/65R22.50 radials, 20 ply XFE wide base tread, rated for 22,800 lb maximum axle load and 65 mph maximum speed. The tires shall be mounted on Accuride 22.50" x 12.25" steel disc type wheels with a ten (10)-stud, 11.25" bolt circle.

4.29.12 REAR AXLE - The rear axle shall be a Meritor™, Model RT-58-185, tandem axle assembly with a capacity of 58,000 lb. An inter-axle differential, which divides torque evenly between axles, shall be provided with an indicator light mounted on the cab instrument panel.

4.29.13 TOP SPEED OF VEHICLE - A rear axle ratio shall be furnished to allow the vehicle to reach a top speed of 60 mph.

4.29.14 REAR SUSPENSION - The rear suspension shall be an Ultimaax spring system with an equalizing beam design that distributes the load equally between the two (2) axles. The ground rating of the suspension shall be 58,000 lb.

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

4.29.16 REAR TIRES - Rear tires shall be eight (8) Michelin 315/80R22.50 radials, load range L, X® WORKS™ Z, rated for 66,160 lb maximum axle load and 65 mph maximum speed. The tires shall be mounted on Accuride 22.50" x 9.00" steel disc type wheels with a ten (10) stud, 11.25" bolt circle.

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

4.30 TIRE PRESSURE MANAGEMENT - THERE SHALL BE A REALWHEELS LED AIRSECURE™ TIRE ALERT PRESSURE MANAGEMENT SYSTEM PROVIDED, THAT SHALL MONITOR EACH TIRE'S PRESSURE.

4.30.1 A sensor shall be provided on the valve stem of each tire for a total of 10 tires. The sensor shall calibrate to the tire pressure when installed on the valve stem for pressures between 10 and 200 psi. The sensor shall activate an integral battery operated LED when the pressure of that tire drops 5 to 8 psi. Removing the cap from the sensor shall indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED shall immediately start to flash.

4.30.2 FRONT HUB COVERS - STAINLESS STEEL HUB COVERS SHALL BE PROVIDED ON THE FRONT AXLE. AN OIL LEVEL VIEWING WINDOW SHALL BE PROVIDED.

4.30.3 REAR HUB COVERS - STAINLESS STEEL, HIGH HAT, HUB COVERS SHALL BE PROVIDED ON THE REAR AXLE HUBS.

4.30.4 CHROME LUG NUT COVERS- CHROME LUG NUT COVERS SHALL BE SUPPLIED ON FRONT AND REAR WHEELS.

4.30.5 MUD FLAPS - MUD FLAPS WITH A PIERCE LOGO SHALL BE INSTALLED BEHIND THE FRONT AND REAR WHEELS. 4.30.6 WHEEL CHOCKS - There shall be one (1) pair of Ziamatic AC-32, aluminum alloy, Quick-Choc wheel blocks provided.

4.30.8 **4.30.7 WHEEL CHOCK BRACKETS - THERE SHALL BE ONE (1) PAIR OF ZIAMATIC QCH-32-H HORIZONTAL MOUNTING WHEEL CHOCK BRACKETS PROVIDED FOR THE ZIAMATIC AC-32 WHEEL CHOCKS. THE BRACKETS SHALL BE MOUNTED UNDER DRIVER SIDE FRONT COMPARTMENTS, USE NYLON LOCKING NUTS TO INSTALL THE BRACKETS.**ELECTRONIC STABILITY CONTROL - A vehicle control system shall be provided as an integral part of the ABS brake system from Meritor Wabco. The system shall monitor and update the lateral acceleration of the vehicle and compare it to a critical threshold where a side roll event may occur. If the critical threshold is met, the vehicle control system shall automatically reduce engine RPM, engage the engine retarder (if equipped), and selectively apply brakes to the individual wheel ends of the front and rear axles to reduce the possibility of a side roll event.The system shall monitor directional stability through a lateral accelerometer, steer angle sensor and yaw rate sensor. If spinout or drift out is detected, the vehicle control system shall selectively apply brakes to the individual wheel ends of the front and rear axles to bring the vehicle back to its intended direction.ANTI-LOCK BRAKE SYSTEM - The vehicle shall be equipped with a Wabco 6S6M, anti-lock braking system. The ABS shall provide a six (6) channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology shall control the anti-lock braking system. Each wheel shall be monitored by the system. When any wheel begins to lockup, a signal shall be sent to the control unit. This control unit shall then reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system shall eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

4.30.9 AUTOMATIC TRACTION CONTROL - An anti-slip feature shall be included with the ABS. The Automatic Traction Control shall be used for traction in poor road and weather conditions. The Automatic Traction Control shall act as an electronic differential lock that shall not allow a driving wheel to spin, thereby supplying traction at all times. The ABS electronic control unit (ECU) shall work with the engine ECU, sharing information concerning wheel slip. Engine ECU shall use information to control engine speed, allowing only as much throttle application as required for the available traction, regardless of how much the driver is asking for. A "mud/snow" switch shall be provided on the instrument panel. Activation of the switch shall allow additional tire slip to let the truck climb out and get on top of deep snow or mud.

4.30.10 BRAKES- The service brake system shall be full air type. The front brakes shall be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance. The brake system shall be certified, third party inspected, for improved stopping distance. The rear brakes shall be Meritor™ 16.50" x 8.63" cam operated with automatic slack adjusters. Dust shields shall be provided.

4.30.11 AIR COMPRESSOR, BRAKE SYSTEM - The air compressor shall be a Bendix®, Model BA-921, with 15.80 cubic feet per minute output at 1,250 rpm.

4.30.12 BRAKE SYSTEM - The brake system shall include:

A. Bendix dual brake treadle valve with vinyl covered foot surface.

B. Heated automatic moisture ejector on air dryer.

C. Total air system capacity of 8,108 cubic inches.

D. Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi.

E. Spring set parking brake system.

F. Parking brake operated by a push-pull style control valve.

G. A parking "brake on" indicator light on instrument panel.

H. Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, shall be provided with an automatic spring brake application at 40 psi.

I. A pressure protection valve shall be provided to prevent all air operated accessories from drawing air from the air system when the system pressure drops below 80 psi (550 kPa).

J. 1/4 turn drain valves on each air tank.

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

L. To reduce the effects of corrosion, the air tank shall be mounted with stainless steel brackets.

4.30.13 BRAKE SYSTEM AIR DRYER - The air dryer shall be WABCO System Saver 1200 with spin-on coalescing filter cartridge and 100 watt heater.

4.30.14 BRAKE LINES - Color-coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom in the chassis areas that are subject to excessive heat.

4.30.15 AIR INLET/OUTLET - One (1) air inlet/outlet shall be installed with the female coupling located in the driver side lower step well of cab. This system shall tie into the "wet" tank of the brake system and include a check valve in the inlet line and an 85 psi pressure protection valve in the outlet line. The air outlet shall be controlled by a needle valve.

A mating male fitting shall be provided with the loose equipment.

The air inlet shall allow a shoreline air hose to be connected to the vehicle. This shall allow station air to be supplied to the brake system of the vehicle to insure constant air pressure.

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

The all wheel lock-up system shall be activated automatically when the aerial master switch is activated.

4.31 AUXILLARY BRAKING SYSTEMS - When two (2) separate auxiliary braking systems are installed on a unit they shall be programmed or wired to provide separate or simultaneous operation. In this case, it shall be the transmission retarder and the Jake Brake. They shall be set up so when the retarder comes on, the Jake shall activate at the same time.
The Jake shall start on deceleration and the transmission retarder shall also start on brake application.

4.32 U-BOLT GUARD OVER PARKING BRAKE KNOB - There shall be one (1) U-bolt type protective guard(s) installed over the "Parking Brake" knob to prevent accidental activation of the brake. The guard shall be located on the driver's side.

4.33 COLOR CODE RESERVOIRS - The chassis air reservoirs shall be painted for easy identification. The supply tank shall be black, primary tank shall be green, secondary tank shall be blue and auxiliary tank (s) shall be yellow.

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

4.35 AIR COMPRESSOR, BRAKE SYSTEM MAINTENANCE - a kussmaul, model 091-9b-1 air compressor shall be provided. It shall be driven by the 120 volt shoreline electrical system and shall be located driver side rear facing seat riser, must be wired to a receptacle, not hard wired. Needs to be removable from the front access panel. Provide knockouts on the panel not louvers and foam gasket.

The compressor shall maintain the air pressure in the chassis air brake system while the vehicle is not in use.

A pressure switch shall sense when the system pressure drops and automatically start the compressor, which then shall run until pressure is restored.

4.36 REMOTE AIR TANK DRAIN - There shall be a remote mounted 1/4 turn drain valve installed on each air supply reservoir. The drain valve shall be actuated from the underside of the driver side body corner. .375" air line shall be provided between each drain valve and the reservoirs.4.37 ENGINE - The chassis shall be powered by an electronically controlled engine as described below: Make - Detroit™A. Model - DD13®B.

Power - 525 hp at 1625 rpmC. Torque - 1850 lb-ft at 1075 rpmD. Governed Speed - Full Load - 1900 rpm Road/2080 rpm Parked PTOE. Emissions Certification - EPA 2016 (GHG17)F. Fuel - DieselG.

Cylinders - Six (6)H. Displacement - 781 cubic inches (12.8L)I. Starter - Delco Remy 39MT™J.

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

4.38 HIGH IDLE - A high idle switch shall be provided, inside the cab, on the instrument panel, that shall automatically maintain a preset engine rpm. The high idle shall automatically engage when the parking brake is set and the engine has been idling for 5 minutes. A switch shall be installed, at the cab instrument panel, for activation/deactivation override.

A. The high idle shall be operational only when the parking brake is on, the truck transmission is in neutral, and the engine has been idling for 5 minutes. A green indicator light shall be provided adjacent to the switch. The light shall illuminate when the above conditions are met. The light shall be labeled "OK to Engage High Idle".

B. The high idle circuit shall be programmed to allow high idle with the parking brake applied, transmission in neutral and pump in gear.

C. When the truck transmission is shifted into gear with the high idle on, the high idle shall drop out for a safe shift condition.

4.39 ENGINE BRAKE - A Jacobs engine brake is to be installed with the controls located on the instrument panel within easy reach of the driver.

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

B. The engine brake shall be installed in such a manner that when the engine brake is slowing the vehicle the brake lights are activated.

C. The ABS system shall automatically disengage the auxiliary braking device, when required.

4.40 CLUTCH FAN - A Horton® fan clutch shall be provided. The fan clutch shall be automatic when the pump transmission is in "Road" position, and fully engaged in "Pump" position.

4.41 ROCKER COVER BOLTS - The rear most bolts on the engine rocker cover shall be flat head style. This is in place of the "stud" style provided as standard.

4.42 HEAVY DUTY OIL LINE - A heavy duty oil line and fittings shall be provided between the engine oil pan and the oil level manifold.

4.43 ENGINE AIR INTAKE - An air intake with an ember separator (to prevent road dirt, burning embers, and recirculating hot air from entering the engine) shall be mounted at the front of the apparatus, on the passenger side of the engine. The ember separator shall be mounted in the air intake with flame retardant, roto-molded polyethylene housing. It shall be easily accessible by the hinged access panel at the front of the vehicle.

4.44 EXHAUST SYSTEM - The exhaust system shall include a diesel particulate filter (DPF) and a selective catalytic reduction (SCR) device to meet current EPA standards. The exhaust system shall be stainless steel from the turbo to the inlet of the SCR device and shall be 5.00" in diameter.

A. An insulation wrap shall be provided on all exhaust pipe between the turbo and SCR to minimize the transfer of heat to the cab.

B. The exhaust shall terminate horizontally ahead of the right side rear wheels, flush with the body rubrail. Tailpipe shall be angled 35 degrees to the rear. A tailpipe diffuser shall be provided to reduce the temperature of the exhaust as it exits. Heat deflector shields shall be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

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

A. For maximum corrosion resistance and cooling performance, the entire radiator core shall be constructed using long life aluminum alloy. The core shall be made of aluminum fins, having a serpentine design, brazed to aluminum tubes. The tubes shall be brazed to aluminum headers. No solder joints or leaded material of any kind shall be acceptable in the core assembly. The radiator core shall have a minimum frontal area of 1434 square inches. Supply tank made of glass-reinforced nylon and a return tank of cast aluminum alloy shall be crimped on to the core assembly using header tabs and a compression gasket to complete the radiator core assembly. The radiator shall be compatible with commercial antifreeze solutions.

B. There shall be a full steel frame around the entire radiator core assembly. The radiator core assembly shall be isolated within the steel frame by rubber inserts to enhance cooling system durability and reliability. The radiator shall be mounted in such a manner as to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven ground. The radiator assembly shall be isolated from the chassis frame rails with rubber isolators.

C. The radiator assembly shall include an integral deaeration tank permanently mounted to the top of the radiator framework, with a readily accessible remote-mounted overflow tank. For visual coolant level inspection, the radiator shall have a built-in sight glass. The radiator shall be equipped with a 15 psi pressure relief cap.

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

E. A heavy-duty fan shall draw in fresh, cool air through the radiator. Shields or baffles shall be provided to prevent recirculation of hot air to the inlet side of the radiator.

4.46 COOLANT LINES - Gates® silicone hoses shall be used for all engine/heater coolant lines installed by the chassis manufacturer.

A. The chassis manufacturer shall also use Gates brand hoseon other heater, defroster and auxiliary coolant circuits. There shall be some areas in which an appropriate Gates product is not available. In those instances, a comparable silicone hose from another manufacturer shall be used.

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

4.47 INSULATION WRAP - The lower radiator hose shall be wrapped with orange heat resistant insulation to prevent damage to electrical harness.

4.48 FUEL TANK - A 75 gallon fuel tank shall be provided and mounted at the rear of the chassis. The tank shall be constructed of 12-gauge, hot rolled steel. It shall be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank shall be mounted with stainless steel straps.

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

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

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

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

E. All fuel lines shall be of the wire braided type. Reusable fittings shall be provided.

4.49 DIESEL EXHAUST FLUID TANK - A 4.5 gallon diesel exhaust fluid (DEF) tank shall be provided and mounted in the driver's side body forward of the rear axle.

A. A 0.50" drain plug shall be provided in a low point of the tank for drainage.

B. A fill inlet shall be provided and marked "Diesel Exhaust Fluid Only". The fill inlet shall be located below the air bottle storage behind a common door on the driver side of the vehicle.

C. The tank shall meet the engine manufacturer's requirement for 10 percent expansion space in the event of tank freezing.

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

4.50 AUXILIARY FUEL PUMP - An auxiliary electric fuel pump shall be added to the fuel line for priming the engine. A switch located on the cab instrument panel shall be provided to operate the pump.

4.51 FUEL COOLER - An air to fuel cooler shall be installed in the engine fuel return line. The fuel filler cap shall have a retaining chain and holder provided on the fuel fill door.

4.52 TRANSMISSION -An Allison 5th generation, Model EVS 4500PR, electronic, torque converting, automatic transmission with retarder shall be provided. The transmission shall be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display shall indicate when service is due.

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

B. A transmission temperature gauge, with red light and audible alarm, shall be installed on the cab instrument panel.

C. The transmission retarder control shall be activated 33 percent by release of the accelerator pedal or 66 percent by slight application of the brake pedal, or 100 percent by heavy application of brake pedal. A second on/off switch is provided to activate and deactivate the auto apply portion.

D. The transmission shall have the 1600 ft. lb. torque (medium) spring setting for retardation force.

E. The transmission retarder shall have a master "on/off" switch on the instrument panel. A red indicator light shall be provided to warn that the transmission is being overworked.

F. The retarder shall be wired to the brake lights so they are energized when the retarder is slowing the vehicle down.

G. The ABS system shall automatically disengage the auxiliary braking device when required.

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

A. The transmission ratio shall be: 1st - 4.70 to 1.00, 2nd - 2.21 to 1.00, 3rd - 1.53 to 1.00, 4th - 1.00 to 1.00, 5th - 0.76 to 1.00, 6th - 0.67 to 1.00, R - 5.55 to 1.00.

4.54 TRANSMISSION COOLER -An externally mounted Modine bar plate transmission oil cooler shall be provided using engine coolant to control the transmission oil temperature. The internal bar plates shall be constructed of stainless steel. The cooler's housing shall be constructed of 1020 steel, coated to protect from corrosion. The cooler shall be tagged with information including OEM part number, vendor serial number and date / lot code.

A. An externally mounted Modine bar plate transmission oil cooler shall be provided using engine coolant to control the transmission retarder oil temperature. The internal bar plates shall be constructed of stainless steel. The cooler's housing shall be constructed of 1020 steel, coated to protect from corrosion. The cooler shall be tagged with information including OEM part number, vendor serial number and date / lot code.

4.55 DOWNSHIFT MODE (w/engine brake) - The transmission shall be provided with an aggressive downshift mode. This shall provide earlier transmission downshifts to 2nd gear from 6th gear, resulting in improved engine braking performance.

4.56 DRIVELINE - Drivelines shall be a heavy-duty metal tube and be equipped with Spicer® 1810 universal joints. The shafts shall be dynamically balanced before installation. A splined slip joint shall be provided in each driveshaft. The slip joint shall be coated with Glidecoat® or equivalent.

4.57 GREASE SHIELD - The drive shaft slip joint requires a grease shield to prevent grease from being thrown against the frame wiring harness.

4.58 PAINT PUMP TRANSMISSION AND DRIVE TRANSMISSION OUTPUT YOKES - The pump transmission and drive transmission output yokes shall be brush painted the same color as the driveshafts. The yokes shall be brush painted, not spray painted. Paint color is job color.

4.59 STEERING - Dual Sheppard, Model M110, steering gears, with integral heavy-duty power steering, shall be provided. For reduced system temperatures, the power steering shall incorporate an air to oil cooler and an Eaton, Model VN20, hydraulic pump with integral pressure and flow control. All power steering lines shall have wire braded lines with crimped fittings.

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

B. Standard steering gear oil to be replaced with 15W40 CJ-4 motor oil.

4.60 STEERING WHEEL - The steering wheel shall be 18.00" in diameter, have tilting and telescoping capabilities, and a 4-spoke design.

4.61 LOGO AND CUSTOMER DESIGNATION ON DASH - The dash panel shall have an emblem containing the Pierce logo and customer name. The emblem shall have three (3) rows of text for the customer's department name. There shall be a maximum of eight (8) characters in the first row, 11 characters in the second row and 11 characters in the third row.

The first row of text shall be: San Antonio

The second row of text shall be: Fire

The third row of text shall be: Department

4.62 TAG/LABEL - The following one (1) tags or labels shall be provided DS in nose cone on the chassis or cab. The tag/label shall be configured and read “STEERING FLUID 15W40 CJ-4 OIL MOTOR OIL.”

4.63 BUMPER - A one (1)-piece, 0.25" thick steel channel bumper, a minimum 12.00" high shall be attached to the front of the chassis frame. The bumper shall be painted job color.

A. A 9.00" formed steel channel shall be mounted directly behind bumper for additional strength.

B. The bumper shall be extended 10.00" from front face of cab.

4.64 GRAVEL PAN - A gravel pan, constructed of bright aluminum treadplate, shall be furnished between the bumper and cab face. The gravel pan shall be properly supported from the underside to prevent flexing and vibration of the aluminum treadplate.

4.65 LIFT AND TOW MOUNTS WITH TOW EYES - Mounted to the frame extension shall be lift and tow mounts.

Incorporated in the mounts shall be two (2) painted steel tow eyes. The lift and tow mounts shall be designed and positioned to adapt to certain tow truck lift systems. The tow eyes shall not be used for lifting of the apparatus.

The inner and outer edges of the tow eyes shall have a 0.25" radius.

The lift and tow mounts with eyes shall be painted orange.

4.66 TOW EYES - Two (2) cutouts shall be provided in the front face of the bumper to allow two (2) Chicago style tow eyes to extend out the front. The inner and outer edges of the utility eyes shall have a 0.25 radius.

The tow eyes shall be designed and positioned to allow up to a 6,000 pound straight horizontal pull in line with the centerline of the vehicle. The tow eyes shall not be used for lifting of the apparatus.

The utility eyes shall be painted red.

4.67 TOW HOOKS - No tow hooks are to be provided. This truck shall be equipped with a lift and tow package with integral tow eyes.

4.68 CAB - The Velocity cab shall be designed specifically for the fire service and shall be manufactured by Pierce Manufacturing. To provide quality at the source and single source customer support, the cab shall be built by the apparatus manufacturer in a facility located on the manufacturer's premises.

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

4.68.2 The cab shall have 12 main vertical structural members located in the A-pillar (front cab corner posts), B-pillar (side center posts), C-pillar (rear corner posts) and rear wall areas. The A-pillar shall be constructed of 0.25" heavy wall extrusions joined by a solid A356-T6 aluminum joint casting. The B-pillar and C-pillar shall also be constructed from 0.25" heavy wall extrusions. The rear wall shall be constructed of two (2) 4.00" x 2.00" outer aluminum extrusions and two (2) 3.00" x 2.00" inner aluminum extrusions. All main vertical structural members shall run from the floor to 7.50" x 3.50" x 0.125" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a 0.75" thick corner casting at each of the front corners of the roof assembly.

4.68.3 The front of the cab shall be constructed of a 0.25" thick firewall, covered with a 0.125" front skin (for a total thickness of 0.38"), and reinforced with 24.50" wide x 10.00" deep x 0.50" thick supports on each side of the engine tunnel. The cross-cab support shall be welded to the A-pillar, 0.25" firewall, and engine tunnel, on the left and right sides.

4.68.4 The cab floors shall be constructed of 0.1875" thick aluminum plate and reinforced at the firewall with an additional 0.25" thick cross-floor support providing a total thickness of 0.44" of structural material at the front floor area. The front floor area shall also be supported with three (3) 0.50" plates bolted together that also provides the mounting point for the cab lift. This tubing shall run from the front of the cab to the 0.1875" thick engine tunnel, creating the structure to support the forces created when lifting the cab.

4.68.5 The cab shall be a full-tilt style. A 3-point cab mount system with rubber isolators shall improve ride quality by isolating chassis vibrations from the cab.

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

4.68.7 The forward cab section shall have an overall height (from the cab roof to the ground) of approximately 102.00". The crew cab section shall have a 10.00" raised roof, with an overall cab height of approximately 112.00". The raised portion shall start at the most forward point of the B-pillar and continue rearward to the back of the cab. The overall height listed shall be calculated based on a truck configuration with the lowest suspension weight ratings, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension shall increase the overall height listed.

4.68.8 The raised roof section of the crew cab shall have a 58.00" wide x 10.00" high square notch in the center section of the roof. This shall allow the aerial device to be bedded in the same location as a non-raised roof.

4.68.9 The cab shall have an interior width of not less than 93.50". The driver and passenger seating positions shall have a minimum 24.00" clear width at knee level.

4.68.10 To reduce injuries to occupants in the seated positions, proper head clearance shall be provided. The floor-to-ceiling height inside the forward cab shall be no less than 60.25". The floor-to-ceiling height inside the crew cab shall be no less than 52.95" in the center position and 68.75" in the outboard positions.

4.68.11 The crew cab shall measure a minimum of 57.50" from the rear wall to the backside of the engine tunnel (knee level) for optimal occupant legroom.

4.69 INTERIOR CAB INSULATION - The cab walls, ceiling and engine tunnel shall be insulated in all strategic locations to maximize acoustic absorption and thermal insulation. The cab shall be insulated with 2.00" insulation in the rear wall, 3.00" insulation in the side walls, and 1.50" insulation in the ceiling.

4.70 FENDER LINERS - Full-circular, aluminum inner fender liners in the wheel wells shall be provided.

4.71 PANORAMIC WINDSHIELD - A one (1)-piece, safety glass windshield with more than 2,802 square inches of clear viewing area shall be provided. The windshield shall be full width and shall provide the occupants with a panoramic view. The windshield shall consist of three (3) layers: the outer light, the middle safety laminate, and the inner light. The 0.114" thick outer light layer shall provide superior chip resistance. The middle safety laminate layer shall prevent the windshield glass pieces from detaching in the event of breakage. The inner light shall provide yet another chip resistant layer. The cab windshield shall be bonded to the aluminum windshield frame using a urethane adhesive. A custom frit pattern shall be applied on the outside perimeter of the windshield for a finished automotive appearance.

4.72 WINDSHIELD WIPERS - Three (3) electric windshield wipers with a washer, in conformance with FMVSS and SAE requirements, shall be provided. The wiper blades shall be 21.65" long and together shall clear a minimum of 1,783 square inches of the windshield for maximum visibility in inclement weather.

The windshield washer fluid reservoir shall be located at the front of the vehicle and be accessible through the access hood for simple maintenance.

4.73 FAST SERVICE ACCESS FRONT TILT HOOD - A full-width access hood shall be provided for convenient access to engine coolant, steering fluid, wiper fluid, cab lift controls, headlight power modules, and ember separator. The hood shall also provide complete access to the windshield wiper motor and components. The hood shall be contoured to provide a sleek, automotive appearance. The hood shall be constructed of two (2) fiberglass panels bonded together and shall include reinforcing ribs for structural integrity. The hood shall include air cylinders to hold the hood in open and closed positions, and a heavy duty latch system that shall meet FMVSS 113 (Hood Latch System). The spring-loaded hood latch shall be located at the center of the hood with a double-action release lever located behind the Pierce logo. The two (2)-step release requires the lever first be pulled to the driver side until the hood releases from the first latch (primary latch) then to the passenger side to fully release the hood (secondary latch).

4.74 ENGINE TUNNEL - To provide structural strength, the engine tunnel sidewalls shall be constructed of 0.50" aluminum plate that is welded to both the 0.25" firewall and 0.38" heavy wall extrusion under the crew cab floor. To maximize occupant space, the top edges shall be tapered.

The back of the engine tunnel shall be no higher than 16.25" off the crew cab floor.

The engine tunnel shall be insulated on both sides for thermal and acoustic absorption. The underside of the tunnel shall be covered with 1.00" thick polyether foam that is reinforced with an aluminized face. Thermal rating for this insulation shall be -40 degrees Fahrenheit to 300 degrees Fahrenheit. The insulation shall keep noise (dBA) levels at or lower than the specifications in the current edition of the NFPA 1901 standards.

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

4.76 CAB LIFT - A hydraulic cab lift system shall be provided, consisting of an electric-powered hydraulic pump, fluid reservoir, dual lift cylinders, remote cab lift controls and all necessary hoses and valves. The hydraulic pump shall have a backup manual override, for use in the event of an electrical failure.

4.76.1 The cab lift controls shall be located at the driver side front of the cab, easily accessible under the full width front access hood. The controls shall include a permanently mounted raise/lower switch. For enhanced visibility during cab tilt operations, a remote control tether with on/off switch shall be supplied on a coiled cord that shall extend from 2.00' (coiled) to 6.00' (extended).

4.76.2 The cab shall be capable of tilting 42 degrees and 80 degrees with crane assist to accommodate engine maintenance and removal. The cab pivots shall be located 46.00" apart to provide stability while tilting the cab.

4.76.3 The rear of the cab shall be locked down by a two (2)-point, automatic, hydraulic, double hook mechanism that fully engages after the cab has been lowered (self-locking). The dual 2.25" diameter hydraulic cylinders shall be equipped with a velocity fuse that protects the cab from accidentally descending when the cab is in the tilt position.

4.76.4 For increased safety, a redundant mechanical stay arm shall be provided that must be manually put in place on the driver side between the chassis and cab frame when cab is in the raised position. This device shall be manually stowed to its original position before the cab can be lowered.

4.77 CAB LIFT INTERLOCK - The cab lift safety system shall be interlocked to the parking brake. The cab tilt mechanism shall be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism shall be disabled.

4.78 GRILLE - A bright finished aluminum mesh grille screen, inserted behind a formed bright finished grille surround, shall be provided on the front center of the cab, and shall serve as an air intake to the radiator.

4.79 SCUFFPLATE - A treadplate scuffplate shall be installed on the top edge of both rear facing seat risers. The scuffplate shall be flanged to the front to protect the painted edge of the seat riser.

4.80 FRONT CAB TRIM - Bright finished wrap-around housings shall be provided on each side of the front cab face for mounting of the headlights and front directional lights. The housings shall mate up to the side edge of the forward grille, and then extend around the front corners of the cab rearward, providing for a streamlined automotive appearance.

4.81 MIRRORS - Ramco, Model 6001FFHR-750HR, polished aluminum 9.25" wide x 13.50" high mirrors, with full flat glass section, shall be mounted on each side of the front cab corner. A convex section shall be bolted to the top of each mirror.

The flat glass in each mirror shall be heated and adjustable with remote controls that are convenient to the driver.

The convex section in each mirror shall be heated and adjustable with remote controls.

4.82 MIRROR (SIDE VIEW) - Exterior officer's side view mirror shall be provided on the cab. Mirror shall allow passenger to view the side cab blind spot and the area to the rear of the truck.

Mirror shall be located on the cab door, mounted on an adjustable arm. Mirror head shall be an 8.00" convex mirror.

4.83 FRONT CROSS VIEW MIRROR - There shall be one (1) 8.00" diameter eyeball mirror provided on the passenger side front corner of the cab. It shall be mounted high, above the windshield. The mirror shall provide the driver with a view of the front bumper and the front of the truck.

The mirror housing, tubing, clamps and hardware shall be constructed of corrosion resistant stainless steel.

Mirror head shall be K-10, EB50S-S, 8.00" stainless steel housing with three (3) arms.

A 4.00" riser shall be provided between the mirror body and support arm on passenger side only.

4.84 CAB DOORS - The forward cab and crew cab doors shall be the half-height style door. To enhance entry and egress to the cab, the forward cab doors shall be a minimum of 43.59" wide x 64.71" high. The crew cab doors shall measure a minimum of 37.87" wide x 73.75" high.

4.84.1 The forward cab and crew cab doors shall be constructed of extruded aluminum with a nominal material thickness of 0.125". The exterior door skins shall be constructed from 0.090" aluminum.

4.84.2 The forward cab door windows shall include a 7.50" high x 10.00" wide drop area at the front to enhance visibility.

4.84.3 A customized, vertical, pull-down type door handle shall be provided on the exterior of each cab door. The exterior handle shall be designed specifically for the fire service to prevent accidental activation, and shall provide 4.00" wide x 2.00" deep hand clearance for ease of use with heavy gloved hands. Each door shall also be provided with an interior flush, open style paddle handle that shall be readily operable from fore and aft positions, and be designed to prevent accidental activation. The interior handles shall provide 4.00" wide x 1.25" deep hand clearance for ease of use with heavy gloved hands.

4.84.4 The cab doors shall be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. The keys shall be Model 751. The locks shall be capable of activating when the doors are open or closed. The doors shall remain locked if locks are activated when the doors are opened, then closed.

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

4.84.6 A chrome grab handle shall be provided on the inside of each cab and crew cab door.

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

4.85 CAB DOOR PANELS - The inner cab door panels shall be constructed out of brushed stainless steel. The cab door panels shall be removable.

4.86 RECESSED POCKET WITH ELASTIC COVER - To provide organized storage (clutter control) in the cab for miscellaneous equipment, the cab interior shall be provided with a recessed storage pocket. The pocket shall be 5.63" wide x 2.00" high x 6.00" deep. The pocket shall be provided with a perforated elastic material cover to secure the equipment in the pocket. The pocket shall be installed in location 7 on the driver side console.

4.87 ELECTRIC WINDOW CONTROLS - Each cab entry door shall be equipped with an electrically operated tempered glass window. A window control panel shall be located on the door panel within easy reach of the respective occupant. Each switch shall allow intermittent or auto down operation for ease of use. Auto down operation shall be actuated by holding the window down switch for approximately 1 second. The driver control panel shall contain a control switch for each cab door's window. All other door control panels shall contain a single switch to operate the window within that door.

The window switches shall be connected directly to the battery power. This allows the windows to be raised and lowered when the battery switch is in the off position.

4.88 ELECTRIC CAB DOOR LOCKS - The front driver and passenger doors shall have a door lock master switch (custom designed rotary lock knob) built into the interior door latch that shall control all front and rear side exit door locks. Each rear cab door shall have its own lock control. Each door shall have a keyed exterior lock mechanism built into the door handle assembly.

4.88.1 There shall be one (1) concealed switch on the exterior of the cab, located under the front full width service access panel, that operates the cab door locks.

4.88.2 The lock system shall include two (2) key FOBs that allow for keyless entry into the vehicle. The key FOB system shall use code hopping technology for high security and be FCC part 15 compliant.

4.89 DUAL STEPS - A dual step shall be provided below each cab and crew cab door. The steps shall be designed with a grip pattern punched into bright aluminum treadplate material providing support, slip resistance, and drainage. The steps shall be a bolt-on design and provide a 24.00" wide x 7.00" deep stepping surface. The step design raises the middle step higher and closer to the cab floor, resulting in a 12.00" distance from the step to cab floor in the cab and a 13.50" distance from the step to cab floor in the crew cab. Stepping distances from the ground to first step shall be 16.50" and from first step to middle step shall be 12.00".

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

4.90 STEP LIGHTS - For reduced overall maintenance costs compared to incandescent lighting, there shall be four (4) white LED step lights provided. The lights shall be installed at each cab and crew cab door, one (1) per step. The lights shall be located in the driver side front doorstep, driver side crew cab doorstep, passenger side front doorstep and passenger side crew cab doorstep.

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

The lights shall be activated when the adjacent door is opened.

4.91 FENDER CROWNS - Rubber fender crowns shall be provided around the cab wheel openings. Crowns shall be black.

4.92 CREW CAB WINDOWS - One (1) fixed window with tinted glass shall be provided on each side of the cab, to the rear of the front cab door. The windows shall be sized to enhance light penetration into the cab interior. The windows shall measure 20.00" wide x 20.50" high.

4.93 WINDOWS INTERIOR TRIM - For improved aesthetics, the cab side windows shall include a vacuum formed ABS interior trim panel.

4.94 STORAGE COMPARTMENT - Provided under the forward facing crew cab seats shall be a transverse compartment.

4.94.1 The compartment shall be open top to bottom. There shall be no dividers. The upper section shall be 9.50" wide x 13.12" high x 26.25" deep (driver side) and 24.00" deep (passenger side). The top 7.38" of the upper compartment shall be full width (transverse) of the crew cab. The lower section on both sides shall be 9.50" wide x 16.50" high x 22.00" deep. The compartment shall extend from the bottom of the cab to top of the seat riser.

4.94.2 There shall be an access door on both sides of the cab with double pan doors.

4.94.3 Doors shall be latched with recessed, polished stainless steel D-ring handles and Eberhard 106 locks. The doors shall include gas shock style positive door holders. A magnetic style switch shall be provided to activate the door open warning system.

4.94.4 There shall be one (1) drop down door, single pan construction, on the forward face of the seat riser.

4.94.5 The drop down door shall include two (2) flush quarter turn latches.

4.94.6 The cab side access doors shall be painted to match the cab exterior and the drop down door inside the cab shall be constructed of polished stainless steel.

4.94.7 The compartment interior shall be [Finish, Exterior Cab Compt].

4.94.8 Compartment Light - There shall be four (4) white LED strip lights, one (1) each left side of lower and upper exterior compartment door opening. The lights shall be controlled by an automatic door switch.

4.95 SPECIAL FASTENERS (under side of cab insulation) - All insulation in the cab engine tunnel and under the cab and crew cab floor shall be held in place by mechanical fasteners and large washers.

4.96 CAB INSULATION - The underside of the cab and crew cab floor shall be sprayed with insulation. The insulation shall keep noise (dBA) levels at or lower than the specifications in the current edition of the NFPA 1901 standards.

4.97 MOUNTING PLATE ON ENGINE TUNNEL - Equipment installation provisions shall be installed on the engine tunnel.

A .188" smooth aluminum plate shall be bolted to the top surface of the engine tunnel. The plate shall extend from behind the instrument panel console, down the taper in the tunnel and terminate at the rear of the storage compartment mounted to the rear of the engine tunnel. The rear horizontal surface of the tunnel shall not be covered. The front of the plate shall be flanged 45 degrees downward to prevent items from rolling underneath it. The front horizontal surface shall be 10.00" from the front flange to the taper down the engine tunnel. This front surface shall not follow the profile of the engine tunnel. The plate shall be spaced off the engine tunnel .75" to allow for wire routing below the plate.

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

4.98 CAB INTERIOR - With safety as the primary objective, the wrap-around style cab instrument panel shall be designed with unobstructed visibility to instrumentation. The dash layout shall provide the driver with a quick reference to gauges that allows more time to focus on the road. Interior Cab shall be equipped with the following:

4.98.1 The center console shall be a high impact ABS polymer and shall be easily removable for access to the defroster. The center console shall include louvers strategically located for optimal air flow and defrost capability to the windshield.

4.98.2 The passenger side dashboard shall be constructed of painted aluminum for durability and low maintenance. For enhanced versatility, the passenger side dash shall include a flat working surface.

4.98.3 To provide optional (service friendly) control panels, switches and storage modules, a painted aluminum overhead console shall also be provided.

4.98.4 To complete the cab front interior design, painted aluminum modesty panels shall be provided under the dash on both sides of the cab. The driver side modesty panel shall provide mounting for the battery switch and diagnostic connectors, while the passenger side modesty panel provides a glove box, and ground access to the main electrical distribution panel via quick quarter turn fasteners.

4.98.5 To provide a deluxe automotive interior, the engine tunnel, side walls and rear wall shall be covered by a leather grain vinyl that is resistant to oil, grease, and mildew.

4.98.6 The headliner shall be installed in both forward and rear cab sections. The headliner panel shall be a composition of an aluminum panel covered with a sound barrier and upholstery.

4.98.7 The cab structure shall include designated raceways for electrical harness routing from the front of the cab to the rear upper portion of the cab. Raceways shall be extruded in the forward door frame, floor, walls and overhead in the area where the walls meet the ceiling. The raceways located in the floor shall be covered by aluminum extrusion, while the vertical and overhead raceways shall be covered by painted aluminum covers. The raceways shall improve harness integrity by providing a continuous harness path that eliminates wire chafing and abrasion associated with exposed wiring or routing through drilled metal holes. Harnesses shall be laid in place.

4.99 CAB INTERIOR UPHOLSTERY - The cab interior upholstery shall be dark silver gray. All cab interior materials shall meet FMVSS 302 (flammability of interior materials).

4.100 CAB INTERIOR PAINT - A rich looking interior shall be provided by painting all the metal surfaces inside the cab fire smoke gray, vinyl texture paint.

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

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

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

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

The defroster shall be capable of clearing 98 percent of the windshield and side glass when tested under conditions where the cab has been cold soaked at 0 degrees Fahrenheit for 10 hours, and a 2 ounce per square inch layer of frost/ice has been able to build up on the exterior windshield. The defroster system shall meet or exceed SAE J382 requirements.

4.103 AIR CONDITIONING - Due to the large space inside the cab, a high-performance, customized air conditioning system shall be furnished. A 19.10 cubic inch compressor shall be installed on the engine. Air Conditioning shall be equipped with the following:

4.103.1 The air conditioning system shall be capable of cooling the average cab temperature from 100 degrees Fahrenheit to 64 degrees Fahrenheit in the forward section of the cab, and 69 degrees Fahrenheit in the rear section of the cab, at 50 percent relative humidity within 30 minutes. The cooling performance test shall be run only after the cab has been heat soaked at 100 degrees Fahrenheit for a minimum of 4 hours.4.103.2 A roof-mounted condenser with a 78,000 BTU output that meets and exceeds the performance specification shall be installed on the cab roof. The condenser cover and mounting legs to be painted white as provided by manufacturer.4.103.3 The evaporator unit shall be installed in the rear portion of the cab ceiling over the engine tunnel. The evaporator shall include one (1) high performance heating core, one (1) high performance cooling core with (1) plenum directed to the front and one (1) plenum directed to the rear of the cab.4.103.4 The evaporator unit shall have a 52,000 BTU at 690 SCFM rating that meets and exceeds the performance specifications.4.103.5 Adjustable air outlets shall be strategically located on the evaporator cover per the following:

1. Four (4) shall be directed towards the drivers location
2. Four (4) shall be directed towards the officers location
3. Eight (5) shall be directed towards crew cab area

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

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

4.104 INTERIOR CAB INSULATION - The cab walls, ceiling and engine tunnel shall be insulated in all strategic locations to maximize acoustic absorption and thermal insulation. The cab shall be insulated with 2.00" insulation in the rear wall, 3.00" insulation in the side walls, and 1.50" insulation in the ceiling. Headliners shall be constructed from a 0.20" high density polyethylene corrugated material. Each headliner shall be wrapped with a 0.25" thick foil faced poly damp low emissivity foam insulation barrier for acoustic and thermal control.

Designed for maximum sound absorption and thermal insulation, the rear cab wall shall be insulated with a 1.50" thick open cell acoustical foam. The thermal protection of the foam shall provide and R-value of 4 per 1.00" thickness.

4.105 SPECIAL DRAIN TUBES - Two (2) condensate drain tubes shall be provided for the air conditioning evaporator. The drip pan shall have two (2) drain tubes plumbed separately to allow for the condensate to exit the drip pan.

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

There shall be no retention bracket provided to help secure each sun visor in the stowed position.

4.107 GRAB HANDLE - A black rubber covered grab handle shall be mounted on the door post of the driver side cab and passenger door to assist in entering the cab. The grab handle shall be securely mounted to the post area between the door and windshield. A long rubber grab handle shall be mounted on the dash board in front of the officer.

4.108 ENGINE COMPARTMENT LIGHTS - There shall be one (1) Whelen, Model 3SC0CDCR, 12 volt DC, 3.00" white LED light(s) with Whelen, Model 3FLANGEC, chrome flange kit(s) installed under the cab to be used as engine compartment illumination. These light(s) shall be activated automatically when the cab is raised.

4.109 ACCESS TO ENGINE DIPSTICKS - For access to the engine oil and transmission fluid dipsticks, there shall be a door on the engine tunnel, inside the crew cab. The door shall be on the rear wall of the engine tunnel, on the vertical surface. The door shall be 17.75" wide x 12.75" high and be flush with the wall of the engine tunnel.

The engine oil dipstick shall allow for checking only. The transmission dipstick shall allow for both checking and filling. An additional port shall be provided for filling the engine oil.

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

4.110 MAP BOX - One (1) long map box with two (2) partitions shall be installed to create a three (3) bin box open from top. The overall map box size shall be 4 wide x 45 long x 8 deep and shall then be divided into three (3) equal bins by use of permanent partitions.

4.110.1 The map box shall be constructed of .125" aluminum and shall be painted to match the cab interior.

4.110.2 There shall be a quantity of one (1).

4.110.3 The map box shall Mounted on forward wall of center EMS cabinet between driver and officer above the engine tunnel. Locate the top of the map box 3" down from the top of the cabinet, centered L/R.

4.111 CAB SAFETY SYSTEM - The cab shall be provided with a safety system designed to protect occupants in the event of a side roll or frontal impact, and shall include the following:

4.111.1 A supplemental restraint system (SRS) sensor shall be installed on a structural cab member behind the instrument panel. The SRS sensor shall perform real time diagnostics of all critical subsystems and shall record sensory inputs immediately before and during a side roll or frontal impact event.

4.111.2 A slave SRS sensor shall be installed in the cab to provide capacity for eight (8) crew cab seating positions.

4.111.3 A fault-indicating light shall be provided on the vehicle's instrument panel allowing the driver to monitor the operational status of the SRS system.

4.111.4 A driver side front air bag shall be mounted in the steering wheel and shall be designed to protect the head and upper torso of the occupant, when used in combination with the 3-point seat belt.

4.111.5 A passenger side knee bolster air bag shall be mounted in the modesty panel below the dash panel and shall be designed to protect the legs of the occupant, when used in combination with the 3-point seat belt.

4.111.6 Air curtains shall be provided in the outboard bolster of outboard seat backs to provide a cushion between occupant and the cab wall.

4.111.7 Suspension seats shall be provided with devices to retract them to the lowest travel position during a side roll or frontal impact event.

4.111.8 Seat belts shall be provided with pre-tensioners to remove slack from the seat belt during a side roll or frontal impact event.

4.112 FRONTAL IMPACT PROTECTION - The SRS system shall provide protection during a frontal or oblique impact event. The system shall activate when the vehicle decelerates at a predetermined G force known to cause injury to the occupants. The cab and chassis shall have been subjected, via third party test facility, to a crash impact during frontal and oblique impact testing. Testing included all major chassis and cab components such as mounting straps for fuel and air tanks, suspension mounts, front suspension components, rear suspensions components, frame rail cross members, engine and transmission and their mounts, pump house and mounts, frame extensions and body mounts. The testing provided configuration specific information used to optimize the timing for firing the safety restraint system. The sensor shall activate the pyrotechnic devices when the correct crash algorithm, wave form, is detected.

4.112.1 The SRS system shall deploy the following components in the event of a frontal or oblique impact event:

4.112.2 Driver side front air bag

4.112.3 Passenger side knee bolster air bag

4.112.4 Air curtains mounted in the outboard bolster of outboard seat backs

4.112.5 Suspension seats shall be retracted to the lowest travel position

4.112.6 Seat belts shall be pre-tensioned to firmly hold the occupant in place

4.113 SIDE ROLL PROTECTION - The SRS system shall provide protection during a fast or slow 90 degree roll to the side, in which the vehicle comes to rest on its side. The system shall analyze the vehicle's angle and rate of roll to determine the optimal activation of the advanced occupant restraints.

4.113.1 The SRS system shall deploy the following components in the event of a side roll:

4.113.2 Air curtains mounted in the outboard bolster of outboard seat backs

4.113.3 Suspension seats shall be retracted to the lowest travel position

4.113.4 Seat belts shall be pre-tensioned to firmly hold the occupant in place

4.114 SEATING CAPACITY - The seating capacity in the cab shall be five (5).

4.115 DRIVER SEAT - A Pierce PS6® seat shall be provided in the cab for the driver. The seat design shall be a cam action type with air suspension. For increased convenience, the seat shall include electric controls to adjust the rake (15 degrees), height (1.12" travel) and horizontal (7.75" travel) position. Electric controls shall be located below the forward part of the seat cushion. To provide flexibility for multiple driver configurations, the seat shall have a reclining back, adjustable from 20 degrees back to 45 degrees forward. Providing for maximum comfort, the seat back shall be a high back style with manual lumbar adjustment lever, for lower back support, and shall include minimum 7.50" deep side bolster pads for maximum support. The lumbar adjustment lever shall be easily located at the lower outboard position of the seat cushion. For optimal comfort, the seat shall be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric vibration control).

4.115.1 The seat shall include the following features incorporated into the side roll protection system:

4.115.2 Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position.

4.115.3 A suspension seat safety system shall be included. When activated in the event of a side roll, this system shall pretension the seat belt and retract the seat to its lowest travel position.

4.115.4 The seat shall be furnished with a 3-point, shoulder type seat belt. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.

4.116 OFFICER SEAT - A Pierce PS6® seat shall be provided in the cab for the passenger. The seat shall be a cam action type with air suspension. For increased convenience, the seat shall include a manual control to adjust the horizontal position (6.00" travel). The manual horizontal control shall be a towel-bar style located below the forward part of the seat cushion. For optimal comfort, the seat shall be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seat shall be equipped with seat belt sensors in the seat cushion and belt receptacle that shall activate an alarm indicating a seat is occupied but not belted.

4.116.1 The seat back shall be an SCBA back style with 7.5 degree fixed recline angle, and shall include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

4.116.2 The seat shall include the following features incorporated into the side roll protection system:

4.116.3 Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position.

4.116.4 A suspension seat safety system shall be included. When activated, this system shall pretension the seat belt and then retract the seat to its lowest travel position.

4.116.5 The seat shall be furnished with a 3-point, shoulder type seat belt. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.

4.117 REAR FACING DRIVER SIDE EMS COMPARTMENT - A rear facing EMS compartment shall be provided in the crew cab at the driver side outboard position. The compartment shall be mounted 4.50" off the edge of the seat riser.

4.117.1 The compartment shall be 20.00" wide x 30.00" high x 25.00" deep with one (1) Amdor roll up door, non-locking, with white finish, radius track style. That is, it shall travel over the top and down the back of the compartment. Front top corners of the compartment shall be radiused. This shall allow access through the front and top section of the compartment.

4.117.2 The compartment shall be constructed of smooth aluminum and painted to match the cab interior. A shield shall be installed to keep items in this compartment from falling into the door tracking area and jamming the door.

4.117.3 Compartment Light - There shall be one (1) white LED strip light installed on the left side of the compartment opening. The lights shall be controlled by an automatic door switch.

4.118 STORAGE COMPARTMENT - A rear facing compartment shall be provided in the crew cab on the rear of the engine tunnel. The compartment shall mount flush with the rear edge of the tunnel.

4.118.1 The compartment shall be approximately 47.50" wide x 20.50" high. The compartment shall be approximately 17.00" deep at the bottom and 20.00" deep at the top. In place of a door, the compartment shall have a heavy black nylon webbing made of 1.00" nylon strap with a 2.00" box pattern. Side-release buckles shall be used to fasten all sides of the opening.

4.118.2 A permanent vertical partition shall be provided on the left side of the compartment. The partition shall be mounted to provide an 18.00" wide clear opening on the left side of the compartment. An adjustable shelf shall be provided on the right side of the partition. Each shelf shall be constructed of 0.090" aluminum with a 1.25" up-turned lip. Shelving shall be infinitely adjustable by means of a threaded tightener sliding in a track.

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

4.118.4 Compartment Light - There shall be two (2) white LED strip lights installed, one (1) each side of the compartment opening. The lights shall be controlled by a switch on the exterior of the compartment.

4.119 STORAGE COMPARTMENT - A rear facing radio storage compartment shall be provided in the crew cab at the passenger side outboard position. The compartment shall be mounted 4.50" off the edge of the seat riser.

4.119.1 The compartment shall be 20.00" wide x 30.00" high x 23.00" deep and shall be provided with an access panel that screws into place. There shall be ventilation holes provided in the access panel.

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

4.120 FORWARD FACING DRIVER SIDE OUTBOARD SEAT - There shall be one (1) forward facing Pierce PS6® foldup seat provided at the driver side outboard position in the crew cab. To provide improved ride comfort, and maximize accessibility to the crew cab, the seat shall be provided with 17.00" deep foam cushions, and the seat back shall be provided with 0 degree fixed recline angle. To ensure safe operation, the seat shall be equipped with seat belt sensors in the seat cushion and belt receptacle, that shall activate an alarm indicating a seat is occupied but not buckled.

4.120.1 The seat back shall be an SCBA back style. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

4.120.2 The seat shall include the following features incorporated into the side roll protection system:

4.120.3 Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position.

4.120.4 A seat safety system shall be included. When activated, this system shall pretension the seat belt around the occupant to firmly hold them in place in the event of a side roll.

4.120.5 The seat shall be furnished with a 3-point, shoulder type seat belt. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.

4.120.6 The seat shall be moved approximately 3.00" inboard from the standard location.

4.121 FORWARD FACING CENTER SEAT - There shall be one (1) forward facing, Pierce PS6® seat provided at the center position in the crew cab. For optimal comfort, the seat shall be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seat shall be equipped with seat belt sensors in the seat cushion and belt receptacle that shall activate an alarm indicating a seat is occupied but not buckled.

4.121.1 The seat back shall be an SCBA back style with 7.5 degree fixed recline angle, and shall include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

4.121.2 The seat shall include the following feature incorporated into the side roll protection system:

4.121.3 A seat safety system shall be included. When activated, this system shall pretension the seat belt around the occupant to firmly hold them in place in the event of a side roll.

4.121.4 The seat shall be furnished with a 3-point, shoulder type seat belt. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.

4.122 FORWARD FACING PASSENGER SIDE OUTBOARD SEAT - There shall be one (1) forward facing Pierce PS6® foldup seat provided at the passenger side outboard position in the crew cab. To provide improved ride comfort, and maximize accessibility to the crew cab, the seat shall be provided with 17.00" deep foam cushions, and the seat back shall be provided with 0 degree fixed recline angle. To ensure safe operation, the seat shall be equipped with seat belt sensors in the seat cushion and belt receptacle, that shall activate an alarm indicating a seat is occupied but not buckled.

4.122.1 The seat back shall be an SCBA back style. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

4.122.2 The seat shall include the following features incorporated into the side roll protection system:

4.122.3 Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position.

4.122.4 A seat safety system shall be included. When activated, this system shall pretension the seat belt around the occupant to firmly hold them in place in the event of a side roll.

4.122.5 The seat shall be furnished with a 3-point, shoulder type seat belt. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.

4.122.6 The seat shall be moved approximately 3.00" inboard from the standard location.

4.123 SHELVING - There shall be one (1) shelf provided. Each shelf shall be constructed of 0.090" aluminum with a 1.25" up-turned lip. Shelving shall be infinitely adjustable by means of a threaded tightener sliding in a track.

The location shall be one (1) shelf in the center rear facing EMS cabinet.

4.124 CAB COMPARTMENT LIGHTING - There shall be one (1) Pierce 20.00" LED compartment light strip(s) provided in passenger side rear facing EMS compartment. Mount the switch like 29674.

Opening the compartment door shall automatically turn compartment lighting on.

4.125 SEAT UPHOLSTERY - All seat upholstery shall be black Turnout Tuff material.

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

There shall be a quantity of four (4) SCBA brackets.

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

The 3-point shoulder type seat belts shall also include the Ready Reach D-loop assembly to the shoulder belt system. The Ready Reach feature adds an extender arm to the D-loop location placing the D-loop in a closer, easier to reach location.

4.128 SHOULDER HARNESS HEIGHT ADJUSTMENT - All seating positions furnished with 3-point shoulder type seat belts shall include a height adjustment. This adjustment shall optimize the belts effectiveness and comfort for the seated firefighter.

A total of five (5) seating positions shall have the adjustable shoulder harness.

4.129 CAB DOME LIGHTS - There shall be four (4) Whelen, Model 60C*EGCS, 6.00" round dual LED dome lights provided. Two (2) lights shall be mounted above the inside shoulder of the driver and officer and two (2) lights shall be installed and located, one (1) on each side of the crew cab.

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

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

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

4.130 ADDITIONAL DOME LIGHTS - There shall be one (1) 6.00" round Whelen, Model 60CREGCS white and red LED dome light installed in the cab located drivers side light centered in the ceiling panel in front of the 2 forward facing seats.

4.130.1 The white light shall be controlled by the door switch and a switch on the light.

4.130.2 The red light shall be controlled by the switch on the light.

4.131 OVERHEAD MAP LIGHTS - There shall be two (2) Peterson, Model M371S, rectangular LED adjustable map lights installed in the cab:

4.131.1 One (1) overhead in front of the driving position.

4.131.2 One (1) overhead in front of the passenger's position.

4.131.3 Each light shall include a switch on the light housing.

4.131.4 The light switches shall be energized when the spare wire cut off switch is on.

4.132 HAND HELD SPOTLIGHT - There shall be four (4) Streamlight, Model Survivor 90503, LED flashlights with chargers and AC/DC chords provided and installed one each side in the front of the cab to the rear of the cab door on the angled portion (nuts on the outside) and two in the rear crew cab area on the wire cover at the ceiling, match 29756 EXACTLY.

4.133 POWER TO HAND HELD SPOTLIGHT - The 12 volt DC power to recharge the hand lights shall be from the spare wire fuse panel located in the in service out of service switch, match 29756.

4.134 HAND HELD LIGHT - There shall be two (2) lights. Streamlight E-Spot, LiteBox Vehicle Mount Systems, Model 45855, LED hand held flashlights with an orange thermoplastic body provided.

4.134.1 The location shall be mounted on top of the DS EMS compartment, match 29756 as close as possible.

4.134.2 The system shall include the hand light, a charger and the vehicle mount system and strap.

4.135 CAB INSTRUMENTATION - The cab instrument panel shall consist of gauges, an LCD display, telltale indicator lights, alarms, control switches, and a diagnostic panel. The function of instrument panel controls and switches shall be identified by a label adjacent to each item. Actuation of the headlight switch shall illuminate the labels in low light conditions. Telltale indicator lamps shall not be illuminated unless necessary. The cab instruments and controls shall be conveniently located within the forward cab section directly forward of the driver. Gauge and switch panels shall be designed to be removable for ease of service and low cost of ownership.

4.136 GAUGES - The gauge panel shall include the following ten (10) ivory gauges with chrome bezels to monitor vehicle performance:

A. Voltmeter gauge (Volts)
    1. Low volts (11.8 VDC) - Amber indicator on gauge assembly with alarm
    2. High volts (15 VDC) - Amber indicator on gauge assembly with alarm
    3. Very low volts (11.3 VDC) - Amber indicator on gauge assembly with alarm
    4. Very high volts (16 VDC) - Amber indicator on gauge assembly with alarm
B. Tachometer (RPM)
C. Speedometer (Primary (outside) MPH, Secondary (inside) Km/H)
D. Fuel level gauge (Empty - Full in fractions)
    1. Low fuel (1/8 full) - Amber indicator on gauge assembly with alarm
    2. Very low fuel (1/32) fuel - Amber indicator on gauge assembly with alarm
    3. Engine oil pressure gauge (PSI) - Low oil pressure to activate engine warning lights and alarms - Red indicator on gauge assembly with alarm
E. Front air pressure gauge (PSI) - Low air pressure to activate warning lights and alarm = Red indicator on gauge assembly with alarm
F. Rear air pressure gauge (PSI) - Low air pressure to activate warning lights and alarm - Red indicator on gauge assembly with alarm
G. Transmission oil temperature gauge (Fahrenheit) - High transmission oil temperature activates warning lights and alarm; Amber indicator on gauge assembly with alarm
H. Engine coolant temperature gauge (Fahrenheit) - High engine temperature activates an engine warning light and alarm; Red indicator on gauge assembly with alarm
I. Diesel Exhaust Fluid Level Gauge (Empty - Full in fractions)
    a. Low fluid (1/8 full) - Amber indicator on gauge assembly with alarm
J. All gauges and gauge indicators shall perform prove out at initial power-up to ensure proper performance.

4.137 INDICATOR LAMPS - To promote safety, the following telltale indicator lamps shall be integral to the gauge assembly and are located above and below the center gauges. The indicator lamps shall be "dead-front" design that is only visible when active. The colored indicator lights shall have descriptive text or symbols. The following amber telltale lamps shall be present:

A. Low coolant
B. Trac cntl (traction control) (where applicable)
C. Check engine
D. Check trans (check transmission)
E. Aux brake overheat (Auxiliary brake overheat)
F. Air rest (air restriction)
G. Caution (triangle symbol)
H. Water in fuel

I. DPF (engine diesel particulate filter regeneration)
J. Trailer ABS (where applicable)
K. Wait to start (where applicable)
L. HET (engine high exhaust temperature) (where applicable)
M. ABS (antilock brake system)
N. MIL (engine emissions system malfunction indicator lamp) (where applicable)
O. SRS (supplemental restraint system) fault (where applicable)
P. DEF (low diesel exhaust fluid level)
Q. The following red telltale lamps shall be present:
R. Warning (stop sign symbol)
S. Seat belt
T. Parking brake
U. Stop engine
V. Rack down

4.137.1 The following green telltale lamps shall be provided:
4.137.2 Left turn
4.137.3 Right turn
4.137.4 Battery on
4.137.5 The following blue telltale lamp shall be provided:

4.137.6 High beam

4.138 ALARMS - Audible steady tone warning alarm: A steady audible tone alarm shall be provided whenever a warning message is present.Audible pulsing tone caution alarm: A pulsing audible tone alarm (chime/chirp) shall be provided whenever a caution message is present without a warning message being present.Alarm silence: Any active audible alarm shall be able to be silenced by holding the ignition switch at the top position for three (3) to five (5) seconds. For improved safety, silenced audible alarms shall intermittently chirp every 30 seconds until the alarm condition no longer exists. The intermittent chirp shall act as a reminder to the operator that a caution or warning condition still exists. Any new warning or caution condition shall enable the steady or pulsing tones respectively.

4.139 INDICATOR LAMP AND ALARM PROVE-OUT - Telltale indicators and alarms shall perform prove-out at initial power-up to ensure proper performance.

4.140 CONTROL SWITCHES - For ease of use, the following controls shall be provided immediately adjacent to the cab instrument panel within easy reach of the driver.

4.140.1 Emergency master switch: A molded plastic push button switch with integral indicator lamp shall be provided. Pressing the switch shall activate emergency response lights and siren control. A green lamp on the switch provides indication that the emergency master mode is active. Pressing the switch again disables the emergency master mode.
4.140.2 Headlight / Parking light switch: A three (3)-position maintained rocker switch shall be provided. The first switch position shall deactivate all parking lights and the headlights. The second switch position shall activate the parking lights. The third switch position shall activate the headlights.
4.140.3 Panel backlighting intensity control switch: A three (3)-position momentary rocker switch shall be provided. The first switch position decreases the panel backlighting intensity to a minimum level as the switch is held. The second switch position is the default position that does not affect the backlighting intensity. The third switch position increases the panel backlighting intensity to a maximum level as the switch is held.
4.140.4 The following standard controls shall be integral to the gauge assembly and are located below the right hand gauges. All switches have backlit labels for low light applications.
4.140.5 High idle engagement switch: A two (2)-position momentary rocker switch with integral indicator lamp shall be provided. The first switch position is the default switch position. The second switch position shall activate and deactivate the high idle function when pressed and released. The "Ok To Engage High Idle" indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch shall indicate when the high idle function is engaged.

4.140.6 "Ok To Engage High Idle" indicator lamp: A green indicator light shall be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement.

4.140.7 The following standard controls shall be provided adjacent to the cab gauge assembly within easy reach of the driver. All switches shall have backlit labels for low light applications.

4.140.8 Ignition switch: A three (3)-position maintained/momentary rocker switch shall be provided. The first switch position shall deactivate vehicle ignition. The second switch position shall activate vehicle ignition. The third momentary position shall disable the Command Zone audible alarm if held for three (3) to five (5) seconds. A green indicator lamp shall be activated with vehicle ignition.

4.140.9 Engine start switch: A two (2)-position momentary rocker switch shall be provided. The first switch position is the default switch position. The second switch position shall activate the vehicle's engine. The switch actuator is designed to prevent accidental activation.

4.140.10 4-way hazard switch: A two (2)-position maintained rocker switch shall be provided. The first switch position shall deactivate the 4-way hazard switch function. The second switch position shall activate the 4-way hazard function. The switch actuator shall be red and includes the international 4-way hazard symbol.

4.140.11 Heater, defroster, and optional air conditioning control panel: A control panel with membrane switches shall be provided to control heater/defroster temperature and heater, defroster, and air conditioning fan speeds. A green LED status bar shall indicate the relative temperature and fan speed settings.4.140.12 Turn signal arm: A self-canceling turn signal with high beam headlight and windshield wiper/washer controls shall be provided. The windshield wiper control shall have high, low, and intermittent modes.4.140.13 Parking brake control: An air actuated push/pull park brake control valve shall be provided.4.140.14 Chassis horn control: Activation of the chassis horn control shall be provided through the center of the steering wheel.

4.141 CUSTOM SWITCH PANELS - The design of cab instrumentation shall allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There shall be positions for up to four (4) switch panels in the overhead console on the driver's side, up to four (4) switch panels in the engine tunnel console facing the driver, up to four (4) switch panels in the overhead console on the officer's side and up to two (2) switch panels in the engine tunnel console facing the officer. All switches shall have backlit labels for low light applications.

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

4.142.1The diagnostic panel shall include the following:4.142.2 Engine diagnostic port4.142.3 Transmission diagnostic port

4.142.4 ABS diagnostic port
4.142.5 SRS diagnostic port (where applicable)
4.142.6 Command Zone USB diagnostic port
4.142.7 ABS diagnostic switch (blink codes flashed on ABS telltale indicator)
4.142.8 Diesel particulate filter regeneration switch (where applicable)
4.142.9 Diesel particulate filter regeneration inhibit switch (where applicable)

4.143 CAB LCD DISPLAY -A digital four (4)-row by 20-character dot matrix display shall be integral to the gauge panel. The display shall be capable of showing simple graphical images as well as text. The display shall be split into three (3) sections. Each section shall have a dedicated function. The upper left section shall display the outside ambient temperature.

4.143.1 The upper right section shall display, along with other configuration specific information:
4.143.2 Odometer
4.143.3 Trip mileage
4.143.4 PTO hours
4.143.5 Fuel consumption
4.143.6 Engine hours

4.143.7 The bottom section shall display INFO, CAUTION, and WARNING messages. Text messages shall automatically activate to describe the cause of an audible caution or warning alarm. The LCD shall be capable of displaying multiple text messages should more than one caution or warning condition exist.

4.144 AIR RESTRICTION INDICATOR - A high air restriction warning indicator light LCD message with amber warning indicator and audible alarm shall be provided.

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

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

4.146 DO NOT MOVE TRUCK MESSAGES - Messages shall be displayed on the Command Zone™, color display located within sight of the driver whenever the Do Not Move Truck light is active. The messages shall designate the item or items not in the stowed for vehicle travel position (parking brake disengaged).

- The following messages shall be displayed (where applicable):
- Do Not Move Truck
- DS Cab Door Open (Driver Side Cab Door Open)
- PS Cab Door Open (Passenger's Side Cab Door Open)
- DS Crew Cab Door Open (Driver Side Crew Cab Door Open)
- PS Crew Cab Door Open (Passenger's Side Crew Cab Door Open)
- DS Body Door Open (Driver Side Body Door Open)
- PS Body Door Open (Passenger's Side Body Door Open)
- Rear Body Door Open
- DS Ladder Rack Down (Driver Side Ladder Rack Down)
- PS Ladder Rack Down (Passenger Side Ladder Rack Down)
- Deck Gun Not Stowed
- Lt Tower Not Stowed (Light Tower Not Stowed)
- Hatch Door Open
- Fold Tank Not Stowed (Fold-A-Tank Not Stowed)
- Aerial Not Stowed (Aerial Device Not Stowed)
- Stabilizer Not Stowed
- Steps Not Stowed
- Handrail Not Stowed

- Any other device that is opened, extended, or deployed that creates a hazard or is likely to cause major damage to the apparatus if the apparatus is moved shall be displayed as a caution message after the parking brake is disengaged.

4.147 SWITCH PANELS - The emergency light switch panel shall have a master switch for ease of use plus individual switches for selective control. Each switch panel shall contain eight (8) membrane-type switches each rated for one million (1,000,000) cycles. Panels containing less than eight (8) switch assignments shall include non-functioning black appliqués. Documentation shall be provided by the manufacturer indicating the rated cycle life of the switches. The switch panel(s) shall be located in the overhead position above the windshield on the driver side overhead to allow for easy access.

Additional switch panel(s) shall be located in the overhead position(s) above the windshield or in designated locations on the lower instrument panel layout.

The switches shall be membrane-type and also act as an integral indicator light. For quick, visual indication the entire surface of the switch shall be illuminated white whenever back lighting is activated and illuminated green whenever the switch is active. An active illuminated switch shall flash when interlock requirements are not met or device is actively being load managed. For ease of use, a two (2)-ply, scratch resistant laser engraved Gravoply label indicating the use of each switch shall be placed in the center of the switch. The label shall allow light to pass through the letters for ease of use in low light conditions.

4.148 WIPER CONTROL - For simple operation and easy reach, the windshield wiper control shall be an integral part of the directional light lever located on the steering column. The wiper control shall include high and low wiper speed settings, a one (1)-speed intermittent wiper control and windshield washer switch. The control shall have a "return to park" provision, which allows the wipers to return to the stored position when the wipers are not in use.

4.149 HOURMETER (AERIAL DEVICE) - An hourmeter for the aerial device shall be provided and located within the cab display or instrument panel.

4.150 AERIAL MASTER - There shall be a master switch for the aerial operating electrical system provided.

4.151 AERIAL PTO SWITCH - A PTO switch for the aerial with indicator light shall be provided.

4.152 SPARE CIRCUIT - There shall be one (1) pair of wires, including a positive and a negative, installed on the apparatus. The above wires shall have the following features:

- The positive wire shall be connected directly to the battery power.
- The negative wire shall be connected to ground.
- Wires shall be protected to 15 amps at 12 volts DC.
- Power and ground shall terminate in the overhead switch panel centered above officer, wiring to be connected to the in service / out of service switch.
- Termination shall be with heat shrinkable butt splicing.
- Wires shall be sized to 125 percent of the protection.
- This circuit(s) may be load managed when the parking brake is set.

4.152.1 SPARE CIRCUIT - There shall be three (3) pair of wires, including a positive and a negative, installed on the apparatus. The above wires shall have the following features:

- The positive wire shall be connected to the auxiliary switch located on the instrument panel to the right of the steering wheel, option 614250.
- The negative wire shall be connected to ground.
- Wires shall be protected to 60 amps at 12 volts DC.
- Power and ground shall terminate in the passenger side radio compartment in the crew cab, all flashlights, power points, radios and charger, rocket modem to be connected to these terminal strips.
- Termination shall be to a Blue Sea System, model 5026, 12 circuit with negative bus bar, straight blade fuse block. The terminal block shall include a cover with circuit labels.

- Wires to the fuse block shall be sized to 125% of the protection.
- This circuit(s) may be load managed when the parking brake is applied.

4.152.2 SPARE CIRCUIT - There shall be a Cole Hersee part number 75908 disconnect switch installed in the spare wire circuit(s) to connect or disconnect the power to the spare wire(s) located the in service / out of service circuits. The label and switch shall be installed in the panel below the dash where the back-up camera speaker would fit.

4.152.3 SPARE CIRCUIT - There shall be two (2) pair of wires, including a positive and a negative, installed on the apparatus. The above wires shall have the following features:

- The positive wire shall be connected directly to the battery power.
- The negative wire shall be connected to ground.
- Wires shall be protected to 15 amps at 12 volts DC.
- Power and ground shall terminate One in DS rear facing EMS compt. mounted at the top, and one in the center rear facing EMS box to be mounted PS rear shelf track. All must be wired to the in/out service breaker panels in the PS rear facing radio compartment-.
- Termination shall be with 15 amp, power point plug with rubber cover.
- Wires shall be sized to 125% of the protection.
- This circuit(s) may be load managed when the parking brake is set.

4.152.4 SPARE CIRCUIT -There shall be one (1) pair of wires, including a positive and a negative, installed on the apparatus. The above wires shall have the following features:

- The positive wire shall be connected directly to the battery power
- The negative wire shall be connected to ground
- Wires shall be protected to 15 amps at 12 volts DC
- Power and ground shall terminate officer side dash area and Switch Panel # 9
- Termination shall be with 15 amp, power point plug with rubber cover
- Wires shall be sized to 125 percent of the protection
- The circuit(s) may be load managed when the parking brake is set.

4.152.5 SPARE CIRCUIT - There shall be one (1) pair of wires, including a positive and a negative, installed on the apparatus.

- The above wires shall have the following features:
- The positive wire shall be connected directly to the battery power.
- The negative wire shall be connected to ground.
- Wires shall be protected to 40 amps at 12 volts DC.
- Power and ground shall terminate PS EMS rear facing cabinet.
- Termination shall be with 3/8" studs and plastic covers.
- Wires shall be sized to 125% of the protection.
- This circuit(s) may be load managed when the parking brake is set.

4.152.6 SPARE CIRCUIT There shall be two (2) pair of wires, including a positive and a negative, installed on the apparatus. The above wires shall have the following features:

- The positive wire shall be connected directly to the battery power.
- The negative wire shall be connected to ground.
- Wires shall be protected to 15 amps at 12 volts DC.
- Power and ground shall terminate one each side under the open top, 3 slot map box, mounted to the center EMS compartment. Make sure these are connected to the Blue Sea junction boxes thru the in service / out of service switch.
- Termination shall be with 15 amp, power point plug with rubber cover.
- Wires shall be sized to 125% of the protection.
- This circuit(s) may be load managed when the parking brake is set.

4.153 EMERGENCY LIGHT SWITCHES - The emergency light switching shall work as follows: The emergency master switch must be activated for all emergency lighting to function.

4.153.1 The emergency master "saved states" feature shall not be activated. This means that if the emergency master switch is on and individual switch is turned off. Then the emergency master is turned off, upon turning the emergency master switch back on the individual switch which was previously turn off shall turn back on.

4.153.2 All emergency lighting shall be turned on whenever the emergency master switch is turned on.

4.153.3 Individual emergency light switches may be deactivated and/or reactivated after the emergency master switch is turned on.

4.153.4 Switches shall be per the following: Emergency Master, Lightbar, Front Warning, Side Warning, Rear Warning, High Beam Flash shall be combined with Front Warning, Upper & Lower Rear Warning shall be combined under Rear Warning.

4.154 STEREO RADIO - A Jensen, heavy duty AM/FM/CD/Weatherband stereo radio, with front auxiliary input shall be installed per switch panel layout. There shall be 5.25" speakers installed one (1) pair of 5.25" speakers in the cab and one (1) pair of 5.25" speakers in the crew cab. The antenna shall be a roof-mounted rubber antenna located in an open space, on the cab roof. The following features shall be included:
4.154.1 CD Player with Electronic Skip Protection (ESP)
4.154.2 Full 7-Channel NOAA Weatherband Tuner with SAME technology
4.154.3 Built-in Clock
4.154.4 Audio CD, CD-R, R/W, MP3 CD compatible
4.154.5 Radio Broadcast Data System Text Display
4.154.6 Front panel USB input
4.154.7 Front and Rear Auxiliary Audio Input
4.154.8 Receives audio (A2DP/AVRCP) from Bluetooth enabled device
4.154.9 Supports Bluetooth HFP to receive phone calls from BT-enabled phones
4.154.10 Low battery alert (Alt;10.8Vdc)
4.154.7 Heavy Duty design with Conformal Coated Circuit Boards for maximum durability under all conditions
4.154.8 SWITCH, MASTER, AM/FM RADIO
4.154.9 A remote switch shall be provided inside the cab to control turning off the AM/FM radio. The switch shall be installed drivers side switch panel. The radio shall automatically turn on with truck.

4.155 PUSH BUTTON MOUNTING BRACKET - A mounting bracket shall be provided chrome buttons shall be in the wedge bracket near the officer. DO NOT MOUNT UNTIL PICKUP. Match to job 29756 and see pictures. They shall locate near with wiring coming from below the engine tunnel mount plate for the mounting of push button controls. The mounting bracket shall be large enough for three (3) push buttons. The controls and labels shall be mounted horizontally, next to each other. The bracket shall be fabricated from smooth aluminum and painted to match work surface.

4.156 INFORMATION CENTER - An information center employing a 7.00" diagonal touch screen color LCD display shall be encased in an ABS plastic housing. The information center shall have the following specifications:

- Operate in temperatures from -40 to 185 degrees Fahrenheit
- An Optical Gel shall be placed between the LCD and protective lens
- Five weather resistant user interface switches
- Grey with black accents
- Sunlight Readable
- Linux operating system
- Minimum of 1000nits rated display
- Display can be changed to an available foreign language
- A LCD display integral to the cab gauge panel shall be included as outlined in the cab instrumentation area.
- Programmed to read US Customary

4.157 GENERAL SCREEN DESIGN - Where possible, background colors shall be used to provide "At a Glance" vehicle information. If information provided on a screen is within acceptable limits, a green background shall be used.

4.157.1 If a caution or warning situation arises the following shall occur:

4.157.2 An amber background/text color shall indicate a caution condition

4.157.3 A red background/text color shall indicate a warning condition

4.157.4 The information center shall utilize an "Alert Center" to display text messages for audible alarm tones. The text messages shall be written to identify the item(s) causing the audible alarm to sound. If more than one (1) text message occurs, the messages shall cycle every second until the problem(s) have been resolved. The background color for the "Alert Center" shall change to indicate the severity of the "warning" message. If a warning and a caution condition occur simultaneously, the red background color shall be shown for all alert center messages.

4.157.5 A label for each button shall exist. The label shall indicate the function for each active button for each screen. Buttons that are not utilized on specific screens shall have a button label with no text or symbol.

4.158 HOME/TRANSIT SCREEN- This screen shall display the following:

- Vehicle Mitigation (if equipped)
- Water Level (if equipped)
- Foam Level (if equipped)
- Seat Belt Monitoring Screen
- Tire Pressure Monitoring (if equipped)
- Digital Speedometer
- Active Alarms

4.159 ON SCENE SCREEN - This screen shall display the following and shall be auto activated with pump engaged (if equipped):

- Battery Voltage
- Fuel
- Oil Pressure
- Coolant Temperature
- RPM
- Water Level (if equipped)
- Foam Level (if equipped)
- Foam Concentration (if equipped)
- Water Flow Rate (if equipped)
- Water Used (if equipped)
- Active Alarms

4.160 VIRTUAL BUTTONS - There shall be four (4) virtual switch panel screens that match the overhead and lower lighting and HVAC switch panels.

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

- Diagnostics
- Faults
- Listed by order of occurrence
- Allows to sort by system
- Interlock
- Throttle Interlocks
- Pump Interlocks (if equipped)
- Aerial Interlocks (if equipped)

- PTO Interlocks (if equipped)

4.162 Load Manager - A list of items to be load managed shall be provided. The list shall provide a description of the load. The lower the priority numbers the earlier the device shall be shed should a low voltage condition occur. The screen shall indicate if a load has been shed (disabled) or not shed. "At a glance" color features are utilized on this screen:

- Systems
- Command Zone
- Module type and ID number
- Module Version
- Input or output number
- Circuit number connected to that input or output
- Status of the input or output
- Power and Constant Current module diagnostic information
- Foam (if equipped)
- Pressure Controller (if equipped)
- Generator Frequency (if equipped)
- Live Data
- General Truck Data
- Maintenance
- Engine oil and filter
- Transmission oil and filter
- Pump oil (if equipped)
- Foam (if equipped)
- Aerial (if equipped)

4.162.1 Setup availability for the following:

- Clock Setup
- Date & Time
- 12 or 24 hour format
- Set time and date
- Backlight
- Daytime
- Night time
- Sensitivity
- Unit Selection
- Home Screen
- Virtual Button Setup
- On Scene Screen Setup
- Configure Video Mode
- Set Video Contrast
- Set Video Color
- Set Video Tint

4.162.2 Do Not Move - The screen shall indicate the approximate location and type of item that is open or is not stowed for travel. The actual status of the following devices shall be indicate:

- Driver Side Cab Door
- Passenger's Side Cab Door

- Driver Side Crew Cab Door
- Passenger's Side Crew Cab Door
- Driver Side Body Doors
- Passenger's Side Body Doors
- Rear Body Door(s)
- Ladder Rack (if applicable)
- Deck Gun (if applicable)
- Light Tower (if applicable)
- Hatch Door (if applicable)
- Stabilizers (if applicable)
- Steps (if applicable)
- Notifications

4.162.3 View Active Alarms - Shows a list of all active alarms including date and time of the occurrence is shown with each alarm

- Silence Alarms - All alarms are silenced
- Timer Screen
- HVAC (if equipped)
- Tire Information (if equipped)
- Ascendant Set Up Confirmation (if equipped)
- Button functions and button labels may change with each screen.

4.163 VEHICLE DATA RECORDER - There shall be a vehicle data recorder (VDR) capable of reading and storing vehicle information provided. The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A USB cable can be used to connect the VDR to a laptop to retrieve required information. The program to download the information from the VDR shall be available to download on-line.

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

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

4.164 SEAT BELT MONITORING SYSTEM - A seat belt monitoring system (SBMS) shall be provided on the Command Zone™ color display and in the center overhead of the cab instrument panel. The SBMS shall be capable of monitoring up to 10 seating positions indicating the status of each seat position per the following:

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

- The seat belt monitoring screen shall become active on the Command Zone color display when:

4.164.1 The home screen is active:
4.164.2 and there is any occupant seated but not buckled or any belt buckled with an occupant.
4.164.3 and there are no other Do Not Move Apparatus conditions present.

As soon as all Do Not Move Apparatus conditions are cleared, the SBMS shall be activated.

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

4.165 INTERCOM SYSTEM - There shall be digital, dual radio interface, intercom located in the cab. The front panel shall have master volume, and squelch controls with illuminated indicators, allowing for independent level setting of radio and auxiliary audio devices.

1. There shall be two (2) radio listen only / transmit controls, allowing for simulcast interoperability with select, monitor, receive, and transmit indicators. There shall be two (2) auxiliary audio inputs with select and receive indicators.

2. There shall be one (1) wireless base station for up to five (1-5) headset users provided.

3. The wireless base station shall have a 100' to 1100' range, line of sight. Objects between the transmitter and receiver affect range.

4. The following Firecom components shall be provided:

5. One (1) 5200D Intercom

6. One (1) WB505R wireless base station (1-5 wireless positions)

7. All necessary power and station cabling

4.166 WIRELESS UNDER HELMET, RADIO TRANSMIT ONLY HEADSET - There shall be four (4) Firecom™, Model UHW-505, wireless under the helmet, radio transmit headset(s) provided. A heavy duty, coiled 12 volt charging pigtail with plug shall be provided driver's seat, officer seat, driver's side outboard forward facing seat and passenger's side outboard forward facing seat. Each headset shall feature:

- Noise cancelling electric microphone
- Flexible microphone boom
- Ear seals with 20 dB noise reduction
- Stereo Listen-Through Ear dome microphones
- Radio Push to Transmit button (Left or Right Side)
- Rechargeable battery operates for 24 hours on a full charge
- IP-66 when worn

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

4.168 AUXILIARY AUDIO CABLE - An auxiliary 3.5 mm stereo male to 2 RCA male audio cable shall be provided from the intercom aux inlet to the AM/FM radio. Auxiliary audio shall be mixed with the two-way radio and intercom traffic at exactly one half the strength of the signal in the headsets.

4.169 REMOTE ON/OFF SWITCH FOR AM/FM RADIO - a remote on/off switch shall be supplied in a location to be determined. The switch power shall be directly tied to the ignition switch power.

4.170 COMPLETE MDT INSTALLATION - There shall be one (1) Mobile Data Terminal (MDT), Docking station, mounting bracket, power supply, antenna, GPS, modem, and all cabling installed on the officer's side of the engine tunnel plate. Please run wiring under the plate so the mount can be near the officer's side forward. Specific shipping requirements shall be followed.

4.171 PORTABLE RADIO CHARGER INSTALLATION - There shall be four (4) customer supplied portable two-way radio chargers(s) sent to the apparatus manufacturers preferred radio installer to be installed two near the driver as located on attached drawing, one on the center crew box and one on the PS crew box as indicated in the supplied photo. Specific shipping requirements shall be followed.

4.172 GPS ANTENNA INSTALLATION - There shall be one (1) GPS antenna(s) installed on the roof. The antenna coax cable(s) shall be run from the antenna to PASSENGER SIDE JUST BEHIND THE LIGHT BAR. Cable routed to cab electronics cabinet behind the officer position. This needs to have at least 2' of cable to extended outside the box. and a connector provided, if necessary. Specific shipping requirements shall be followed.

4.173 RADIO ANTENNA MOUNT – There shall be two (2) standard 1.125", 18 thread antenna-mounting base(s) installed One to the rear of driver side A/C routed to the radio box behind the officer. Make sure at least 2' of cable is able to get outside the box on the cab roof with high efficiency, low loss, coaxial cable(s) routed to the radio box. A weatherproof cap shall be installed on the mount. At least one shall have a STiCO model MABVT8 antenna attached and the other shall have a cap placed to make the connection weather tight.

4.174 RADIO INSTALLED - There shall be one Unity XM-100M Mobile radio (or comparable as approved by Fire Department Apparatus Committee) with handheld controller installed in radio compartment. The control head shall be installed in the overhead compartment above officer's seat. This radio shall be capable of broadcasting on VHF/700MHZ and 800MHZ.

4.175 VEHICLE CAMERA SYSTEM - There shall be a color vehicle camera system provided with the following:

- One (1) camera located at the rear of the apparatus, pointing rearward, displayed automatically with the vehicle in reverse
- The camera images shall be displayed on the driver's Command Zone™, color display. Audio from the microphone on the active camera shall be not provided.

4.175.1 The following components shall be included:

- One (1) SV-CW134639CAI, camera
- One (1) amplified speaker (if applicable)
- All necessary cables

4.176 VEHICLE CAMERA GUARD - There shall be one (1) aluminum treadplate guard(s) fastened over the vehicle camera(s) located Centered on the rear.

4.177 ELECTRICAL POWER CONTROL SYSTEM - The primary power distribution shall be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers shall be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers shall be located strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers shall be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays shall be easily accessible.

Distribution centers located throughout the vehicle shall contain battery powered studs for supplying customer installed equipment thus providing a lower cost of ownership.

Circuit protection devices, which conform to SAE standards, shall be utilized to protect electrical circuits. All circuit protection devices shall be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers shall be Type-I automatic reset (continuously resetting). When required, automotive type fuses shall be utilized to protect electronic equipment. Control relays and solenoid shall have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.

4.178 SOLID-STATE CONTROL SYSTEM - A solid-state electronic based control system shall be utilized to achieve advanced operation and control of the vehicle components. A fully computerized vehicle network shall consist of electronic modules located near their point of use to reduce harness lengths and improve reliability. The control system shall comply with SAE J1939-11 recommended practices.

The control system shall operate as a master-slave system whereas the main control module instructs all other system components. The system shall contain patented Mission Critical software that maintains critical vehicle operations in the unlikely event of a main controller error. The system shall utilize a Real Time Operating System (RTOS) fully compliant with OSEK/VDX™ specifications providing a lower cost of ownership.

For increased reliability and simplified use the control system modules shall include the following attributes:

- Green LED indicator light for module power
- Red LED indicator light for network communication stability status
- Control system self test at activation and continually throughout vehicle operation
- No moving parts due to transistor logic
- Software logic control for NFPA mandated safety interlocks and indicators
- Integrated electrical system load management without additional components
- Integrated electrical load sequencing system without additional components
- Customized control software to the vehicle's configuration
- Factory and field re programmable to accommodate changes to the vehicle's operating parameters
- Complete operating and troubleshooting manuals
- USB connection to the main control module for advanced troubleshooting
- To assure long life and operation in a broad range of environmental conditions, the solid-state control system modules shall meet the following specifications:
    - Module circuit board shall meet SAE J771 specifications
    - Operating temperature from -40C to +70C
    - Storage temperature from -40C to +70C
    - Vibration to 50g
    - IP67 rated enclosure (Totally protected against dust and also protected against the effect of temporary immersion between 15 centimeters and one (1) meter)
    - Operating voltage from eight (8) volts to 16 volts DC

The main controller shall activate status indicators and audible alarms designed to provide warning of problems before they become critical.

4.179 CIRCUIT PROTECTION AND CONTROL DIAGRAM - Copies of all job-specific, computer network input and output (I/O) connections shall be provided with each chassis. The sheets shall indicate the function of each module connection point, circuit protection information (where applicable), wire numbers, wire colors and load management information.

4.180 ON-BOARD ELECTRICAL SYSTEM DIAGNOSTICS - Advanced on-board diagnostic messages shall be provided to support rapid troubleshooting of the electrical power and control system. The diagnostic messages shall be displayed on the information center located at the driver's position. The on-board information center shall include the following diagnostic information:

- Text description of active warning or caution alarms

- Simplified warning indicators
- Amber caution indication with intermittent alarm
- Red warning indication with steady tone alarm

4.181 TECH MODULE WITH WIFI - An in cab module shall provide WiFi wireless interface and data logging capability. (No Exception). The WiFi interface shall comply with IEEE 802.11 b/g/n capabilities while communicating at 2.4 Gigahertz. The module shall provide an external antenna connection allowing a line of site communication range of up to 300 feet with a roof mounted antenna.

4.181.1 The module shall transmit a password protected web page to a WiFi enabled device (i.e. most smart phones, tablets or laptops) allowing two levels of user interaction. The firefighter level shall allow vehicle monitoring of the vehicle and firefighting systems on the apparatus. The technician level shall allow diagnostic access to inputs and outputs installed on the Command Zone™, control and information system.

4.181.2 The data logging capability shall record faults from the engine, transmission, ABS and Command Zone, control and information systems as they occur. No other data shall be recorded at the time the fault occurs. The data logger shall provide up to 2 Gigabytes of data storage.

4.181.3 A USB connection shall be provided on the Tech Module. It shall provide a means to download data logger information and update software in the device.

4.182 PROGNOSTICS - A software based vehicle tool shall be provided to predict remaining life of the vehicles critical fluid and events (no exceptions). The system shall send automatic indications to the Command Zone, color display and/or wireless enabled device to proactively alert of upcoming service intervals. Prognostics shall include:

- Engine oil and filter
- Transmission oil and filter
- Pump oil (if equipped)
- Foam oil (if equipped)
- Aerial oil and filter (if equipped)

4.183 ADVANCED DIAGNOSTICS - An advanced, Windows-based, diagnostic software program shall be provided for this control system. The software shall provide troubleshooting tools to service technicians equipped with a Windows-based computer or wireless enabled device. The service and maintenance software shall be easy to understand and use and have the ability to view system input/output (I/O) information.

4.184 INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM - A system shall be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

4.185 VOLTAGE MONITOR SYSTEM - A voltage monitoring system shall be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system shall provide visual and audible warning when the system voltage is below or above optimum levels. The alarm shall activate if the system falls below 11.8 volts DC for more than two (2) minutes.

4.186 DEDICATED RADIO EQUIPMENT CONNECTION POINTS - There shall be three (3) studs provided in the primary power distribution center located in front of the officer for two-way radio equipment. The studs shall consist of the following:

- 12-volt 40-amp battery switched power
- 12-volt 60-amp ignition switched power
- 12-volt 60-amp direct battery power
- There shall also be a 12-volt 100-amp ground stud located in or adjacent to the power distribution center.

4.187 ENHANCED SOFTWARE - The solid-state control system shall include the following software enhancements:

4.187.1 All perimeter lights and scene lights (where applicable) shall be deactivated when the parking brake is released.

4.187.2 Cab and crew cab dome lights shall remain on for ten (10) seconds for improved visibility after the doors close. The dome lights shall dim after ten (10) seconds or immediately if the vehicle is put into gear.

4.187.3 Cab and crew cab perimeter lights shall remain on for ten (10) seconds for improved visibility after the doors close. The dome lights shall dim after ten (10) seconds or immediately if the vehicle is put into gear.

4.188 EMI/RFI PROTECTION - To prevent erroneous signals from crosstalk contamination and interference, the electrical system shall meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system shall be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

4.188.1 The apparatus shall have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system shall meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10Khz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, shall provide EMC testing reports from testing conducted on an entire apparatus and shall certify that the vehicle meets SAE J551/2 and SAE J1113/25 Region 1, Class C EMR for 10Khz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.

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

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

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

4.189.2 All holes made in the roof shall be caulked with silicon, rope caulk is not acceptable. Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.

4.189.3 Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in it. Exposed area shall be defined as any location outside of the cab or body.

4.189.4 Electrical components designed to be removed for maintenance shall not be fastened with nuts and bolts. Metal screws shall be used in mounting these devices. Also, a coil of wire shall be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.

4.189.5 Corrosion preventative compound shall be applied to all terminal plugs located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation (of the plug).

4.189.6 All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.

4.189.7 All electrical terminals in exposed areas shall have silicon (1890) applied completely over the metal portion of the terminal.

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

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

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

4.190 BATTERY SYSTEM - Six (6) 12 volt, Exide, Model 31A950X1W, group 31 batteries that include the following features shall be provided:

- 950 CCA, cold cranking amps
- 190 amp reserve capacity
- High cycle
- Rating of 5700 CCA at 0 degrees Fahrenheit
- 1140 minutes of reserve capacity
- SAE Posts

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

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

4.191 BATTERY SYSTEM - A single starting system shall be provided.

4.191.1 An ignition switch and starter button shall be located on the instrument panel.

4.192 MASTER BATTERY SWITCH - There shall be a Cole Hersee, Model 75908, master battery switch to activate the battery system, provided inside the cab within easy reach of the driver.

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

4.193 BATTERY COMPARTMENTS - The batteries shall be stored in well-ventilated compartments that are located under the cab and bolted directly to the chassis frame. The battery compartments shall be constructed of 3/16" steel plate and be designed to accommodate a maximum of three (3) group 31 batteries in each compartment. The compartments shall include formed fit heavy-duty roto-molded polyethylene battery tray inserts with drains on each side of the frame rails. The batteries shall be mounted inside of the roto-molded trays.

4.194 JUMPER STUDS - One (1) set of battery jumper studs with plastic color-coded covers shall be installed on the battery box on the driver's side. This shall allow enough room for easy jumper cable access.

4.195 BATTERY CHARGER - There shall be a kussmaul™ 1200, model 091-187-12-remote, 40 amp battery charger provided with model 091-199-001 remote bar graph display.

There shall be a kussmaul model 091-198-12-pp remote display installed on the apparatus red the display shall be connected to the 12 volt dc electrical system and the air pressure shall be connected to the apparatus air brake system.

The battery charger shall be wired to the ac shoreline inlet.

Battery charger shall be rear facing seat risers, compressor on the ds and the charger on the ps. Make sure the pump is down low with the pump discharge mounted down as indicated on the installation instructions. The charger needs to have the 120 volt receptacle, not hard wired.

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

4.196 AUTO EJECT FOR SHORELINE - There shall be one (1) blue sea sure eject™ part number 7851, 20 amp 120 volt ac shoreline inlet provided to operate the dedicated 120 volt ac circuits on the apparatus.

The shoreline shall be connected to battery changer and air compressor, and the receptacles in d4 and p4.

The shoreline inlet cover color to be red.

The connector body shall be released from the inlet when the apparatus engine start button is activated.

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

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

- Line voltage
- Current ratting (amps)
- Phase
- Frequency

The shoreline receptacle shall be located on the driver side of cab, above wheel.

4.197 ALTERNATOR - A Delco Remy®, Model 55SI, alternator shall be provided. It shall have a rated output current of 430 amps, as measured by SAE method J56. The alternator shall feature an integral regulator and rectifier system that has been tested and qualified to an ambient temperature of 257 degrees Fahrenheit (125 degrees Celsius). The alternator shall be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

4.198 ELECTRONIC LOAD MANAGER- An electronic load management (ELM) system shall be provided that monitors the vehicles 12-volt electrical system, automatically reducing the electrical load in the event of a low voltage condition, and automatically restoring the shed electrical loads when a low voltage condition expires. This ensures the integrity of the electrical system.

For improved reliability and ease of use, the load manager system shall be an integral part of the vehicle's solid state control system requiring no additional components to perform load management tasks. Load management systems which require additional components shall not be allowed. The system shall include the following features:

- System voltage monitoring.
- A shed load shall remain inactive for a minimum of five minutes to prevent the load from cycling on and off.
- Sixteen available electronic load shedding levels.
- Priority levels can be set for individual outputs.
- High Idle to activate before any electric loads are shed and deactivate with the service brake.
- If enabled:
    - "Load Man Hi-Idle On" shall display on the information center.
    - Hi-Idle shall not activate until 30 seconds after engine start up.
    - Individual switch "on" indicator to flash when the particular load has been shed.
    - The information center indicates system voltage.
    - The information center, where applicable, includes a "Load Manager" screen indicating the following:

- Load managed items list, with priority levels and item condition.
- Individual load managed item condition:
- ON = not shed
- SHED = shed

4.199 SEQUENCER - A sequencer shall be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation shall allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

4.199.1 For improved reliability and ease of use, the load sequencing system shall be an integral part of the vehicle's solid state control system requiring no additional components to perform load sequencing tasks. Load sequencing systems which require additional components shall not be allowed.

4.199.2 Emergency light sequencing shall operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights shall be activated one by one at half-second intervals. Sequenced emergency light switch indicators shall flash while waiting for activation.

4.199.3 When the emergency master switch is deactivated, the sequencer shall deactivate the warning light loads in the reverse order.

4.199.4 Sequencing of the following items shall also occur, in conjunction with the ignition switch, at half-second intervals:

- Cab Heater and Air Conditioning
- Crew Cab Heater (if applicable)
- Crew Cab Air Conditioning (if applicable)
- Exhaust Fans (if applicable)
- Third Evaporator (if applicable)

4.200 HEADLIGHTS - There shall be four (4) LED round light assemblies mounted in the front chrome trim housing on each side of the cab grille. The headlight system shall be two low beam and four high beam lights.

4.201 DIRECTIONAL LIGHTS -There shall be two (2) Whelen 600® series, LED combination directional/marker lights provided. The lights shall be located on the outside cab corners, next to the headlights. The color of the lenses shall be clear.

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

4.203 CAB CLEARANCE/MARKER/ID LIGHTS - there shall be seven (5) Whelen, model 0sa00mcr, amber led lights with a chrome bezel provided to indicate the presence and overall width of the vehicle in the following locations:

4.203.1 Three (3) amber led identification lights shall be installed on the front of the aerial basket, centered.

4.203.2 Two (2) amber led clearance/marker lights shall be installed, one (1) on each corner of the aerial basket visible from the side and the front of the vehicle.

4.203.3 REAR CLEARANCE/MARKER/ID LIGHTING –

4.203.4 There shall be three (3) Whelen®, Model 0SR00MCR, LED lights used as identification lights located at the rear of the apparatus per the following:

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

- All at the same height

4.203.5 There shall be two (2) Whelen®, Model 0SR00MCR, LED lights installed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following:

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

4.203.6 There shall be two (2) Whelen®, Model 0SR00MCR, LED lights installed on the side of the apparatus as marker lights as close to the rear as practical per the following:

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

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

4.203.8 There shall be two (2) red reflectors located on the side of the truck facing to the side. One (1) each side, as far to the rear as practical, at a minimum of 15.00", but no more than 60.00", above the ground.Per FMVSS 108 and CMVSS 108 requirements.

4.204 MARKER LIGHTS - There shall be one (1) pair of amber and red LED marker lights with rubber arm, located At the rear of the apparatus. The amber lens shall face the front and the red lens shall face the rear of the truck. These lights shall be activated with the running lights and turn signal of the vehicle.

4.205 REAR FMVSS LIGHTING The rear stop/tail and directional LED lighting shall consist of the following:

- Two (2) Whelen®, Model M6BTT, red LED stop/tail lights
- Two (2) Whelen, Model M6T, amber LED arrow turn lights
- The lights shall be provided with color lenses.
- The lights shall be mounted in a polished combination housing.
- There shall be two (2) Whelen Model M6BUW, LED backup lights provided in the tail light housing.

4.206 LICENSE PLATE BRACKET - There shall be one (1) license plate bracket mounted on the rear of the body. A white LED light shall illuminate the license plate. A polished stainless steel light shield shall be provided over the light that shall direct illumination downward, preventing white light to the rear.

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

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

4.209 SONAR SAFETY SYSTEM - The apparatus shall be equipped with a max 1 sonar back-up warning system. The system shall automatically activate when the vehicle is placed in reverse. Four (4) electronic sensors shall be installed on the vehicles rear bumper and shall emit ultrasonic pulses and listen for the returning sonic echo that bounces off an obstacle within the system's operating range. This information shall be transmitted by wire to a speaker behind the driver seat which warns the operator with a beeping sound indicating that there are potential obstacles at the rear of the vehicle and a clear voice tells the operator the countdown of the remaining distance in feet as the vehicle reverses.

4.210 DEUTSCH CONNECTIONS - All external 12V electrical light connections shall be installed with Deutsch connectors.

4.211 CAB PERIMETER SCENE LIGHTS - There shall be four (4) Amdor Model AY-9500-012, 12.00" white LED strip lights provided.

- One (1) under the driver's side cab access step.
- One (1) under the passenger's side cab access step.
- One (1) under the passenger's side crew cab access step.
- One (1) under the driver's side crew cab access step.

The lights shall be activated when the battery switch is on and the respective door is open and whenever control has been selected for the body perimeter lights.

4.212 BODY PERIMETER SCENE LIGHTS - There shall be two (2) Amdor LumaBar H2O™, Model AY-9500-020, 20.00" 12 volt DC LED strip lights provided. The lights shall be mounted in the following locations:

- One (1) light under the driver's side turntable access steps
- One (1) light under the passenger's side turntable access steps
- The perimeter scene lights shall be activated when the parking brake is applied and the reverse signal activated, activating all the side facing perimeter lights.

4.213 ADDITIONAL PERIMETER LIGHTS - There shall be ten (10) lights Amdor® Luma Bar® H2O, Model AY-9500-012 12.00" white LED perimeter light(s) provided one (1) light under compartment D1, one (1) light under compartment P1, one (1) light under each side of the front bumper spaced evenly, one (1) light under each side of the rear tailboard, one (1) light under compartment D4, one (1) light under compartment P4, one (1) light under compartment D6 and one (1) light under compartment P6. These lights shall be activated the same as the body perimeter lights.

4.214 STEP LIGHTS - All steps on the apparatus shall be illuminated per the current edition of NFPA 1901 and shall match the turn table access step lights.

4.215 SCENE LIGHTS - There shall be one (1) Fire Research, Model SPA900-Q70 scene light(s) with chrome flange(s) installed on the side of the apparatus, passenger side upper between front and rear cab door. A control for the light(s) selected above shall be the following:

- a switch at the driver's side switch panel
- opening the passenger's side cab or crew cab doors
- a switch at the passenger's side switch panel
- no additional switch location
- These lights may be load managed when the parking brake is set.

4.215.1 SCENE LIGHTS - There shall be one (1) Fire Research, Model SPA900-Q70 scene light(s) with chrome flange(s) installed on the side of the apparatus, drivers side upper between front and rear cab door.

- A control for the light(s) selected above shall be the following:
- a switch at the driver's side switch panel
- opening the driver's side cab or crew cab doors
- a switch at the passenger's side switch panel
- no additional switch location
- These lights may be load managed when the parking brake is set.

4.216 12 VOLT LIGHTING - There shall be one (1) Fire Research Spectra, Model SPA530-Q20-TW-*, 20,000 lumens 12 volt DC LED scene light(s) with top wire exit provided on push up side mount pole(s), location to be determined at pre-construction meeting.

4.216.1 The painted parts of this light assembly to be white with a chrome bezel.

4.216.2 The light(s) shall be controlled by a switch at the driver's side switch panel, by a switch at the driver's side pump panel and by a switch at the passenge's side switch panel.

4.216.3 These lights shall be connected to the Do Not Move Truck Indicator circuit.

4.216.4 12 VOLT LIGHTING - There shall be one (1) Fire Research Spectra, Model SPA530-Q20-TW-*, 20,000 lumens 12 volt DC LED scene light(s) with top wire exit provided on push up side mount pole(s), location to be determined. The painted parts of this light assembly to be white with a chrome bezel. The light(s) shall be controlled by a switch at the driver's side switch panel, by a switch at the driver's side pump panel and by a switch at the passenger's side switch panel. These lights shall be connected to the Do Not Move Truck Indicator circuit.

4.216.5 12 VOLT LIGHTING - There shall be one (1) Fire Research Spectra Max, Model SPA260-Q20, 12 volt LED surface mounted scene light(s) with white bezel(s) provided drivers side above the rear outrigger, on the painted panel. The light(s) shall be controlled in the following way:

- from the driver's side body scene light option control.
- no additional switch location
- no additional switch location
- no additional switch location
- The light(s) may be load managed when the parking brake is applied.

4.216.6 12 VOLT LIGHTING - There shall be one (1) Fire Research Spectra Max, Model SPA260-Q20, 12 volt LED surface mounted scene light(s) with white bezel(s) provided passenger side above the rear outrigger, on the painted panel. The light(s) shall be controlled in the following way:

- from the passenger's side body scene light option control
- no additional switch location
- no additional switch location
- no additional switch location
- The light(s) may be load managed when the parking brake is applied.

4.217 REAR SCENE LIGHT(S) -There shall be two (2) Whelen®, Model M6ZC, LED scene light(s) with chrome flange(s) installed at the rear of the apparatus, one (1) each side high on rear body bulkhead.

4.217.1 The light(s) shall be controlled by a switch at the driver's side switch panel, by a switch at the passenger's side switch panel and by a cup switch at the driver's side rear bulkhead.

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

4.218 WALKING SURFACE LIGHT - There shall be Model FRP, 4" round black 12 volt DC LED floodlight with bolt mount provided to illuminate the entire designated walking surface on top of the body. The light shall be activated when the body step lights are on.

4.219 CARGO AREA - The cargo area shall be fabricated of .125" 5052 aluminum with a tensile strength range of 31,000 to 38,000 psi. The sides shall not form any portion of the fender compartments. The upper and rear edges of the side panels shall have a double break for rigidity. The cargo area shall be located ahead of the ladder turntable. Flooring of the cargo area shall be aluminum treadplate.

4.220 TURNTABLE STEPS - Steps to access the turntable from the driver side and passenger side shall be provided just behind the compartmentation. The steps shall be a swing-down design, with the stepping area made of Morton Tread-Grip® channel. The step height for the bottom step (the distance from the top surface of the step to the ground) shall not exceed 24.00" with the step in its extended position. No step height (the distance between the top surfaces of any two (2) adjacent steps) shall be greater than 14.00". The stepwell shall be lined with bright aluminum treadplate to act as scuffplates. The steps shall be connected to the "Do Not Move Truck" indicator. A handrail shall be provided on each side of the access steps.

4.221 STEP LIGHTS - There shall be three (3) white LED step lights provided for each set of aerial turntable access steps. In order to ensure exceptional illumination, each light shall provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light. The step lights shall be actuated by the aerial master switch in the cab.

4.222 SMOOTH ALUMINUM REAR WALL - The rear wall shall be smooth aluminum.

4.223 TOW EYES - Two (2) rear painted tow eyes shall be located at the rear of the apparatus and shall be mounted directly to the torque box. The inner and outer edges of the tow eyes shall be radiused. There shall be no garnish ring provided on either tow eye.

4.224 COMPARTMENTATION - Compartmentation shall be fabricated of 0.125" 5052 aluminum. The side compartments are an integral assembly with the rear fenders. Fully enclosed rear wheel housings shall be provided to prevent rust pockets and for ease of maintenance. Due to the severe loading requirements of this aerial, a method of compartment body support suitable for the intended load shall be provided. The backbone of the support system shall be the chassis frame rail, which is the strongest component of the chassis and is designed for sustaining maximum loads.

4.224.1 A support system shall be used which shall incorporate a floating substructure by using Neoprene Elastomer isolators to allow the body to remain rigid while the chassis goes through its natural flex. The isolators shall have a broad range of proven viability in vehicular applications, be of a fail safe design, and allow for all necessary movement in three (3) transitional and rotational modes. This shall result in a 500 lb equipment rating for each lower compartment of the body.

4.224.2 The compartmentation in front of the rear axle shall include a 3.00" steel support assemblies which are bolted to the chassis frame rails. A steel framework shall be mounted to the body above these support assemblies connected to the support assemblies with isolators. There shall be one (1) support assembly mounted to each chassis frame rail.

4.224.3 The compartmentation behind the rear axle shall include 3.00" steel support assemblies which are bolted to the chassis frame rails and extend underneath to the outside edge of the body. The support assembly shall be coated to isolate the dissimilar metals before it is bolted to the body. There shall be one (1) support assembly mounted to each chassis frame rail.

4.224.4 Compartment flooring shall be of the sweep out design with the floor higher than the compartment door lip. The compartment door openings are framed by flanging the edges in 1.75" and bending out again 0.75" to form an angle. Drip protection is provided over all door openings by means of bright aluminum extrusion or formed bright aluminum treadplate. Side compartment tops shall be covered with bright aluminum treadplate with a 1.00" rolled over edge on the front, rear and outward side. The covers are fabricated in one (1) piece and have the corners welded. A bright aluminum treadplate cover shall be provided on the front wall of each side compartment. All screws and bolts which protrude into a compartment shall have acorn nuts at the ends to prevent injury.

4.224.5 The body design has been fully tested. Proven engineering and test techniques such as finite element analysis, model analysis, stress coating and strain gauging have been performed with special attention given to fatigue life and structural integrity of the compartment body and substructure.

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

4.226 LOUVERS - All body compartments shall have a minimum of one (1) set of louvers stamped into a wall to provide the proper airflow inside the compartment and to prevent water from dripping into the compartment. These louvers shall be formed into the metal and not added to the compartment as a separate plate.

4.227 ENGINEER COMPARTMENT - A transverse engineer compartment shall be provided ahead of the water pump.

The compartment shall be approximately 26.00" wide x cab height x 100.00" deep. The door opening shall be approximately 23.00" wide. The width of the transverse section over the chassis frame rails shall be reduced by 6.00" due to the boom support.

The compartment shall be furnished with a roll-up door to match the door construction on the body.

The top of the compartment shall be notched around the aerial device.

The compartment shall [drip pan] below the roll of the door.

4.228 LEFT SIDE COMPARTMENTATION - A full height rollup door compartment, ahead of the rear wheels, shall be provided. The compartment shall be 41.75" wide x 64.00" high x 24.25" deep with a clear door opening of 38.75" wide x 56.38" high.

One (1) rollup door compartment shall be located above the fender compartments and over the rear axles. The compartment shall be 72.13" wide x 33.25" high x 24.25" deep with a clear door opening of 63.75" wide x 25.50" high.

The retracted rollup door shall consume approximately 8.00" in height and 12.00" in depth of the upper outboard portion of each compartment.

A compartment with a single pan stainless steel lift up door shall be located above the front stabilizer. The compartment shall be 24.25" wide x 15.50" high x 24.25" deep with a door opening of 18.50" wide x 12.75" high. The compartment shall have an aluminum treadplate cover with access to the top of the cord reel and shall be extended above the catwalk to accommodate the reel. A top-hinged horizontal lift up stainless steel door shall be provided with pneumatic cylinders for payout of the cord. The three (3) sides of the door opening shall have stainless steel scuffplates.

A full height roll-up door compartment, behind the rear wheels, shall be provided. The compartment shall be 43.75" wide x 52.25" high x 21.25" deep with a door opening of 40.75" wide x 44.62" high.

There shall be one (1) roll-up door compartment located below the turntable. The compartment shall be 39.38" wide x 21.38" high x 21.25" deep with a door opening of 33.75" wide x 13.75" high.

The retracted roll-up door shall consume approximately 8.00" in height and 12.00" in depth of the upper outboard portion of each compartment.

4.229 RIGHT SIDE COMPARTMENTATION - A full height rollup door compartment, ahead of the rear wheels, shall be provided. The compartment shall be 41.75" wide x 64.00" high x 24.25" deep with a clear door opening of 38.75" wide x 56.38" high.

One (1) rollup door compartment shall be located above the fender compartments and over the rear axles. The compartment shall be 72.13" wide x 33.25" high x 24.25" deep with a clear door opening of 63.75" wide x 25.50" high.

The retracted rollup door shall consume approximately 8.00" in height and 12.00" in depth of the upper outboard portion of each compartment.

A compartment with a single pan stainless steel lift up door shall be located above the front stabilizer. The compartment shall be 24.25" wide x 15.50" high x 24.25" deep with a door opening of 18.50" wide x 12.75" high. The compartment shall have an aluminum treadplate cover with access to the top of the cord reel and shall be extended above the catwalk to accommodate the reel. A top-hinged horizontal lift up stainless steel door shall be provided with pneumatic cylinders for payout of the cord. The three (3) sides of the door opening shall have stainless steel scuffplates.

A full height roll-up door compartment, behind the rear wheels, shall be provided. The compartment shall be 43.75" wide x 52.25" high x 21.25" deep with a door opening of 40.75" wide x 44.62" high.

There shall be one (1) roll-up door compartment located below the turntable. The compartment shall be 39.38" wide x 21.38" high x 21.25" deep with a door opening of 33.75" wide x 13.75" high.

The retracted roll-up door shall consume approximately 8.00" in height and 12.00" in depth of the upper outboard portion of each compartment.

4.230 SIDE COMPARTMENT ROLLUP DOORS -There shall be ten (10) compartment doors installed on the side compartments, double faced, aluminum construction, painted one (1) color to match the lower portion of the body and manufactured by amdor™ brand rollup doors.

Door(s) shall be constructed using 1.00" extruded double wall aluminum slats which shall feature a flat smooth interior surface to provide maximum protection against equipment hang-up. The slats shall be connected with a structural driven ball and socket hinge designed to provide maximum curtain diaphragm strength. Mounting and adjusting the curtain shall be done with a clip system that connects the curtain to the balancer drum allowing for easy tension adjustment without tools. The slats shall be mounted in reusable slat shoes with positive snap-lock securement.

Each slat shall incorporate weather tight recessed dual durometer seals. One (1) fin shall be designed to locate the seal within the extrusion. The second shall serve as a wiping seal which shall also allow for compression to prevent water ingression.

The doors shall be mounted in a one (1)-piece aluminum side frame with recessed side seals to minimize seal damage during equipment deployment. All seals including side frames, top gutters and bottom panel are to be manufactured utilizing non-marring materials.

Bottom panel flange of roll-up door shall be equipped with two (2) cut-outs to allow for easier access with gloved hands.

A stainless steel lift bar to be provided for opening the door and located at the bottom of each door with latches on the outer extrusion of the door frame. A ledge to be supplied over lift bar for additional area to aid in closing the door. The lift bar shall be located at the bottom of door with striker latches installed at the base of the side frames. Side frame mounted door strikers shall include support beneath the stainless steel lift bar to prevent door curtain bounce, improve bottom seal life expectancy and to avoid false door ajar signals.

All injection molded roll-up door wear components shall be constructed of type 6 nylon.

Each roll-up door shall have a 3.00 inch diameter balancer/tensioner drum to assist in lifting the door.

The header for the roll-up door assembly shall not exceed 4.00".

A heavy-duty magnetic switch shall be used for control of open compartment door warning lights.

Rear bumper

An 8.00" rear bumper shall be furnished. The bumper shall be constructed of steel framework and shall be covered with polished aluminum treadplate. The bumper shall be 7.00" deep x 4.50" high and shall be spaced away from the body approximately 1.00". The corners of the bumper shall be angled at 30 degrees. It shall extend the full width of the body.

4.231 DOOR GUARD - There shall be ten (10) compartment doors that shall include a guard/drip pan designed to protect the roll-up door from damage when in the retracted position and contain any water spray. The guard shall be fabricated from stainless steel and installed high as possible all compartments.

4.232 DOOR LATCHES - Southco model #c2-32-11 latches shall be provided in place of standard latches. Six (6) latches shall be provided. The latches shall be provided aerial over-ride, compts ipo chute, the outrigger doors, stabilizer controls door. Black latches shall be used.

4.233 ROLLUP DOOR PULL STRAPS - Two (2) compartment doors shall be provided with elastic pull straps. The straps shall be 32.00" long and orange in color.

The straps shall be located approximately mid height of the side compartment with a footman loop and installed directly to the inside of the rollup door.

The rollup door compartments to have these straps shall be ls6 and rs6.

Painted smooth aluminum stabilizer door

4.234 COMPARTMENT LIGHTING - There shall be ten (10) compartment(s) with two (2) led compartment light strips. The dual light strips shall be centered vertically along each side of the door framing. There shall be two (2) light strips per compartment. The dual light strips shall be in compartment(s): all body compartments.

Any remaining compartments shall include a single led compartment light strip.

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

There shall be a covered metal clamp install 2.00" from each end and evenly spaced no less than 8.00" between the end clamps.

Additional compartment lighting

There shall be two (2) 9.00" white 12 volt dc led strip light(s) provided in the ls5 and rs5, mounted horizontal along the top compartment(s).

Opening the compartment door(s) shall automatically turn the compartment lighting on.

Long item storage over pump

A transverse area over the pump and forward of the cargo area. This compartment shall contain no partitions, location ..

A blister shall be supplied at each side as needed to enclose the stored items due to their length.

The stored items shall be accessible from either side of the vehicle through the aluminum treadplate door(s) with a southco raised trigger c2 chrome latch. The door shall be hinged [hinge location].

The items to be stored shall be ladder, little giant, type 1a, model 22. 22 ft.

4.235 MOUNTING TRACKS - There shall be eight (8) sets of tracks for mounting shelf(s) in ls1, ls3, ls4, ls6, rs1, rs3, rs4 and rs6. These tracks shall be installed vertically to support the adjustable shelf(s), and shall be full height of the compartment. The tracks shall be painted to match the compartment interior.

4.236 ADJUSTABLE SHELVES - There shall be ten (10) shelves with a capacity of 500 lb provided.

The shelf construction shall consist of .188" aluminum painted spatter gray with 2.00" sides.

Each shelf shall be infinitely adjustable by means of a threaded fastener, which slides in a track.

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

The location(s) shall be in rs1 centered between the floor and the ceiling, in rs3 centered between the floor and the ceiling, in rs4 centered between the floor and the ceiling, in rs4 in the upper third, in rs1 in the upper third, in ls1 centered between the floor and ceiling, in ls4 centered between the floor and ceiling, in ls4 in the upper third, in ls3 in the upper third and in ls1 in the upper third.

Transverse two (2) way slide-out multi-stop utility tray

There shall be one (1) slide-out tray provided for use in the transverse side body compartment(s).

Each tray shall be a utility style tray that is rated for up to 500 lb in the extended position. The bottom of each tray shall be constructed of 0.19" thick aluminum while special aluminum extrusions shall be utilized for the tray sides, ends and tracks. The corners shall be welded.

Each tray shall have 3.00" high sides, shall span the full depth of the transverse compartment and shall be as wide as possible for the designated mounting location.

Each tray shall be supported with a minimum of six (6) ball bearing rollers. Each tray shall slide out two thirds (2/3) of its length to either side of the apparatus.

The tray shall lock in the stowed, half-way, and fully extended positions. A release lever shall be provided for releasing the tray with one (1) hand.

The vertical location of each tray within the compartment shall be adjustable.

The tray(s) shall be located above the floor mount tray in the upper portion d6 / p6.

Slide-out floor mounted tray

There shall be four (4) floor mounted slide-out tray(s) provided ls1, ls4, rs1, rs4. A capacity rating shall not be available on this tray due to a reduced side height being less than 2.00". The tray(s) shall be constructed of a minimum .13" aluminum with welded corners. The finish shall be painted to match compartment interior. The locking rod shall be painted red 600t.

The tray(s) shall be designed for maximum compartment width and depth.

The side height of the tray(s) shall be as follows:

Front: 2.00" high

Rear: 4.00" high

Left: 4.00" high

Right: 4.00" high

Slides shall be equipped with ball bearings for ease of operation and years of dependable service. The slides shall be located on the sides of the tray so that the tray can be located as close to the compartment floor as possible.

Automatic locks shall be provided for both the "in" and "out" positions. The trip mechanism for the locks shall be located at the front of the tray for ease of use with a gloved hand.

Two (2) way utility slide-out floor mounted tray

There shall be one (1) floor mounted utility slide-out tray(s) provided ls6, rs6. Each tray shall be rated for up to 500lb in the extended position. The tray(s) shall be constructed of .19" thick aluminum for the tray bottom and sides. The corners shall be welded. The finish shall be painted to match compartment interior.

The tray shall be 4.00" high x full depth of the transverse compartment x as wide as possible for the compartment.

The tray shall operate with slide-master slides model sm2-d, 70% extension, 2-section, two-way slides.

Automatic locks shall be provided for both the "in" and "out" positions. The trip mechanism for the locks shall be located at the front of the tray for ease of use with a gloved hand.

Toolboard added to half depth slide-out tray

An aluminum toolboard shall be provided and mounted in a slide-out tray that is half the depth of a transverse compartment (tray not included). The toolboard shall be constructed of 0.19" thick aluminum that is painted spatter gray to match compartment interior. The toolboard shall be provided with 0.20" diameter holes in a pegboard pattern with 1.00" centers between holes. A 1.00" x 1.00" aluminum tube frame shall be welded to the edge of the pegboard.

The toolboard shall span the full depth of the slide-out tray and shall be as tall as possible for the specified mounting location.

The toolboard shall be mounted on aluminum tracks to allow for side to side adjustment within the tray.

The total capacity rating of the toolboard shall vary depending on the tray it is mounted in (capacity rating for the toolboard shall match the capacity rating of the tray it is mounted in).

A total of two (2) toolboard(s) shall be provided and mounted in the slide-out tray(s) located ls6/rs6 on the upper 2 - way slide out tray, each tool board only half the depth of the tray, 36" tall.

Compartment ipo hose chute

There shall be two (2) compartment(s) located on the both sides side of the body at the rear in place of the hose chute. Each compartment shall be approximately 10.00" wide x 16.00" high x 46.00" deep in the lower 14.00" of height and 22.75" deep in the upper 2.00" of height. Each compartment shall have a smooth aluminum door, hinged on the inboard side with a flush southco c2 black powder coated latch on the outboard side.

Transverse compartment over torque box

One (1) upper forward body compartments shall be transverse over the torque box, to the opposite side of the body. The transverse area shall be 19.25" high x 68.00" deep and as wide as the compartments being transversed. The p3/d3 compartment shall include this transverse option.

Retention webbing

Webbing shall be provided to retain compartment equipment from laying against the compartment door. The webbing shall be located rs3.

Each compartment door opening shall be provided with a heavy black nylon webbing made of 2.00" nylon strap with a 2.00" box pattern. The nylon webbing shall be permanently fastened at the bottom of the compartment and have seat belt buckle fasteners on the opposite side to secure it.

A total of one (1) shall be provided.

Vertical compartment partition

Two (2) partitions shall be provided.

The partition construction shall consist of .125" aluminum painted spatter gray. Each partition shall be the full vertical height of the compartment.

The location(s) of this partition(s) shall be even with the aerial boom support blister within the ls6 / rs6 compartments, fasten the partition with bolts and lock nuts, no self tapping screws. Connect top of partition to wall for stability compartment.

Floor extension

There shall be a compartment floor extension provided. The floor extension shall extend from the area over the frame rails to within an inch of the compartment door. The floor extension shall have a downward 2.00" vertical lip and a 1.00" return flange. The floor extension shall be made of .18" thick aluminum.

A total of two (2) shall be provided and located engineer compartment each side.

4.237 REAR BUMPER - An 8.00" rear bumper shall be furnished. The bumper shall be constructed of steel framework and shall be covered with polished aluminum treadplate. The bumper shall be 7.00" deep x 4.50" high and shall be spaced away from the body approximately 1.00". The corners of the bumper shall be angled at 30 degrees. It shall extend the full width of the body.

4.238 DOOR GUARD - There shall be 11 compartment doors that shall include a guard/drip pan designed to protect the roll-up door from damage when in the retracted position and contain any water spray. The guard shall be fabricated from stainless steel and installed High as possible in all compartments.

4.239 DOOR LATCHES - SouthCo model #C2-32-11 latches shall be provided in place of standard latches. Two (2) latches shall be provided. The latches shall be provided on all stabilizer doors.

4.240 PULL STRAP, DOOR - There shall be ten (10) compartment doors provided with pull straps. The compartment door(s) to be provided with a pull strap shall be D2, D3, D1, D4, P1, P2, P3, D5, P4 and P5.

4.241 PULL STRAP, DOOR - There shall be ten (10) compartment doors provided with Amdor Flex-HD pull straps. The compartment door(s) to be provided with a pull strap shall be D1.

4.242 PAINTED SMOOTH ALUMINUM STABILIZER DOOR - The smooth aluminum door on the compartments above the front stabilizers shall be painted job color. Each door shall be provided with a Southco non-locking C2 black lever latch.

4.243 LOCKING NUTS - The SCBA and hatch compartment doors shall have nuts with star washers and blue Loctite®. Locking nuts shall be provided for the following areas:

1. DEF tank support mounting bracket-to-body.
2. Fuel access door hinges.
3. Wheel chock holder brackets-to-body.
4. Outrigger jack plate storage bracket-to-body.
5. Mud flaps-to-wheel wells.
6. Engine coolant recovery tank under hood mounting bolts.
8. Pump side panel access doors.
9. Rear DS compartment and ladder door hinges.
10. Stream light Survivor and Box light chargers-to-compartment.
11. Relay cover shield for electric components at DS frame rail at transmission.
12. Clamp for step light wires at each crew compartment step.
13. All 12VDC stud terminals whether hot or ground throughout the frame rails and under hood.
14. PS glove box hinge.
15. Interior cab ceiling mounted storage compartment hinges.
16. Interior cab ceiling mounted air conditioning filter and pump access door hinge.
17. Interior cab access door hinge under rear seat transverse compartment.
18. Interior cab access door hinge for engine and transmission oils.
19. Exterior cab transverse compartment access door hinges.
20. Cab mirrors attachment screws-add locking nuts inside under hood after screws are tightened.
21. D1 compartment tool board hinge anchor backing plate bolts-add lock nuts upper and lower after bolts are tightened.
22. Raised module box in R1 ceiling attachment hardware or PS small compartment in aerials.

4.244 RUB RAIL - The bottom edge of the body panel shall have a 2.00" high rubber rub rail the length of the body for protection.

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

4.246 EQUIPMENT STORAGE - A total of one (1) compartment(s) shall be provided and located on the driver's side centered between the tandem rear wheels. The compartment(s) shall be approximately 16.00" wide at the top x 8.00" wide at the bottom with tapered sides. The compartment(s) shall be approximately 12.00" high x 26.00". Flooring shall be rubber lined and have a drain hole.

A drop down door with support cables and a pair of Southco non-locking C2 black lever latches shall be provided for each compartment. The door shall be painted stainless steel. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal.

4.247 CORNER FENDER PANEL DOUBLE AIR BOTTLE STORAGE - A total of one (1) air bottle compartment shall be provided in the upper corner(s) of the passenger side fender panel. The compartment(s) shall be located on the passenger's side ahead of the rear wheel. The air bottle compartment(s) shall be in the form of a round tube (7.75" diameter maximum) and of adequate depth (26.00" maximum) to accommodate different size air bottles. The tubes shall be mounted separately in a diagonal fashion, one above the other.

Flooring shall be rubber lined and have a drain hole. A triangular shaped vertically hinged door and a Southco non-locking C2 black lever latch shall be provided for each compartment. The door shall be painted stainless steel. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal.

4.248 FOUR AIR BOTTLE STORAGE COMPARTMENT - A total of one (1) air bottle compartment shall be provided and located on the passenger's side centered between the tandem rear wheels. The air bottle compartment shall consist of individual bins each designed to hold an air bottle with a maximum diameter of 7.63" and a maximum depth of 26.00".

Each compartment shall hold a total of four (4) air bottles. The compartment shall accommodate three (3) bottles across the top and one (1) centered below. The bottom air bottle shall be accessible only when the top center bottle is removed and the hinged partition over the bottom bottle is lifted up. Each bottle shall be separated by a partition.

Flooring shall be rubber lined and have a drain hole. A drop down door with support cables with pair of Southco non-locking C2 black lever latches shall be provided for each compartment. The door shall be painted stainless steel. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal.

4.249 AIR BOTTLE COMPARTMENT STRAP -Straps shall be provided in the air bottle compartment(s) to help contain the air bottles. The straps shall wrap around the neck of each bottle and attach to the wall of the compartment.

4.250 AIR BOTTLE STORAGE - A total of two (2) air bottle compartments shall be provided and located driver side rear, passenger side rear. The air bottle compartment shall be in the form of a round tube, 7.63" diameter, and shall be of adequate depth to accommodate different size air bottles. The flooring shall be rubber lined and have a drain hole. A painted door with a Southco non-locking C2 black lever latch shall be provided to contain the air bottle. A dielectric barrier shall be provided between the door hinge, hinge fasteners (screws) and the body sheet metal.

4.250.1 AIR BOTTLE STORAGE (Single) -A quantity of one air bottle compartment, approximately 7.50" wide x 7.50" tall x 26.00" deep, shall be provided on the driver side forward of the rear wheels. The triangular door shall cover the air bottle opening and the DEF tank access. The compartment shall be square with angled corners. A painted stainless steel door with a Southco non-locking C2 black lever latch shall be provided to contain the air bottle. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal. Inside the compartment, black rubber matting shall be provided.

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

4.252 EXTENSION LADDER - There shall be one (1) 35' two (2) section aluminum Duo-Safety Series 1200-A extension ladder(s) provided.

4.253 AERIAL EXTENSION LADDER - There shall be one (1) 28' two (2) section aluminum Series 900-A extension ladder(s) provided and located in the aerial torque box.

4.254 ROOF LADDERS - There shall be two (1) 16' aluminum Duo-Safety Series 875-A roof ladders provided.

4.255 ADDED ROOF LADDER - There shall be one (1) 20' roof, aluminum, Series 875-A provided.

4.256 AERIAL ATTIC EXTENSION LADDER - There shall be one (1) 14' Fresno aluminum Duo-Safety Series 701 attic extension ladder(s) provided.

4.257 AERIAL FOLDING LADDER - There shall be one (1) 10' aluminum Duo-Safety Series 585-A folding ladder(s) provided and located in the aerial torque box.

4.258 GROUND LADDER STORAGE - The ground ladders are stored within the torque box and are removable from the rear.

4.258.1 Ladders shall be enclosed to prevent road dirt and debris from fouling or damaging the ladders.

4.258.2 The ladders rest in full length stainless steel slides and are arranged in such a manner that any one ladder can be removed without having to move or remove any other ladder.

4.258.3 An AMDOR rollup door shall be provided at the rear, double faced, aluminum construction, painted one (1) color to match the lower portion of the body and manufactured by AMDOR manufacturing. The latching mechanism shall consist of a full length lift bar lock with latches on the outer extrusion of the door frame.

4.258.4 A stainless plate with a two bend flange and a stainless steel hinge shall be provided to secure the aerial ladder complement. The plate assembly shall be mounted to the bottom of the entrance of the torque box ladder storage area.

4.258.5 When the plate is vertical, it shall secure the ladders and prevent them from migrating to the rear of the apparatus. When the plate is down and not securing the ladders, the roll-up door cannot close, which shall activate the "Open Door Indicator Light" within the cab. The roll-up door together with hinge friction shall secure the plate in place during driving operations.

4.258.6 A door guard shall be provided to prevent tools inside the torque box from damaging the roll-up door.

4.259 LADDER STORAGE LIGHTING - there shall be two (2) truck lite model 44042c, 4.00" white led lights with model 40700, grommets used to illuminate the torque box ladder storage compartment. One (1) each side shall be located on the side wall of the torque box near the ladder storage entry area.

The lights shall be activated when the ladder storage compartment door is opened.

4.260 DURA-SURF LADDER SLIDES - Black Dura-Surf friction reducing material shall be added to the stainless steel slides, on the bottom horizontal surfaces, of the ladder storage rack.

4.261 EQUIPMENT STORAGE - An aluminum trough shall be provided in the torque box for the storage of equipment. The "U" shaped trough shall be TBD.

4.261.1 4' PIKE POLE - Four (4) pike poles Fire Hooks Unlimited RH 4' New York style hook with D-handle shall be provided and located TBD.

4.261.2 6' PIKE POLE - Two (2) pike poles, Fire Hooks Unlimited, Model RH6, 6' long roof hook, with a steel handle and chisel end shall be provided and located TBD.

4.261.3 8' PIKE POLE - There shall be One (1) pike pole Fire Hooks Unlimited, Model RH-8, 8' pike pole(s) with steel handle and gas shut off end provided. The pike pole(s) shall be stored in tubular holders located TBD.

4.261.4 8' PIKE POLE - One (1) pike pole, Fire Hooks Unlimited, Model RH 8, 8' long roof hook, with a steel handle and chisel end shall be provided and located TBD.

4.261.5 PIKE POLES - There shall be two (2) Fire Hooks Unlimited NHF-12, 12' pike pole(s) with fiberglass handles provided. The pike pole(s) shall be stored on the apparatus.

4.261.6 PIKE POLE 8 FT - There shall be one (1) Fire Hooks Unlimited NHF-8, 8 foot pike pole(s) with fiberglass handles provided and located TBD.

4.261.7 ADDITIONAL PIKE POLE - There shall be one (1) 8' long pike pole(s), Fire Hooks Unlimited NYFG-8, with fiberglass handle(s) and pry end provided Aerial fly section.

4.261.8 PIKE POLE STORAGE - Aluminum tubing shall be used for the storage of three (3) pike poles and shall be located in the aerial torque box. If the head of a pike pole can come in contact with a painted surface, a stainless steel scuffplate shall be provided.

4.261.9 PIKE POLE STORAGE - Aluminum tubing shall be used for the storage of three (3) pike poles and shall be located torque box, the 8 eight foot- option- 680352, (2) two 6 foot-option557255. If the head of a pike pole can come in contact with a painted surface, a stainless steel scuffplate shall be provided. The pike pole tube shall be notched to allow a New York style pike pole to fit into the tube.

4.262 WARNING LABEL(S) - There shall be one (1) label(s), indicating "NO STEP", provided cover by drivers side batteries inside frame rail that cover s the raised modules.

4.263 LABELS AND TAGS - one (1) ID label/tag shall be provided. The label/tag shall be black colored with contrasting lettering. The label/tag shall be located AT THE REAR ABOVE AERIAL INLET LABEL and sized appropriately for the specified location(s). The label/tag shall state the following "TEST ONLY".

4.264 AIR HORN SYSTEM - Two (2) Buell air horns shall be recessed in the front bumper. Models 1062 and 1063 shall be provided. The horn system shall be piped to the air brake system wet tank utilizing 0.38" tubing. A pressure protection valve shall be installed in-line to prevent loss of air in the air brake system.

4.264.1 Air Horn Location - The air horns shall be located on each side of the bumper, towards the outside.

4.265 AIR HORN CONTROL - The air horns shall be actuated by a chrome push button located on the officer's side of the engine tunnel and by the horn button in the steering wheel. The driver shall have the option to control the air horns or the chassis horns from the horn button by means of a selector switch located on the instrument panel.

4.266 ELECTRONIC SIREN - A Whelen®, Model 295SLSA1, electronic siren with noise canceling microphone shall be provided. This siren to be active when the battery switch is on and that emergency master switch is on. Electronic siren head shall be recessed in the overhead console above the engine tunnel on the driver side.

4.267 SIREN CONTROL - The electronic siren shall be controllable on the siren head and horn ring only. No foot switches shall be required. The driver shall have the option to control the siren or the chassis horns from the horn button by means of a selector switch located on the instrument panel.

4.268 SPEAKERS - There shall be two (2) Whelen Projector™ Series, Model SA314A, 100-watt, cast aluminum speakers with natural finish provided. Each speaker shall be connected to the siren amplifier. The speakers shall be recessed in each side of the front bumper, just outside of the frame rails.

4.269 AUXILIARY MECHANICAL SIREN - A Federal Q2B® siren shall be furnished. A siren brake button shall be installed on the switch panel. The control solenoid shall be powered up after the emergency master switch is activated. The mechanical siren shall be recessed in the front bumper in the center. The siren shall be properly supported using the bumper framework.

4.270 MECHANICAL SIREN CONTROL - The mechanical siren Shall be actuated by a push button located on the officer's side instrument panel and by a foot switch on the driver's side. A second siren brake switch shall be installed on the officer side engine tunnel area. The switch shall be a chrome push button style.

4.271 BELL - a chrome plated, 12.00" bronze cast bell, complete with an eagle, shall be mounted through the center of the grille. The bell shall be mounted on a flat, saddle welded bracket. The bracket shall come out from the round tube on the center of the cab located behind the grille and extend straight out for the bell mounting. The bracket shall be painted black.

A rope pull for the bell shall be installed inside the cab.

4.272 SLIDE-OUT/FOLD-OUT PLATFORM - one (1) slideout platform shall be provided on the right side. The platform shall have a pull out, flip down design. The front edge and top surface of the platform shall be made of da finished aluminum. There shall be a morton cass insert provided on the stepping surface.

The platform shall be approximately 13.75" deep when in the stowed position and approximately 21.75" deep when extended. The capacity rating shall be 500 lb in the extended position. The platform shall be for a 42.00" wide pump house providing a 35.00" wide step assembly with a 34.38" wide stepping surface. The platform shall lock in the retracted and extended position.

There shall be [light, long step] white 12 volt dc led light provided to illuminate the ground area.

4.273 WHEEL GUARD - A total of two (2) removable wheel guard(s) shall be supplied at the rear tandem wheels, one (1) on the [location, driver's/passenger's/center] side. The wheel guard shall be constructed of 2.00" square tubing and shall be attached with receiver pins for easy removal with a gloved hand. The wheel guard surface shall have two (2) morton cass inserts to provide a non-skid surface in front of each wheel.

Four (4) additional folding steps shall be located two (2) on the side of the full width engineering compartment on the left side and two (2) on the side of the full width engineering compartment on the right side. The step(s) shall be bright finished, non-skid with a black coating. Each step shall incorporate an led light to illuminate the stepping surface. The step(s) can be used as a hand hold with two openings wide enough for a gloved hand.

4.274 PUMP - Pump shall be a waterous csu, 2000 gpm single (1) stage midship mounted centrifugal type.

Pump shall be the class "a" type.

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

- 100% of rated capacity at 150 psi net pump pressure.

-70% of rated capacity at 200 psi net pump pressure.

-50% of rated capacity at 250 psi net pump pressure.

Pump body shall be close-grained gray iron, bronze fitted, and horizontally split in two (2) sections for easy removal of the entire impeller shaft assembly (including wear rings).

Pump shall be designed for complete servicing from the bottom of the truck, without disturbing the pump setting or apparatus piping.

Pump case halves shall be bolted together on a single horizontal face to minimize a chance of leakage and facilitate ease of reassembly. No end flanges shall be used.

Discharge manifold of the pump shall be cast as an integral part of the pump body assembly and shall provide a minimum of three (3) 3.50" openings for flexibility in providing various discharge outlets for maximum efficiency.

The three (3) 3.50" openings shall be located as follows: one (1) outlet to the right of the pump, one (1) outlet to the left of the pump, and one (1) outlet directly on top of the discharge manifold.

Impeller shaft shall be stainless steel, accurately ground to size. It shall be supported at each end by sealed, anti-friction ball bearings for rigid precise support. Impeller shall have flame plated hubs assuring maximum pump life and efficiency despite any presence of abrasive matter in the water supply.

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

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

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

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

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

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

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

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

4.277 AIR PUMP SHIFT - Pump shift engagement shall be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab.

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

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

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

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

4.279 AUXILIARY COOLING SYSTEM - A supplementary heat exchange cooling system shall be provided to allow the use of water from the discharge side of the pump for cooling the engine water. The heat exchanger shall be cylindrical type and shall be a separate unit. The heat exchanger shall be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger shall be plumbed to the master drain valve.

4.280 INTAKE RELIEF VALVE - One (1) trident air max intake relief valve(s) shall be installed on the suction side of the pump preset at 125 psig.

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

The outlet shall terminate below the frame rails with a 2.50" national standard hose thread adapter and shall have a "do not cap" warning tag.

One (1) adjustable air regulator and pressure indicating gauge shall be located on a common bezel on the left side pump panel to control the intake valve(s).

4.281 PRESSURE GOVERNOR - This apparatus shall be equipped with a class1 "total pressure governor" engine/pump governor/throttle system that is connected directly to the electronic control module (ecm) mounted on the engine. The "total pressure governor" is to operate as a pressure sensor (regulating) governor (psg).

A special preset feature shall permit a predetermined pressure of rpm to be set. The preset pressure or rpm shall be displayed on the message display of the "total pressure governor". The preset shall be easily adjustable by the operator

The pressure sensor governor system shall be operable only after the vehicle parking brake has been set, the transmission is the pumping mode, and the fire pump has been engaged.

The pressure sensor governor system shall have two (2) modes of operation: pressure mode or rpm mode.

When in the pressure mode, the psg system shall automatically maintain the discharge pressure set by the operator regardless of flow (within engine/pump operating capabilities).

In the rpm mode, the psg system shall automatically maintain a set engine speed, regardless of engine load (within engine operation capabilities).

A pump cavitation protection feature shall be provided which shall return the engine to idle should the pump cavitate.

The pressure controller shall incorporate monitoring for engine coolant temperature, oil pressure, and battery voltage.

4.282 PRIMING PUMP - The priming pump shall be a trident emergency products compressed air powered, high efficiency, multistage venturi based airprime system, conforming to standards outlined in the current edition of NFPA 1901.

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

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

Light, additional, for thermal relief valve

A two (2) of 2" diameter Whelen model t0b00fbr blue led grommet mounted lights, shall be provided in addition to the standard light for indication when the thermal relief valve is operating.

Lights shall be located in each side of the pump panel, upper area of dunnage area match 32241, center the sign below the light.

These lights shall be activated with the main thermal valve indicator light on the pump panel.

4.283 PUMP DRAIN TUBING - The master pump drain shall not use copper tubing. Install nylon tubing for the pump drain lines between the valves and the drain. Use hose clamps where ever necessary to allow proper line drainage.

4.284 THERMAL RELIEF VALVE - A hale trv170-l thermal protection device shall be included on the pump that monitors pump water temperature and opens to relieve water to cool the pump when the temperature of the pump water exceeds 170 degrees f (77 c).

The thermal protection device shall include a red warning light and audible alarm. The warning light with a test switch shall be mounted on the pump operator panel.

The discharge line shall be 3/8 inch diameter tubing plumbed to ground.

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

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

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

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

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

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

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

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

Main pump inlet cap provided by fire department

NFPA 1901, 2016 edition, section 16.6.8 requires all intakes to be provided with caps or closures capable of withstanding a hydrostatic gauge pressure of 500 psi.

The caps are not on the apparatus as manufactured. The Fire Department shall provide both caps for the main pump inlets.

4.288 HIGH FLOW BALL INTAKE VALVE - Task force tips model #axd1st-nx-f manually operated lightweight aluminum high flow straight inlet ball intake valve shall be provided. The unit shall be equipped with an adjustable pressure relief valve under the main valve body. The valve shall be controlled with an NFPA compliant slow-close hand wheel gear operator which can be configured for left or right hand operation. A 3/4" bleeder valve shall be provided to exhaust excess air or water from the valve and hose line. A position indicator shall be provided to allow for quick visualization of the status of the valve in the open, closed or partial positions. For maximum corrosion protection the aluminum casting shall be hard coat anodized, with a powder coat internal and external finish and all components typically facing the wet side of the valve shall be constructed from stainless steel.

The connections shall be: 5.00" storz swivel fitting and a 6.00" female nh threaded swivel connection and include polymer bearing strips for prevention of galvanic corrosion. A 5.00" storz cap shall be included.

Two (2) inlet valves shall be provided on both the driver's side and the passenger's side main pump inlets.

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

Valves shall have a ten (10) year warranty.

Not required, left side inlet

NFPA 1901, 2016 edition, section 16.6.3 requires at least one (1) valved intake shall be provided that can be controlled from the pump operator's position.

This apparatus does not have a valved intake as manufactured.

4.290 ANODE, INLET - A pair of sacrificial zinc anodes shall be provided in the water pump inlets to protect the pump from corrosion.

4.291 LEFT SIDE DISCHARGE OUTLETS - There shall be one (1) discharge outlet with a 2.50" valve on the left side of the apparatus, terminating with a 2.50" (m) national standard hose thread adapter.

4.292 RIGHT SIDE DISCHARGE OUTLETS - There shall be one (1) discharge outlet with a 2.50" valve on the right side of the apparatus, terminating with a 2.50" (m) national standard hose thread adapter.

There shall be a 4.00" discharge outlet with a 3.00" valve with a 3.00" ball, installed on the right side of the apparatus, terminating with a 4.00" (m) national standard hose thread adapter. This discharge outlet shall be actuated with a handwheel control with position indicator at the pump operator's control panel.

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

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

The caps and plugs shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected.

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

The valves shall be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles shall be chrome plated and provide a visual indication of valve position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders shall be located at the bottom of the pump panel. They shall be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders shall be routed below the chassis frame rails.

No snubber drain valves are acceptable.

4.295 LEFT SIDE OUTLET ELBOWS - The 2.50" discharge outlets located on the left side pump panel shall be furnished with a 2.50" (f) national standard hose thread x 2.50" (m) national standard hose thread, chrome plated, 45 degree elbow.

The elbow shall be pierce vlh, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

4.296 RIGHT SIDE OUTLET ELBOWS - The 2.50" discharge outlets located on the right side pump panel shall be furnished with a 2.50" (f) national standard hose thread x 2.50" (m) national standard hose thread, chrome plated, 45 degree elbow.

The elbow shall be pierce vlh, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

4.297 ADDITIONAL RIGHT SIDE OUTLET ELBOWS - The 4.00" discharge outlets, located on the right ride pump panel, shall be furnished with a 4.00" (f) national standard hose thread x 5.00" storz, elbow.

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

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

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

4.299 AERIAL OUTLET - The aerial waterway shall be plumbed from the pump to the water tower line with 5.00" pipe and a 4.00" Akron valve. The handwheel control for the waterway valve shall be located at the pump operator's panel.

An indicator shall be provided to show the position of the valve.

The following drawing(s) shall be provided for approval by the customer. The drawing(s) shall be made to match match the approved pump panel drawings and 31672. Do not mount the sonalert on the panel, mount in the gauge cluster panel similar pierce job number.

4.300 PUMP OPERATOR'S PANEL DRAWING - A detailed drawing to scale of the pump operator's panel shall be provided for the customer to review. The drawing shall include all of the gauges, controls, switching, etc.., located on the pump operator's panel. The customer shall be allowed to make changes and/or mark-ups to this approval drawing. The fire apparatus manufacturer shall make revisions (if needed) to the drawing per the customer changes and/or mark-ups as long as the changes are physically possible within a specific product line.

The finalized and signed customer approved pump operator's panel drawing shall become part of the contract documents.

Due to the way drain(s), bleeder(s), operational/maintenance tag(s) and nfpa required warning tag(s) are placed on pump panel(s), these items shall not be shown on any pump panel approval drawing(s). These item(s) shall be placed on pump panel(s) at the fire apparatus manufacturer discretion.

4.301 REMAINING PUMP PANEL(S) - Detailed drawing(s) to scale of the remaining pump panel(s) shall be provided for the customer to review. The drawing(s) shall include all of the gauges, controls, switching, etc.., located on the pump panel(s). The customer shall be allowed to make changes and/or mark-ups to these approval drawing(s). The fire apparatus manufacturer shall make revisions (if needed) to the drawing(s) per the customer changes and/or mark-ups as long as the changes are physically possible within a specific product line.

The finalized and signed customer approved pump panel drawing(s) shall become part of the contract documents.

Due to the way drain(s), bleeder(s), operational/maintenance tag(s) and NFPA required warning tag(s) are placed on pump panel(s), these items shall not be shown on any pump panel approval drawing(s). These item(s) shall be placed on pump panel(s) at the fire apparatus manufacturer discretion.

4.302 COLOR CODED TAGS - A detailed drawing/chart of the colors used on all of the inlet(s) and outlet(s) shall be provided for the customer to review. The customer shall be allowed to make changes and/or mark-ups to this approval drawing/chart. The fire apparatus manufacturer shall make revisions (if needed) to the drawing per the customer changes and/or mark-ups as long as the changes are physically possible within a specific product line.

The finalized and signed customer approved drawing/chart of the colors shall become part of the contract documents.

4.303 SPECIAL TEXT/VERBIAGE TAGS - A detailed drawing/chart of the text/verbiage used on all of the inlet(s) and outlet(s) shall be provided for the customer to review. The customer shall be allowed to make changes and/or mark-ups to this approval drawing/chart. The fire apparatus manufacturer shall make revisions (if needed) to the drawing per the customer changes and/or mark-ups as long as the changes are physically possible within a specific product line.

The finalized and signed customer approved drawing/chart of the text/verbiage shall become part of the contract documents.

4.304 PUMP COMPARTMENT - The pump compartment shall be separate from the hose body and compartments so that each may flex independently of the other. The pump compartment shall be constructed of the same material as the body compartmentation.

The pump compartment substructure shall be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards.

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

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

4.305 PUMP MOUNTING - Pump shall be mounted to a substructure which shall be mounted to the chassis frame rail using rubber isolators. The mounting shall allow chassis frame rails to flex independently without damage to the fire pump.

4.306 LEFT SIDE PUMP CONTROL PANELS - All pump controls and gauges shall be located at the left (driver's) side of the apparatus and properly identified.

Layout of the pump control panel shall be ergonomically efficient and systematically organized.

The pump operator's control panel shall be removable in two (2) main sections for ease of maintenance:

The upper section shall contain sub panels for the mounting of the pump pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable). Sub panels shall be removable from the face of the pump panel for ease of maintenance. Below the sub panels shall be located all valve controls and line pressure gauges.

The lower section of the panel shall contain all inlets, outlets, and drains.

All push/pull valve controls shall have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods shall be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls shall be capable of locking in any position. The control rods shall pull straight out of the panel and shall be equipped with universal joints to eliminate binding.

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

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

All line pressure gauges shall be mounted directly above the corresponding discharge control tee handles and recessed within the same chrome plated casting as the rod guide for quick identification. The gauge and rod guide casting shall be removable from the face of the pump panel for ease of maintenance. The casting shall be color coded to correspond with the discharge identification tag.

All remaining identification tags shall be mounted on the pump panel in chrome plated bezels.

The pump panel on the right (passenger's) side shall be removable with lift and turn type fasteners.

Trim rings shall be installed around all inlets and outlets.

4.308 PUMP PANEL CONFIGURATION - The pump panel configuration shall be arranged and installed in an organized manner that shall provide user-friendly operation.

4.309 PUMP OPERATOR'S PLATFORM - A pull out, flip down platform shall be provided at the pump operator's control panel.

The front edge and the top surface of the platform shall be made of da finished aluminum with a morton cass insert.

The platform shall be approximately 13.75" deep when in the stowed position and approximately 22.00" deep when extended. The platform stepping surface shall be 35.00" wide. The platform shall lock in the retracted and the extended position.

The platform shall be wired to the "step not stowed" indicator in the cab.

4.310 PUMP OPERATOR'S PLATFORM PERIMETER LIGHT - There shall be an amdor, model ay-lb-12hw020, 350 lumens each, 20.00" white 12 volt dc led strip light provided to illuminate the ground area.

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

The right side pump panel shall be removable and fastened with swell type fasteners.

4.312 PUMP COMPARTMENT LIGHT - A pump compartment light shall be provided inside the right side pump enclosure and accessible through a door on the pump panel.

A .125" weep hole shall be provided in each light lens, preventing moisture retention.

4.313 PUMP PANEL GAUGES AND CONTROLS - The following shall be provided on the pump and gauge panels in a neat and orderly fashion. These gauges shall be in addition to what is provided with the pressure controller.

- engine oil pressure gauge: with visual and audible warning

- engine water temperature gauge: with visual and audible warning

- tachometer: electric

- master pump drain control

- voltmeter

- fuel

Throttle ready green indicator light

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

4.314 OK TO PUMP INDICATOR LIGHT - There shall be a green indicator light installed on the pump operators panel that is activated when the pump is in ok to pump mode.

4.315 PUMP ACCESS DOOR LATCHES - Two (2) pump access door(s) shall be provided with southco non-locking c2 latches to hold the doors in the closed position in place of standard.

Latch(es) shall be provided with on the pump access door(s) located driver and passenger side access door

4.316 HANDWHEEL OUTLET CONTROLS - The control for one (1) shall be 6.25" handwheel control with indicators. The control shall include all u-joints with rubber coverings. The discharge outlets with handwheels shall be ps ldh.

4.317 PUMP PANEL INFORMATION - Please mount the screw in 140 degree temp switch for option 764348 in a port away from the engine cooler tubing.

4.318 VACUUM AND PRESSURE GAUGES - The pump vacuum and pressure gauges shall be liquid filled and manufactured by class 1 incorporated ©.

The gauges shall be a minimum of 6.00" in diameter and shall have white faces with black lettering, with a pressure range of 30.00"-0-600#.

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

Test port connections shall be provided at the pump operator's panel. One shall be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They shall have 0.25 in. Standard pipe thread connections and polished stainless steel plugs. They shall be marked with a label.

4.319 PRESSURE GAUGES - The individual "line" pressure gauges for the discharges shall be interlube filled and manufactured by class 1©.

The gauges shall be a minimum of 3.00" in diameter and shall have white faces with black lettering.

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

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

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

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

4.320 STEP/LIGHT SHIELD - There shall be an aluminum treadplate stepping surface no less than 8.00" deep and properly reinforced to support a man's weight, installed over the pump operators panel.

There shall be 12 volt dc white led lights installed under the step to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights shall be activated by the pump panel light switch. Additional lights shall be included every 18.00" depending on the size of the pump house.

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

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

There shall be one (1) white led, step light provided above this step. In order to ensure exceptional illumination, each step light shall provide a minimum of 25 foot-candles (fc) covering an entire 15.00" x 15.00" square placed 10.00" below the light and a minimum of 1.5 fc covering an entire 30.00" x 30.00" square at the same 10.00" distance below the light. The step light shall be activated by the pump panel light switch.

4.321 ADDITIONAL STEP/LIGHT SHIELD - There shall be an additional aluminum treadplate stepping surface no less than 8.00" deep and properly reinforced to support a man's weight, installed over the passenger's side pump panel.

There shall be 12 volt dc white led lights installed under the step to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights shall be activated by the pump panel light switch. Additional lights shall be included every 18.00" depending on the size of the pump house.

There shall be one (1) white led, step light provided above the step. In order to ensure exceptional illumination, each step light shall provide a minimum of 25 foot-candles (fc) covering an entire 15.00" x 15.00" square placed 10.00" below the light and a minimum of 1.5 fc covering an entire 30.00" x 30.00" square at the same 10.00" distance below the light. The step light shall be activated by the pump panel light switch.

4.322 FRONT ZONE UPPER WARNING LIGHTS - there shall be eight (8) Whelen® flashing led warning lights with chrome trim mounted on boxes with removable covers on the cab roof.

The lights shall be configured per the following:

- One (1) model 6rbr* 4.18" high x 6.56" long x 3.43" deep light with red leds flashing in a semi circle pattern in the driver's side, outside rear position.
- One (1) model 6rbb* 4.18" high x 6.56" long x 3.43" deep light with blue leds flashing in a semi circle pattern in the driver's side, outside middle position.
- One (1) model 6rbr* 4.18" high x 6.56" long x 3.43" deep light with red leds flashing in a semi circle pattern in the driver's side, outside front position.
- One (1) model m6r* 4.31" high x 6.75" long x 1.37" deep light with red flashing leds in the driver's side front position.
- One (1) model m6r* 4.31" high x 6.75" long x 1.37" deep light with red flashing leds in the passenger's side front position.
- One (1) model 6rbr* 4.18" high x 6.56" long x 3.43" deep light with red leds flashing in a semi circle pattern in the passenger's side, outside front position.
- One (1) model 6rbb* 4.18" high x 6.56" long x 3.43" deep light with blue leds flashing in a semi circle pattern in the passenger's side, outside middle position.
- One (1) model 6rbr* 4.18" high x 6.56" long x 3.43" deep light with red leds flashing in a semi circle pattern in the passenger's side, outside rear position.
- The lens color(s) to be clear.
- There shall be a switch in the cab on the switch panel to control the flashing leds.
- The flashing leds in the front positions shall be activated when the aerial device is raised out of the stowed position.
- The flashing leds in the rear and middle positions may be load managed when the parking brake is applied.

4.323 FRONT ZONE UPPER LIGHTING, PLATFORM: There shall be three (3) Whelen®, model 6rb**, 4.18" high x 6.56" long x 3.43" deep, flashing in a semi-circle pattern led lights with chrome trim located at the front of the platform basket facing forward per the following:

The left side outside warning light to include red leds

The center light to include blue leds

The right side outside warning light to include red leds

The [clear color, lens, led's]

There shall be a switch in the cab on the switch panel to control the lights. The lights shall be deactivated when the aerial device is lifted from the stowed position.

4.324 ADDITIONAL WARNING LIGHTS: There shall be two (2) Whelen, model 6rb**, 4.19" high x 6.56" long x 3.44" deep led flashing in a semi-circle warning light(s) with chrome flange, located on the basket, side of basket.

The color of these lights shall be red. The lens shall be clear.

There shall be a switch in the cab on the switch panel to activate these lights. The lights shall be deactivated when the aerial device is lifted out of the boom support.

The additional warning light(s) may be load managed if colored or shall be deactivated if white, when the parking brake is applied.

4.325 ADDITIONAL WARNING LIGHTS: There shall be two (2) Whelen, model m7* led flashing warning light(s) that include a chrome flange, located on the basket, front corners of the basket side.

The color of these lights shall be blue and include a lens that is clear.

The light(s) shall be activated with the roof light switch and be deactivated when the boom is lifted out of the cradle.

The additional warning light(s) may be load managed if colored or shall be deactivated if white, when the parking brake is set.

4.326 TRAFFIC LIGHT CONTROLLER - There shall be a GTT, Model 792* strobe Opticom traffic light controller with national standard high priority remote mounted on the front edge of the platform basket. The Opticom traffic light controller shall be activated by a cab switch with emergency master control. The Opticom traffic light controller shall have no momentary activation switch. The Opticom traffic light controller shall be disabled when the parking brake is applied.

4.327 COVER, TRAFFIC LIGHT CONTROLLER - There shall be an aluminum treadplate cover provided over the Opticom traffic light controller for protection.

4.328 CAB FACE WARNING LIGHTS - There shall be two (2) Whelen, Model M6*C, LED flashing warning lights with chrome flange provided on the front of the cab above the headlights.

- The driver's side front warning light to be blue.
- The passenger's side front warning light to be blue.
- Both lights shall include a clear lens.
- There shall be a switch located in the cab on the switch panel to control the lights.

4.329 FRONT WARNING LIGHT - There shall be two (2) Whelen, Model M6*, LED flashing light(s) with chrome trim provided below the headlights as shown on the drawing.

- The color of the light(s) shall be red.
- The color of the lens shall be clear.
- The light(s) shall be activated with the front warning switch.
- These lights may be load managed if colored or disabled if white when the parking brake is applied.
- Any white light shall be disabled and any amber light activated when the parking brake is applied.

4.330 SIDE ZONE LOWER LIGHTING - There shall be six (6) Whelen®, flashing LED warning lights with chrome trim installed per the following:

4.330.1 Two (2) Model 6RB**, 4.18" high x 6.56" long x 3.43" deep lights flashing in a semi-circle pattern, one (1) each side on the front cab corner. The side front warning LEDs to be red.

4.330.2 Two (2) Model M6**, 4.31" high x 6.75" long x 1.37" deep lights, one (1) each side of cab rearward of crew cab doors. The side middle LEDs to be blue.

4.330.3 Two (2) Model M6**, 4.31" high x 6.75" long x 1.37" deep lights, one (1) each side on the rear fender panel. The side rear LEDs to be blue.

4.330.4 The warning light lens color(s) to be clear.

4.330.5 INTERIOR CAB DOOR WARNING LIGHTS - There shall be four (4) Weldon, Model 8401-0000-20, amber 12 volt DC LED flashing strip lights provided.

4.330.6 One (1) light on the driver's side cab door over the window.

4.330.7 One (1) light on the passenger's side cab door over the window.

4.330.8 One (1) light on the passenger's side crew cab door over the window.

4.330.9 One (1) light on the driver's side crew cab door over the window.

4.330.10 Each light shall be activated when the battery switch is on and the adjacent door is opened.

4.330.11 Each light shall be installed so the flash pattern directs traffic away from the doors.

4.331 ADDITIONAL SIDE UPPER LIGHTS - There shall be six (6) Whelen, Model M4**, 3.38" high x 5.50" long x 1.38" deep LED surface mount flashing lights with chrome trim provided on the outside corner radius of the cab roof over the crew cab doors.

- The side front lights to be red.
- The side middle lights to be blue.
- The side rear lights to be red.
- The color of the lenses shall be clear.

4.331.1 The lights shall be installed on two (2) painted bracket that are attached to the cab roof. Three (3) lights on the driver's side and three (3) lights installed on the passenger's side.

4.331.2 There shall be a switch in the cab on the switch panel to control the lights.

4.332 SIDE WARNING LIGHTS - There shall be two (2) Whelen, Model WIONSMC* LED light(s) provided and located centered over D4 / P4, on the side of the catwalk. The color of each light shall be blue LED with a clear lens. Each light shall be provided with a chrome plated ABS flange. The light(s) shall be activated with the side warning switch.

4.332.1 SIDE WARNING LIGHTS - There shall be two (2) Whelen, Model WIONSMC* LED light(s) provided and located centered above D2/P2 on the catwalk.

- The color of each light shall be red LED with a clear lens.
- Each light shall be provided with a chrome plated ABS flange.
- The light(s) shall be activated with the side warning switch.

4.332.2 REAR ZONE LOWER LIGHTING - There shall be two (2) Whelen®, Model M6*C, LED flashing warning lights located at the rear of the apparatus.

- The driver's side rear light to be red
- The passenger's side rear light to be red
- Both lights shall include a lens that is clear.
- There shall be a switch located in the cab on the switch panel to control the lights.

4.332.3 REAR WARNING LIGHTS - There shall be two (2) Whelen®, Model 6RB**, LED flashing warning light(s) with Whelen, Model 6EFLANG, chrome flange(s) provided centered below the rear scene light, on the rear wall.

- The color of the lights shall be blue.

- The color of the lens of the light(s) shall be clear.
- These lights shall be activated with the rear upper warning switch.

4.332.4 REAR OF HOSE BED WARNING LIGHTS - There shall be two (2) Whelen Rota-Beam, Model R3165F, 4.00" high x 7.19" wide beacons with red LED's and clear domes provided.

- One (1) shall be installed on the driver's side rear of the apparatus.
- One (1) shall be installed on the passenger's side rear of the apparatus.
- There shall be a switch located in the cab on the switch panel to control the beacons.

4.332.5 TRAFFIC DIRECTING LIGHT - There shall be one (1) Whelen® Model TAM85, 46.00" long x 2.87" high x 2.25" deep, amber LED traffic directing light installed at the rear of the apparatus.

4.332.6 The Whelen Model TACTL5 control head shall be included with this installation.

4.332.7 The auxiliary warning mode shall be activated with the control head only.

4.332.8 This traffic directing light shall be mounted on top of the body below the turntable at the rear of the apparatus.

4.332.9 The traffic directing light controller shall be located within the overhead recessed console above the engine tunnel on the passenger's side.

4.333 ELECTRICAL SYSTEM GENERAL DESIGN for ALTERNATING CURRENT -The following guidelines shall apply to the 120/240 VAC system installation:

4.333.1 General

A. Any fixed line voltage power source producing alternating current (ac) line voltage shall produce electric power at 60 cycles plus or minus 3 cycles.

B. Except where superseded by the requirements of NFPA 1901, all components, equipment and installation procedures shall conform to NFPA 70, National Electrical Code (herein referred to as the NEC).

C. Line voltage electrical system equipment and materials included on the apparatus shall be listed and installed in accordance with the manufacturer's instructions. All products shall be used only in the manner for which they have been listed.

4.331.2 Grounding

A. Grounding shall be in accordance with Section 250-6 "Portable and Vehicle Mounted Generators" of the NEC. Ungrounded systems shall not be used. Only stranded or braided copper conductors shall be used for grounding and bonding.

B. An equipment grounding means shall be provided in accordance with Section 250-91 (Grounding Conductor Material) of the NEC.

C. The grounded current carrying conductor (neutral) shall be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor shall be colored white or gray in accordance with Section 200-6 (Means of Identifying Grounding Conductors) of the NEC.

D. In addition to the bonding required for the low voltage return current, each body and driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor. This conductor shall have a minimum amperage rating of 115 percent of the nameplate current rating of the power source specification label as defined in Section 310-15 (amp capacities) of the NEC. A single conductor properly sized to meet the low voltage and line voltage requirements shall be permitted to be used.

E. All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source.

4.331.3 Operation

A. Instructions that provide the operator with the essential power source operating instructions, including the power-up and power-down sequence, shall be permanently attached to the apparatus at any point where such operations can take place.

B. Provisions shall be made for quickly and easily placing the power source into operation. The control shall be marked to indicate when it is correctly positioned for power source operation. Any control device used in the drive train shall be equipped with a means to prevent the unintentional movement of the control device from its set position.

C. A power source specification label shall be permanently attached to the apparatus near the operator's control station. The label shall provide the operator with the information detailed in Figure 19-4.10.

D. Direct drive (PTO) and portable generator installations shall comply with Article 445 (Generators) of the NEC.

4.331.4 Overcurrent protection

A. The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 144.00" (3658 mm) in length.

B. For fixed power supplies, all conductors in the power supply assembly shall be type THHW, THW, or use stranded conductors enclosed in nonmetallic liquid tight flexible conduit rated for a minimum of 194 degree Fahrenheit (90 degrees Celsius).

C. For portable power supplies, conductors located between the power source and the line side of the main overcurrent protection device shall be type SO or type SEO with suffix WA flexible cord rated for 600-volts at 194 degrees Fahrenheit (90 degrees Celsius).

4.331.5 Wiring Methods

A. Fixed wiring systems shall be limited to the following:

B. Metallic or nonmetallic liquid tight flexible conduit rated at not less than 194 degrees Fahrenheit (90 degrees Celsius)

C. or

D. Type SO or Type SEO cord with a WA suffix, rated at 600 volts at not less than 194 degrees Fahrenheit (90 degrees Celsius)

E. Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring. In addition the wiring shall be run as follows.

F. Separated by a minimum of 12.00" (305 mm), or properly shielded, from exhaust piping

G. Separated from fuel lines by a minimum of 6.00" (152 mm) distance

H. Electrical cord or conduit shall be supported within 6.00" (152 mm) of any junction box and at a minimum of every 24.00" (610 mm) of continuous run. Supports shall be made of nonmetallic materials or corrosion protected metal. All supports shall be of a design that does not cut or abrade the conduit or cable and shall be mechanically fastened to the vehicle.

4.331.6 Wiring Identification

A. All line voltage conductors located in the main panel board shall be individually and permanently identified. The identification shall reference the wiring schematic or indicate the final termination point. When prewiring for future power sources or devices, the unterminated ends shall be labeled showing function and wire size.

B. Wet Locations

C. All wet location receptacle outlets and inlet devices, including those on hardwired remote power distribution boxes, shall be of the grounding type provided with a wet location cover and installed in accordance with Section 210-7 "Receptacles and Cord Connections" of the NEC.

D. All receptacles located in a wet location shall be not less than 24.00" (610 mm) from the ground. Receptacles on off-road vehicles shall be a minimum of 30.00" (762 mm) from the ground.

E. The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees off vertical. No receptacle shall be installed in a face up position.

4.331.7 Dry Locations

A. All receptacles located in a dry location shall be of the grounding type. Receptacles shall be not less than 30.00" (762 mm) above the interior floor height.

B. All receptacles shall be marked with the type of line voltage (120-volts or 240-volts) and the current rating in amps. If the receptacles are direct current, or other than single phase, they shall be so marked.

4.331.8 Listing - All receptacles and electrical inlet devices shall be listed to UL 498, Standard for Safety Attachment Plugs and Receptacles, or other appropriate performance standards. Receptacles used for direct current voltages shall be rated for the appropriate service.

4.331.9 Electrical System Testing

A. The wiring and associated equipment shall be tested by the apparatus manufacturer or the installer of the line voltage system.

B. The wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900-volts for one (1) minute. The test shall be conducted between live parts and the neutral conductor, and between live parts and the vehicle frame with any switches in the circuit(s) closed. This test shall be conducted after all body work has been completed.

C. Electrical polarity verification shall be made of all permanently wired equipment and receptacles to determine that connections have been properly made.

4.331.10 Operational Test per Current NFPA 1901 Standard

A. The apparatus manufacturer shall perform the following operation test and ensure that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order. The test shall be witnessed and the results certified by an independent third-party certification organization.

B. The prime mover shall be started from a cold start condition and the line voltage electrical system loaded to 100 percent of the nameplate rating.

C. The power source shall be operated at 100 percent of its nameplate voltage for a minimum of two (2) hours unless the system meets category certification as defined in the current NFPA 1901 standard.

D. Where the line voltage power is derived from the vehicle's low voltage system, the minimum continuous electrical load as defined in the current NFPA 1901 standard shall be applied to the low voltage electrical system during the operational test.

4.332 GENERATOR

1. The apparatus shall be equipped with a complete AC (alternating current) electrical power system. The generator shall be a Harrison, Model 10.0MAS-16R/D-11011/15/1, 10,000watt hydraulic driven unit.

2. The generator shall be driven by a transmission power take off unit, through a hydraulic pump and motor.

3. The hydraulic engagement supply shall be operational at any time (no interlocks).

4. An electric/hydraulic valve shall supply hydraulic fluid to the clutch engagement unit provided on the chassis PTO drive.

5. Generator Instruments and Controls - To properly monitor the generator performance a digital meter panel shall be furnished and mounted near the circuit breaker panel.

4.332.1 GENERATOR LOCATION - The generator shall be mounted in the in the area over the pump in the center. The flooring in this area shall be either reinforced or constructed in such a manner that it shall handle the additional weight of the generator.

4.332.2 GENERATOR START - There shall be a switch provided on the cab instrument panel to engage the generator.

4.332.3 CIRCUIT BREAKER PANEL - The circuit breaker panel shall be located high on the forward wall of compartment D4.

4.332.4 SPARE CIRCUIT BREAKER - The circuit breaker panel shall be furnished with two (2) circuit breakers, 120 volt 20 amp, provided as spares.

4.332.5 DIGITAL METER PANEL - The generator meter panel shall be installed [Location TBD] in place of the standard location. The digital meter panel shall be on anytime the generator is running (no green indicator light is required).

4.332.6 120 VOLT LIGHTING - There shall be two (2) Fire Research, Model SPAKR700-K20-ON-HD-***, 120 volt AC 20,000 Lumens LED light(s) with switch, ground base and quick release truck mount brackets provided to be determined. The painted parts of this light assembly to be white with a white bezel. There shall be a 30 amp, 120 volt twist lock plug included with each light selected.

4.332.7 ELECTRIC CORD REEL - Furnished with the 120-volt AC electrical system shall be an Akron cord reel. The reel shall be provided with a 12-volt electric rewind switch that is guarded to prevent accidental operation and labeled for its intended use. The switch shall be protected with a fuse and installed at a height not to exceed 72.00" above the operators standing position.

4.332.8 The reel shall be capable holding 12/3, 600-volt cable or 10/3, 600-volt cable.

4.332.9 The exterior finish of the reel(s) shall be powder coated silver from the reel manufacturer.

4.332.10 A Nylatron guide to be provided to aid in the payout and loading of the reel. A ball stop shall be provided to prevent the cord from being wound on the reel.

4.332.11 A label shall be provided in a readily visible location adjacent to the reel. The label shall indicate current rating, current type, phase, voltage and total cable length.

4.332.12 A total of two (2) cord reels shall be provided one (1) reel in the driver's side front compartment over the driver's side front stabilizer and one (1) reel in the passenger's side front compartment over the passenger's side front stabilizer.

4.332.13 The cord reel should be configured with three (3) conductors.

4.332.14 Reel Warranty - The electric reel shall come with a five (5)-year warranty provided by the reel manufacturer.

4.332.15 CORD - There shall be 200 feet of Carol Super Vu-Tron II yellow 12/3 electrical cord provided for electrical distribution. The cord shall be provided with a Fire Power connector. A total of two (2) shall be provided.

4.332.16 120 VOLT RECEPTACLE - There shall be one (1), 15/20 amp 120 volt AC three (3) wire straight blade duplex receptacle(s) with interior duplex flip up cover(s), installed one in the center rear facing EMS box, mounted on the forward wall, down low, centered side to side. The NEMA configuration for the receptacle(s) shall be 5-20R. The receptacle(s) shall be powered from the shoreline inlet. There shall be a label installed near the receptacle(s) that state the following: Line Voltage, Current Ratting (amps),
Phase, and Frequency

4.332.17 120 VOLT RECEPTACLE: There shall be two (2), 15/20 amp 120 volt AC three (3) wire straight blade duplex receptacle(s) with interior duplex flip up cover(s), installed LS4 and RS4 upper corner by the 12 volt studs. The NEMA configuration for the receptacle(s) shall be 5-20R.

The receptacle(s) shall be powered from the shoreline inlet.

There shall be a label installed near the receptacle(s) that state the following: Line Voltage, Current Ratting (amps), and Phase Frequency.

4.333 THREE SECTION 100 FOOT AERIAL PLATFORM

4.333.1 GENERAL INFORMATION: It is the intent of these specifications to describe a telescoping, elevating platform. The unit shall consist of a three (3) section, aluminum ladder with a self-leveling basket attached, to the ladder fly section.

4.333.2 OPERATION ON GRADES: The aerial unit shall be capable of operating safely, on any slope up to 10 degrees at full capacities. (Operation beyond this limit shall be at the operator's discretion.)

4.333.3 CONSTRUCTION STANDARDS: The ladder shall be constructed to meet all of the requirements as described in the current edition of NFPA 1901 standards. Some portions of this specification exceed minimum NFPA recommendations. They shall be considered a minimum requirement to be met.

A safety factor of 2:1 is required for environmental loading (wind plus .25" of ice build-up). This structural safety factor shall apply to all structural aerial components including turntable and torque box stabilizer components. Definition of the structural safety factor shall be as outlined in NFPA standards:

DL = Dead load stress. Stress produced by the weight of the aerial device and all permanently attached components.

RL = Rated capacity stress. Stress produced by the rated capacity load of the ladder.

WL = Water load stress. Stress produced by nozzle reaction force and the weight of water in the water delivery system.

FY = Material yield strength. The stress at which material exhibits permanent deformation.

2.25 x DL + 2.25 x RL + 2.25 x WL equal to/less than FY. The minimum NFPA specification is exceeded here by providing a safety factor above 2:1 while flowing water.

2.0 x DL + 2.0 x RL + 2.0 x WL + 2.0 x wind loading equal to/less than FY.

The RL is reduced with a .25" ice build up to maintain a minimum 2:1 structural safety factor.

An independent engineering firm shall verify the aerial safety factor. Design verification shall include computer modeling and analysis, and extensive strain gauge testing witnessed by an independent registered professional engineer. Verification shall include written certification from the independent engineering firm made available by the manufacturer upon request from the purchaser.

All welding of aerial components, including the aerial ladder sections, turntable, pedestal, and outriggers shall be performed by welders who are certified to American Welding Society (AWS) standards. The weldment assemblies of each production unit shall be tested visually and mechanically by an ASNT certified level II non-destructive test technician to comply with NFPA standards. Testing procedures shall conform to the AWS standards guide for non-destructive testing. Test methods may include dye penetrant, ultrasound, and magnetic particle where applicable.

4.334 LADDER CONSTRUCTION: The ladder shall be comprised of three (3) sections and shall extend to a nominal height, of 100 feet above the ground, as measured by 1901 recommendations.

The ladder shall be designed to provide continuous egress for firefighters and civilians from an elevated position to the ground. To insure a high strength to weight ratio and an inherent corrosion resistance, the aerial ladder shall be completely constructed of high-strength aluminum. All side rails, rungs, handrails, uprights, and K braces shall be made of structural 6061T6 alloy aluminum extrusions.

All material shall be tested and certified by the material supplier. All ladder sections shall be semi-automatically welded by shielded arc welding methods using 5356 aluminum alloy welding wire. Structural rivets or bolts shall not be utilized in the ladder weldment sections.

The aerial ladder shall consist of three (3) welded, extruded aluminum telescopic ladder sections. Each ladder section shall consist of two (2) extruded aluminum side rails and a combination of aluminum rungs, tubular diagonals, verticals and two (2) full-length handrails. The rungs on all sections shall be K braced for maximum lateral stability. This K bracing shall extend to the center of each rung to minimize ladder side deflection.

The ladder rungs shall be designed to eliminate the need to replace rubber-rung covers. The rungs shall be spaced on 14.00" centers and have an integral skid-resistant surface as outlined in NFPA standards. An oval shaped rung shall be utilized to provide a larger step surface at low angles and more comfortable grip at elevated positions. The minimum design load shall be 500 lbs. distributed over a 3.50" wide area as outlined in NFPA standards.

Each aerial ladder section shall have heat sensor labels that are preset to 300 degrees Fahrenheit with expiration year. The heat labels shall meet NFPA standards.

The aerial ladder shall exceed NFPA standards governing the minimum ladder section width and handrail height:

- Base section: 42.38" wide x 36.00" high

- Mid-section: 32.63" wide x 31.25" high

- Fly section: 24.00" wide x 27.38" high

4.334.1 VERTICAL HEIGHT: The ladder shall extend to a minimum height of 100' above the ground at full extension and elevation. The measurement of height shall be consistent with NFPA standards.

4.334.2 HORIZONTAL REACH: The rated horizontal reach shall be 91'9". The measurement of horizontal reach shall be consistent with NFPA standards.

4.334.3 OPERATION RANGE: The operating range of the ladder shall be 11.5 degrees below horizontal (10 degrees with deep notch cab) to 76 degrees above horizontal with the truck in a level position.

The aerial shall be capable of rotating from side-to-side around the back of the truck, encompassing up to 235 degrees of continuous rotation (depending on equipment and where it is located), while the aerial device remains at 11.5 degrees below horizontal (10 degrees with a deep notch cab). This shall ensure that the platform stepping surface does not exceed the NFPA recommended maximum step height during a continuous rotation of up to 235 degrees.

4.334.4 MOUNTING OF ELEVATING PLATFORM; The aerial device shall be rear mounted, to a torque box, on the truck chassis.

4.334.5 TORQUE BOX: A "torsion box" subframe shall be installed between the two sets of stabilizers. The torque box shall be constructed of a minimum .312" steel plate (50,000 pounds per square inch yield) with steel tubing reinforcement, on each side of the box, in the turntable area. The dimensions of the torque box shall be 41.00" wide x 29.00" high x 247.63" long. There shall be a 1/2" gap between the torque box and the frame rails to promote drying of the surfaces and reduce the effect of corrosion. The torque box subframe assembly shall be capable of withstanding all torsional and horizontal loads when the unit is on the stabilizers. The torque box shall be bolted to the chassis frame rails using thirty-six .750" SAE grade 8 bolts with nuts.

4.334.6 TURNTABLE: The turntable shall be a 1.00" thick aluminum deck, covered with a non-skid, chemical resistant material in the walking areas. The stepping surfaces shall meet the skid-resistance requirements of the current NFPA 1901 standard.

The turntable shall measure 88.50" long x 87.88" wide. The turntable shall include an enclosure for the hydraulic valves and rotation motor, which shall also serve as a step, for access to the ladder.

The turntable handrails shall be a minimum 42.00" high and shall not increase the overall travel height of the vehicle. The handrails shall be constructed out of aluminum and have a slip resistant knurled surface.

The upper turntable assembly shall connect the aerial ladder to the turntable bearing. The steel structure shall have a mounting position for the aerial elevation cylinders, ladder connecting pins, and upper turntable operator's position.

A 54.24" diameter turntable bearing with a 3.25" drive gear face shall be bolted to the top of the bearing mounting plate with .88" diameter Grade 8 plated bolts. The gear teeth shall be stub tooth form. The rated overturning moment of the turntable bearing shall be a minimum of 441,400 ft. lbs.

4.334.7 ELEVATION SYSTEM: Dual 7.00" diameter elevating cylinders shall be mounted on the underside of the base section of the ladder. Two (2) 2.50" diameter stainless steel pins shall fasten the cylinder to the turntable and fasten to the ladder. The pins shall have 125,000 psi minimum yield strength and shall be secured with .50" Grade 8 bolts with lock nuts. The bolts are to ensure that the pins do not walk out of the mounting brackets on the turntable and base section.

The elevating cylinders shall be mounted utilizing maintenance-free spherical bearings on both ends of the cylinders. The aerial base pivot bearings shall be maintenance-free type bearings with no external lubrication required. The cylinders shall function only to elevate the ladder and not as a structural member to stabilize the ladder side movement. The elevating cylinders shall be provided with pilot-operated check valves on the barrel and rod side of the piston to prevent movement of the ladder in case of a loss of hydraulic pressure.

The operation envelope shall be 11.5 degrees below horizontal (10 degrees with a deep notch cab) to 76 degrees above horizontal.

The elevation system shall be designed following NFPA standards. The elevation hydraulic cylinders shall incorporate cushions on the upper limit of travel.

The lift cylinders shall be equipped with integral holding valves located in the cylinder to prevent the unit from descending should the charged lines be severed, at any point within the hydraulic system and to maintain the ladder in the bedded position during road travel. The integral holding valves shall NOT be located in the transfer tubes.

The elevation system shall be controlled by the microprocessor. The microprocessor shall provide the following features:

- Collision avoidance of the elevation system to prevent accidental body damage

- Automatic deceleration when the aerial device is lowered into the cradle

- Automatic deceleration at the end of stroke, in maximum raise and lower positions

- Deceleration of the aerial device at the limits of travel

4.334.8 EXTENSION/RETRACTION SYSTEM: A hydraulically powered, extension and retraction system shall be provided through dual hydraulic cylinders and wire ropes. Each set shall be capable of operating the ladder in the event of a failure, of the other. The extension cylinder rod shall be chrome plated to provide smooth operation of the aerial device and reduce seal wear. The extension/retraction cylinders shall be equipped, with integral holding valves, to prevent the unit from retracting should the charged line be severed, at any point within the hydraulic system. The integral holding valves shall NOT be located in the transfer tubes.

Wire ropes and attaching systems used to extend and retract the fly sections shall have a 5:1 safety factor based on the ultimate strength under all operating conditions. The factor of safety for the wire rope shall remain above 2:1 during any extension or retraction stall. The minimum ratio of the diameter of wire rope used to the diameter of the sheave used shall be 1:12. Wire ropes shall be constructed of seven (7) strands over an inner wire for increased flexibility. The wire rope shall be galvanized to reduce corrosion.

The ladder assembly shall consist of three (3) separate weldments that shall extend and retract within each other. Nylatron PAG + OIL slide pads shall be utilized between each section to minimize friction. Four (4) T type interlocking load transfer stations shall enclose the slide pads. The transfer stations shall be located at the upper portion of the base and second ladder sections. Additional guide pads shall be located along the aerial section to guide the ladder during retraction and extension.

The extension/retraction system shall be controlled by the microprocessor. The microprocessor shall provide the following features:

- Automatic deceleration at the end of stroke, in maximum extend and retract positions

- Controls the rate of retraction while flowing water

All sheaves shall be greaseless and all sheave pins and pivot pins shall be polished stainless steel.

4.334.9 ROTATION SYSTEM: The aerial shall be supplied with a powered rotation system as outlined in NFPA standards. The hydraulic rotation motor shall provide continuous rotation under all rated conditions and be supplied with a brake to prevent unintentional rotation. Two (2) hydraulically driven, planetary gear boxes with drive speed reducers shall be used to provide infinite and minute rotation control throughout the entire rotational travel. Two (2) spring applied, hydraulically released disc type swing brakes shall be furnished to provide positive braking of the turntable assembly. Provisions shall be made for emergency operation of the rotation system should complete loss of normal hydraulic power occur. The hydraulic system shall be equipped with pressure relief valves which shall limit the rotational torque to a nondestructive power. The gearbox shall have a minimum continuous torque rating of 60,000 in. lbs. and a minimum intermittent rating of 130,000 in. lbs. The turntable bearing, ring gear teeth, pinion gear, planetary gearbox, and output shaft shall be certified by the manufacturer of the components for the application.

The rotation system shall be controlled by the microprocessor. The microprocessor shall provide the following features:

- Envelope control of rotation system to prevent accidental body damage

- Prevent the aerial from being rotated into an unstable condition

4.334.10 MANUAL OVERRIDE CONTROLS: Manual override controls shall be provided for all aerial and stabilizer functions.

4.334.11 LADDER SLIDE MECHANISM: Wear pads shall be used between the telescoping ladder sections, to reduce friction for smoother operation. Slide pads shall also be used to control side play between the ladder sections.

4.334.12 BASKET LEVELING SYSTEM: A basket leveling system shall be provided and so designed, that the basket with its rated load, can be supported and maintained level, relative to the horizontal, regardless of the elevation or flexion of the ladder.

Basket leveling shall be accomplished by hydraulic circuitry that is independent from the main hydraulic system. The leveling of the basket features a dual master/slave hydraulic cylinder system, with each side capable of supporting the load, while maintaining the basket level. Two (2) master cylinders are mounted between the turntable and the base ladder section, with two (2) slave cylinders mounted between the ladder fly section and the basket. The slave and master cylinders are synchronized, so as the ladder is raised or lowered, exact amounts of hydraulic fluid are transferred between the master and slave cylinders thus maintaining the basket level.

The hydraulic circuitry includes pressure operated counter balance valves, on the load side of the slave cylinders, to prevent the basket from tipping should the hydraulic lines be severed.

A momentary switch is provided, on the cab instrument panel, to level the basket should this become necessary due to ambient temperature changes. It is not necessary to start the engine and activate the main hydraulic system to level the basket.

The basket leveling system shall be manually adjustable from 10 degrees below horizontal to 10 degrees above horizontal.

Manual basket leveling switches shall be provided at the turntable and basket.

4.334.13 ROTATION INTERLOCK: The microprocessor shall be used to prevent the rotation of the aerial device to the side in which the stabilizers have not been fully deployed (short-jacked). The microprocessor shall allow full and unrestricted use of the aerial, in the 180 degree area, on the side(s) where the stabilizers have been fully deployed. The system shall also have a manual override, to comply with NFPA 1901. SYSTEMS THAT PERMIT THE AERIAL TO ROTATE TO THE "SHORT JACK" SIDE, WITHOUT AUTOMATICALLY STOPPING THE ROTATION AND/OR WITHOUT ACTUATION OF THE "MANUAL OVERRIDE", shall NOT BE ACCEPTED. SYSTEMS THAT ONLY INCLUDE AN ALARM ARE NOT CONSIDERED AN INTERLOCK AND shall NOT BE ACCEPTED.

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

A load chart shall be visible at the operator's station. The load chart shall show the recommended safe load at any condition of the aerial device's elevation and extension. The ratings in the unsupported, fully extended configuration (in addition to 100 lbs. of equipment mounted at the tip) shall maintain a 2:1 safety factor with a 35 mph wind.

The aerial device shall have a rated capacity of 1000 lbs. consistent with standards. The rated capacity shall include 1000 lbs. in personnel allowance and 100 lbs. for equipment mounted at the tip of the ladder. The aerial device shall be rated in multiple configurations as outlined in NFPA standards.

35 MPH WIND CONDITIONS/WATERWAY DRY

Degrees of Elevation	-11.5 to 29*	30 to 39	40 to 49	50 to 76
Basket	1000	1000	1000	1000
Fly Tip	-	250	500	750
Mid Tip	-	250	500	750
Base	250	500	1000	1000

* -10 degrees with deep notch cab

35 MPH WIND CONDITIONS/WATERWAY CHARGED

Degrees of Elevation	-11.5 to 29*	30 to 39	40 to 49	50 to 76
Basket	500	500	500	500

Fly Tip	-	250	500	750
Mid Tip	-	250	500	750
Base	-	500	750	750

* -10 degrees with deep notch cab

Reduced loads at the fly can be redistributed to the mid or base sections as needed.

The aerial device shall be able to maintain the above load capacities while flowing up to 1500 GPM and a nozzle position of 0 to 90 degrees to either side of the ladder centerline, as far above and below horizontal to the platform as nozzle design allows.

While flowing 1500 to 2000 GPM, the nozzle position shall be limited to 45 degrees either side of the ladder centerline horizontal to the platform, 30 degrees above horizontal, and as far below horizontal to the platform as nozzle design allows.

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

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

4.334.16 BOOM SUPPORT: A heavy-duty boom support, constructed of steel, is to be provided for support of the ladder in the travel position. The boom support shall be bolted to the chassis frame as close to the front axle as design allows. On the base section of the ladder, a stainless steel scuffplate shall be provided where the ladder comes into contact with the boom support.

The boom support shall be located just to the rear of the chassis cab, recessed into the engineer compartment.

4.334.17 AERIAL BOOM SUPPORT LIGHT: There shall be one (1) Amdor®, Model AY-LB-12SHW012, 190 lumen, 12" long, LED strip light with white LEDs and surface mounts provided on the boom support cradle. This light shall be activated when the aerial master switch is activated.

4.334.18 HYDRAULIC TANK SPECIAL LOCATION: The hydraulic tank shall be located on top of the torque box at the front.

4.334.19 AERIAL BOOM PANEL: There shall be one boom panel provided on the base section on the left side of the aerial device while viewed from the turntable. This boom panel shall be sized to match the storage box on the opposite side. The boom panel shall be painted #90 red.

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

4.334.20 EXTENSION INDICATOR: Extension markings and corresponding numerical indicators shall be provided along each inside and outside top rail of the base section of the aerial every 10'. They shall indicate various positions of extension up to full. Markings and indicators shall be clearly visible to the console operator. To aid in visibility during hours of darkness, the markings and numerical indicators shall be red reflective material.

4.334.21 LADDER STORAGE MOUNTING BRACKETS: Mounting brackets for a single roof ladder shall be provided on the left side of the aerial device while viewed from the turntable. A total of one (1) roof ladder(s) shall be stored on the aerial base section. The bracket(s) shall be located inboard of the boom panel at the base section.

The mounting brackets shall accommodate a 16' Duo-Safety 875-A roof ladder(s) to be stored individually as determined by the type of aerial device and the available space.

4.334.22 LIMITED RETRACTION: The aerial device shall have limited retraction.

4.334.23 ADDITIONAL INCLINOMETER: There shall be one (1) additional inclinometer(s) provided to indicate the degree of elevation of the aerial device. The inclinometer(s) shall be located on the outside of the base section on the opposite side of the standard location.

A light shall be provided to illuminate the inclinometer.

4.334.24 PIKE POLE AND AXE MOUNTING BRACKETS: Mounting shall be provided near the end of the fly section on the left side of the aerial device while viewed from the turntable for one (1) pike pole and a fire axe.

The bracket shall be sized to hold a Fire Hooks Unlimited 8' pike pole.

The axe mounting shall be provided on the aerial tip side and the pike pole mounting shall be provided towards the aerial turntable.

4.334.25 STOKES AND LYFE BRACKET STORAGE BOX: There shall be an aluminum storage box provided at the base section of the aerial ladder on the right side of the aerial device while viewed from the turntable. The box shall be painted job color. The box shall be located in place of the aerial boom panel and have a hinged cover with butterfly latch to secure the stokes basket and Lyfe brackets. The cover shall have the same finish as the box. A divider shall be provided to separate the stokes basket and the brackets. The box shall have no louvers.

The size of the stokes basket shall be 86 x 8 x 25 stokes. and storage to hold the 3 in 1 life brackets.

The maximum capacity of this box shall be 75 lb.

4.334.26 BASKET STRUCTURE: The basket structure shall be constructed of structural T6061 aluminum and integrated with the construction of the waterway to ensure a high strength-to-weight ratio. The aerial basket shall be fully tested and independent third party certified.

The flooring and front decking of the basket shall be multi-piece non-slip material, preventing the accumulation of water on the standing surface. The floor shall measure approximately 37.19" long x 78.13" wide. The stepping surfaces shall meet the skid-resistance requirements of current NFPA 1901 standard.

The outside basket steps shall be at the same level as the basket floor. The steps on the front and sides are approximately 8.00" deep. The doors and front corners of the basket shall be at 45 degrees to allow the basket to be maneuvered closer to buildings when approaching at an angle.

Four (4) stainless steel pompier belt safety loops shall be attached to the inside of the basket. Two (2) lifting eyes shall be provided on the bottom side of the basket support structure.

Two (2) rubber bumpers are provided on the bottom side of the basket structure for damage protection when setting it down on a surface.

The basket interior shall be illuminated as required per the current edition of NFPA 1901. All hoses and wiring at the basket shall be fully enclosed. Electrical sub-components shall be mounted under the basket in a separate enclosure for easy servicing while maintaining an unobstructed basket interior.

4.334.27 BASKET SIDES: The sides of the basket shall be of tubular aluminum construction and aluminum sheet skin with engine turned finish and, along with the basket doors, shall form a continuous 42.00" high wall around the basket.

4.334.28 PLATFORM ENTRANCES/EXITS: Two (2) swing-in, spring-loaded, self-closing double pan doors shall be of single pan aluminum construction with engine turned finish and shall be provided on the 45 degree angles at the front of the platform. A paddle style door latch shall allow the basket doors to be opened from the outside by applying pressure to the paddle with the hand. The rear of the basket shall be equipped with a vertical self-closing gate for transfer to and from the basket's ladder device. Telescoping-type handrails shall be provided as a banister to bridge the gap between the basket and the fly section at all elevations.

4.334.29 ACCESSORY MOUNTING RECEPTACLES: Two (2) universal accessory mounting receptacles shall be permanently affixed on the front of the basket to receive the LyfeLine™ family of options such as the LyfeSupport™ rescue basket holders, LyfeEye™ rappelling arms, LyfeLadder™ roof ladder brackets, LyfeHoist™ winch, etc. Complete interchangeability shall be required without modification to the basket.

4.334.30 MULTIPLEX DISPLAY COVER: A cover shall be provided for the multiplex display in the platform basket. The cover shall be hinged at the front of the basket and when down it shall cover the multiplex display. The cover shall be constructed of brushed stainless steel.

The cover shall be held down with a rubber draw latch.

4.334.31 HOSE BOX AT PLATFORM: There shall be one (1) hose storage box(es) with a cover and rubber hood latch provided at the platform. The box(es) shall be located at the right side of the basket when viewed from the turntable and shall match the finish of the aerial device. The box(es) size shall be 7.5" x 21.5" x 30.5" deep.

4.334.32 LIGHTS FOR TURNTABLE WALKWAY: There shall be white LED lights provided at the aerial turntable. The lights shall be located to illuminate the entire walking surface of the turntable including the area around the turntable console. These lights shall be activated by the aerial master switch.

4.334.33 TURNTABLE CONSOLE LIGHTING: There shall be one (1), TecNiq Model T10, white LED light strip mounted in the turntable console cover to illuminate the controls located on both the upper and lower portion of the turntable control station. These lights shall be activated by the aerial master switch.

4.334.34 TURNTABLE DECK COATING: The turntable deck shall be provided with non-slip coating that is grey in color.

4.334.35 BASKET HEAT SHIELDS: A heat reflective shield shall be provided on the front, sides and bottom of the basket.

The double pan basket access doors shall form the heat shield at the front of the basket. The side heat shields shall be formed by a single sheet of .063 aluminum.

Full under the basket heat shield protection, with a non-glare finish, shall be provided with a swing-down door for ease of servicing.

4.334.36 INFORMATION CENTER: There shall be an information center provided. The information center shall operate in temperatures from -40 to 185 degrees Fahrenheit. The information center shall employ a Linux operating system and a 7.00" (diagonal measurement) LCD display. The LCD shall have a minimum 400nits rated, color display. The LCD shall be sunlight readable, true digital operation, and shall have improved resolution. The LCD display shall be encased in an ABS, black plastic housing with a gray decal. There shall be five (5), weather-resistant user interface switches provided. The LCD display can be changed to an available foreign language.

4.334.37 OPERATION: The information center shall be designed for easy operation in everyday use. There shall be a page button to cycle from one screen to the next screen in a rotating fashion. A video button shall allow an NTSC signal into the information center to be displayed on the LCD. If any button is pressed while viewing a video feed, the information center shall return to the vehicle information screens. There shall be a menu button to provide access to maintenance, setup, and diagnostic screens. All other button labels shall be specific to the information being viewed.

4.334.38 GENERAL SCREEN DESIGN: Where possible, background colors shall be used to provide vehicle information At A Glance. If the information provided on a screen is within acceptable limits, a green background color shall be used. If the information provided on a screen is not within acceptable limits, an amber background color shall indicate a caution condition and a red background color shall indicate a warning condition.

Every screen in the information center shall include the aerial tip temperature, the time (12- or 24-hour mode) and a text Alert Center. The time shall be synchronized between all Command Zone color displays located on the vehicle. The Alert Center shall display text messages for audible alarms. The text messages shall identify any items causing the audible alarm to sound. If more than one (1) audible alarm is activated, the text message for each alarm shall cycle every second until the problems have been resolved. The background for the Alert Center shall change to indicate the severity of the warning message. Amber shall indicate a caution condition and red shall indicate a warning condition. If a warning and a caution condition occur simultaneously, the red background color shall be shown for all Alert Center messages.

A label shall be provided for each button. The label shall indicate the function for each active button for each screen. If the button is not utilized on specific screens, it shall have a button label with no text.

Symbols shall accurately depict the aerial device type the information pertains to such as rear mount ladder, rear mount platform, mid-mount ladder or mid-mount platform.

4.334.39 PAGE SCREENS: The Information center shall include the following pages:

The Aerial Main and Load Chart page shall indicate the following information:

- Rungs Aligned and Rungs Not Aligned shall be indicated with text and respective green or red colored ladder symbols.

- Ladder Elevation shall be indicated via a fire apparatus vehicle with ladder symbol with the degree of elevation indicated between the vehicle and ladder.

- Water Flow (if applicable) shall be indicated via a water nozzle symbol and text indicating flow / time.

- Breathing Air Levels shall be indicated via an air bottle symbol and text indicating the percent (%) of air remaining. A green bar graph shown inside the bottle shall indicate oxygen levels above 20%. A red bar graph shall indicate oxygen levels at or below 20%. When oxygen levels are at or below 10%, the red bar graph shall flash.

- At A Glance color features shall be utilized on this screen. Caution type conditions shall be indicated via a yellow background. Warning type conditions shall be indicated via a red background. Conditions operating within acceptable limits shall be indicated via a green background.

The Aerial Reach and Hydraulic Systems page shall indicate the following information:

- Aerial Hydraulic Oil Temperature shall be indicated with symbol and text. At A Glance features shall be utilized.

- Aerial Hydraulic Oil Pressure shall be indicated with a symbol and text. At A Glance features shall be utilized.

- The following calculations shall be indicated on a representative vehicle symbol:

- Aerial Device Extension length

- Aerial Device Height indicating the height of the aerial device tip from the ground

- Aerial Device Reach indicating the horizontal distance the aerial reaches from the turntable.

- Aerial Device Angle indicating the angle from the vehicle which the device is at.

- At A Glance color features shall be utilized on this screen. Caution type conditions shall be indicated via a yellow background. Warning type conditions shall be indicated via a red background. Conditions operating within acceptable limits shall be indicated via a green background.

The Level Vehicle page shall indicate the following information:

- The grade of the vehicle shall be indicated via a fire apparatus vehicle symbol with the degree of grade shown in text format. The symbol shall tilt dependent on the vehicle grade.

- The slope of the vehicle shall be indicated via a fire apparatus vehicle symbol with the degree of slope shown in text format. The symbol shall tilt dependent on the vehicle slope.

- Outriggers status shall be indicated via a colored symbol for each outrigger present. Each outrigger status shall be defined as one of the following:

- Outrigger stowed indicated with a silver pan located close to the vehicle

- Outrigger fully extended indicated with a fully deployed green outrigger

- Outrigger short-jacked indicated by a yellow outrigger partially deployed

- Outrigger not set indicated by a red outrigger that is not set on the ground

- A text box located on the vehicle symbol shall be utilized to identify the overall status of the outrigger leveling system. The following status shall be indicated in the text box:

- Deployed status shall indicate all outriggers are properly set on the ground at full extension

- Shortjacked status shall indicate one or more outriggers are set on the ground but not fully extended.

- Not Set status shall indicate one or more outriggers is not properly set on the ground.

- Stowed status shall indicate all outriggers are stowed for vehicle travel.

- A bedding assist alert shall indicate that the aerial device is being aligned by the Command Zone system as the operator lowers the aerial device into the cradle with the joystick.

- At A Glance color features shall be utilized on this screen. Caution type conditions shall be indicated via a yellow background. Warning type conditions shall be indicated via a red background. Conditions operating within acceptable limits shall be indicated via a green background.

4.334.40 MENU SCREENS: The following screens shall be available through the Menu button:

The View System Information screen shall display aerial device hours, aerial PTO hours, ladder aligned for stowing, aerial rotation angle, total water flow (if applicable), and aerial waterway valve status (if applicable).

The Set Display Brightness screen shall allow brightness increase and decrease and include a default setting button.

The Configure Video Mode screen shall allow setting of video contrast, video color and video tint.

The Set Startup screen allows setting of the screen that shall be active at vehicle power-up.

The Set Date and Time screen has a 12- or 24-hour format, and allows setting of the time and date.

The View Active Alarms screen shows a list of all active alarms including the date and time of each alarm occurrence, and shows all alarms that are silenced.

The System Diagnostics screen allows the user to view system status for each module and its respective inputs and outputs. Viewable data shall include the module type and ID number; the module version; and module diagnostics information including input or output number, the circuit number connected to that input or output, the circuit name (item connected to the circuit), status of the input or output, and other module diagnostic information.

Aerial Calibrations screen indicates items that may be calibrated by the user and instructions to follow for proper calibration of the aerial device.

Button functions and button labels may change with each screen.

4.334.41 LOWER CONTROL STATION: A lower control station shall be located, at the rear of the apparatus, in an easily accessible area. The controls and indication labels shall be illuminated, for nighttime operation. The following items shall be furnished at the lower control station and shall be clearly identified and conveniently located for ease of operation and viewing:

- Level assist switch

- Override switch to override interlocks

- Emergency power unit switch

4.334.42 AERIAL DEVICE CONTROL STATIONS: There shall be two (2) device control stations. One (1) shall be referred to as the basket control station and the other as the turntable control station. All elevation, extension and rotation controls shall operate from both of these locations. The controls shall permit the operator to regulate the speed of the aerial functions, within the safe limits, as determined by the manufacturer and NFPA standards. The controls shall be grouped and operate in an identical manner at both stations for similarity of operation. The controls shall be clearly marked and lighted for nighttime operation.

Each control shall be equipped, with a positive lock to hold the control in a neutral position, preventing accidental activation. In addition to the neutral lock, a console cover shall be provided at the turntable control station. The controls shall be so designed to allow the turntable control station to immediately override the basket controls, even if the ladder is being operated by the basket controls.

4.334.43 TURNTABLE CONTROL STATION: The turntable control station shall be located, on the left side of the turntable, so the operator may easily observe the basket while operating the controls.

The following items shall be installed at the turntable control station, clearly identified, lighted for nighttime operation and conveniently located for ease of operation and viewing:

- Electric controls for elevation, rotation, extension/retraction

- Manual electric controls for basket leveling

- Intercom controls

- Tip tracking light switch

- Emergency power unit switch

- Operator's load chart

- Three (3) position switch for selecting aerial operational speed

4.334.44 TURNTABLE WORK LIGHTS: There shall be a minimum of two (2) 12-volt work lights installed on the turntable, to illuminate the surrounding area for nighttime operation. The work lights shall be activated by the aerial master switch.

4.334.45 BASKET CONTROL CONSOLE: The basket instrument panel shall be located at the front center, of the aerial platform. The following controls shall be installed at the console and be clearly identified, illuminated for nighttime operation and conveniently located for ease of operation and viewing:

- Intercom controls

- Operator's load chart

4.334.46 AERIAL FUNCTION CONTROLS: The aerial function controls, elevation, rotation, extension/retraction shall be mounted in a separate backlit control box, which shall be attached to the front of the platform control console, by means of an easily removable slide mechanism. The aerial function control box shall have three (3) fixed attachment points in the basket. The electrical connection shall be by a strain relieved, coiled cord that is permanently attached to the control box. To reduce the excess cord in the basket, the coiled cord shall use a deutsch style bayonet connector style plug and there shall be there (3) locations in the basket. The legend for the control lever functions shall be illuminated.

4.334.47 HIGH IDLE: The high idle shall be controlled by the microprocessor. The microprocessor shall automatically adjust the engine rpm, to compensate for the amount of load placed upon the system. The system shall include a safety device that allows activation of the high idle, only when the parking brake is set and the transmission is placed in neutral.

4.334.48 STABILIZERS: Two (2) sets of extendible, out and down, "H" type stabilizers shall be provided for stability. The stabilizers shall have a spread of 16' 6".

The stabilizers shall be the double box design, with jack cylinders, that have a 4.25" internal diameter (bore), 3.00" diameter cylinder rod and a 34.88" stroke. The jack cylinders shall be equipped with integral holding valves, which shall hold the cylinder in either the stowed position or the working position, should a charged line be severed at any point within the hydraulic system. For safety, the integral holding valves shall be located in the cylinder base end, NOT in the transfer tube. Vertical jack cylinder rods shall be fully enclosed by a telescoping inner box to protect the cylinder rods against damage that may occur.

The extension cylinders shall be totally enclosed within the extension beams. The horizontal extension cylinders shall be of the trombone type to eliminate wear and potential failure of hydraulic hoses.

The stabilizers shall have the capability of 18.00" of ground penetration, for set-up on uneven terrain. Extension of the horizontal beams shall be activated by an extension cylinder, which has a 2.25" internal diameter (bore), 1.38" diameter cylinder rod and a 48.25" stroke. The extension cylinders shall be totally enclosed within the extension beams. The cylinders shall be equipped with internal decelerators. The cross section dimensions shall be 13.00" high x 6.81" wide.

Each stabilizer leg shall have attached to the end of the leg a 16 gauge polished stainless steel shield. The stainless steel shield shall be of the split-pan design and shall be a maximum 13.50" wide to allow the extension of the stabilizer between parked cars. This plate shall serve as a protective guard and a mounting surface for warning lights. The top, forward, and rear edges shall be flanged back for added strength.

4.334.49 STABILIZER CONTROLS: A portable stabilizer control box shall be provided. The control box shall be weatherproof and oil resistant. Each function and indicator light shall be labeled on a metal photo panel. The control box can be taken as far away as 15 feet from the vehicle with an extension cable.

The stabilizer control box shall include the following:

- One (1) green power indicator light for stabilizer control that shall be illuminated when the aerial master and "PTO" switches in the cab are activated.

- Four (4) electric joysticks for stabilizers: each toggle switch shall control the extend/retract and raise/lower of its respective stabilizer to allow vehicle set up in restricted areas and/or on uneven surfaces.

- Leveling assist push button: The outrigger control system shall incorporate a computerized self-leveling system in addition to the standard outrigger controls. The operator shall have the option to manually or automatically level the truck. The computerized system shall ensure full outrigger extension, proper jack penetration, and shall level the vehicle within 1/2 a degree of level for safe operation of the aerial device.

-One (1) electric push button for the engaging the emergency power unit

- One (1) red "stabilizer not stowed" indicator light: this light shall illuminate when the stabilizers are not in the fully stowed position.

- Four (4) fully extended beams green indicator lights: these lights shall be illuminated when each of the respective stabilizer beams are fully extended.

- Four (4) firm on ground green indicator lights: each light shall be illuminated when its respective stabilizer shoe is in the load supporting condition.

Each joystick shall activate the engine fast idle automatically.

Manual override shall be supplied for each stabilizer control valve.

A "Stabilizers Not Stowed" indicator shall be provided in the driver's compartment. It shall illuminate automatically whenever the stabilizers are not fully stowed to prevent damage to the apparatus if moved. The stabilizer system shall also be wired to the "Do Not Move Indicator Light", which shall flash whenever the apparatus parking brake is not fully engaged and the stabilizers are not fully stowed.

4.334.50 STABILIZER PADS: A one (1) position, floating stabilizer pad shall be provided on each stabilizer. The pads shall require no operator adjustment during set up. The stabilizer pad shall have the ability to pivot, in a 360-degree plane, for set up on uneven terrain.

4.334.51 AUXILIARY STABILIZER PADS: A set of four auxiliary pads with handles shall be provided for additional load distribution on soft surfaces. Their size shall be 31.00" x 26.00" and they shall be constructed of a lightweight composite material. The ground contact area for each stabilizer shall be such that a unit pressure not greater than 75 psi (500 kPa) shall be exerted over the ground contact area when the apparatus is loaded to its maximum in-service weight and the aerial device is carrying its rated capacity in every position permitted by the manufacturer. The pads shall be stored in a double stacked configuration, two (2) behind each rear tandem axle in a single bracket.

4.334.52 CRADLE INTERLOCK SYSTEM: A cradle interlock system shall be provided, to prevent the lifting of the aerial from the nested position, until the operator has positioned all the stabilizers in a load-supporting configuration. A switch shall be installed at the cradle, to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

4.334.53 STABILIZER PINS: The stabilizer jacks shall not have holes for the stabilizer pins.

4.334.54 STABILIZER CONTROL BOX ALUMINUM DOOR: A vertically hinged smooth aluminum door shall be provided over the stabilizer control box. The door shall be hinged outboard.

4.334.55 STABILIZER PANELS: The stabilizer panels shall be painted stainless steel in place of polished stainless steel.

4.334.56 HYDRAULIC SYSTEM: All high-pressure hoses shall have an abrasion resistant cover, and have a rating greater than or equal to the working pressure of the circuit in which they are installed. All hydraulic fittings shall be plated to minimize corrosion. The fitting shall use an O-ring face seal, where possible, to minimize hydraulic leaks. All pressure carrying hydraulic hoses shall have a 4:1 safety rating based on burst pressure

An interlock shall be provided that prevents activation of the hydraulic pump until the transmission is placed in neutral and the parking brake is set as outlined in NFPA standards.

The hydraulic system shall be of the load sense design to minimize heat build up and provide smooth control of the aerial ladder. The system shall meet the performance requirement in NFPA standards, which requires adequate cooling after less than 2 1/2 hours of operations.

All hydraulic components that are non-sealing, where failure could result in the aerial movement, shall comply with NFPA standards and have burst strength of 4:1. Dynamic sealing components, where failure could cause aerial movement, shall have a margin of 2:1 on maximum operating pressure per NFPA standards. All hydraulic hoses, tubes, and connections shall have minimum burst strength of 3:1 per NFPA standards.

A hydraulic oil pressure gauge shall be supplied at the base control location per NFPA standards.

The aerial hydraulic system shall be designed in such a manner that a hydraulic pump failure or line rupture shall not allow the aerial or outriggers to lose position. Hydraulic holding valves shall be mounted directly into cylinders. To ensure reliable performance of holding valves, no hoses or tubing shall be permitted between a holding valve and cylinder. The aerial shall incorporate the use of trombone steel tubes inside the stabilizer beams to eliminate hydraulic hose wear and leaks. Hydraulic power to the ladder shall be transferred from the pedestal by a hydraulic swivel.

4.334.57 HYDRAULIC RESERVOIR: The hydraulic system shall consist of an oil reservoir mounted to the torque box and plumbed to the hydraulic pump. There shall be plumbing for a supply and return line and a tank drain on the reservoir.

The hydraulic pump suction line shall have a shut-off ball valve for pump servicing.

The hydraulic oil reservoir fill shall be labeled per NFPA standards. The hydraulic system shall use multi-weight, SAE grade oil. ISO grade shall be based on geographical location. The manufacturer shall certify that the oil meets or exceeds the hydraulic cleanliness rating of 18/15/13 per ISO 4406:1999 before delivery.

4.334.58 HYDRAULIC FILTERS: The system shall incorporate the following filters to provide dependable service:

- Separate magnet (not on strainer)

- Reservoir suction strainer: 125 mesh

- Pressure filter with dirt alarm: Nominal 5 micron filter with a rating of 6.5 micron @ Beta 200 (99.5% efficiency); 7.5 micron @ Beta 1000 (99.9% efficiency)

- Return filter with dirt alarm: Nominal 5 micron filter with a rating of 6.5 micron @ Beta 200 (99.5% efficiency); 7.5 micron @ Beta 1000 (99.9% efficiency)

- Desiccant breather filter: Water capacity 4 fluid oz, 5 micron rating

4.334.59 HYDRAULIC CYLINDERS: All hydraulic cylinders used on the aerial device shall be produced by a manufacturer that specializes in the production of hydraulic cylinders.

4.334.60 POWER TAKEOFF / HYDRAULIC PUMP: The apparatus shall be equipped with a power takeoff driven by the chassis transmission and actuated by an electric shift located inside the cab. The power takeoff, which drives the hydraulic pump, shall meet all the requirements for the aerial unit operations. The hydraulic pump shall be a variable displacement piston pump, for consistent and rapid response, and be capable of supplying hydraulic oil at a nominal 50gpm flow at pressures up to 3000 psi. The system shall operate up to 3000 psi with flow controls to protect hydraulic components and incorporate a relief valve set at 3150 psi to prevent over pressurization. The hydraulic pump shall be solely dedicated to aerial operations. An amber indicator light shall be installed on the cab instrument panel to notify the operator that the power takeoff is engaged.

An interlock shall be provided that allows operation of the aerial power takeoff shift only after the chassis spring brake has been set and the chassis transmission has either been placed in the neutral position or drive position after the driveline has been disengaged from the rear axle.

4.334.61 EMERGENCY PUMP: The hydraulic system shall be designed with an auxiliary power unit meeting the guidelines of NFPA standards. The auxiliary power unit shall be a 12-volt pump connected to the chassis electrical system. The pump shall provide operation at reduced speeds to store the aerial device and outriggers for road transportation.

Self-centering switches shall be provided at the turntable and stabilizer control station to activate the system. The system shall be designed to provide a minimum of 30 minutes of hydraulic power to operate functions.

4.334.62 HYDRAULIC SWIVEL: The aerial ladder shall be equipped with a three (3) port, high-pressure hydraulic swivel that shall connect the hydraulic lines from the hydraulic pump and reservoir through the rotation point to the aerial control bank. The hydraulic swivel shall allow for 360 degree continuous rotation of the aerial.

4.334.63 ELECTRIC SWIVEL: The ladder shall be equipped with an electric swivel to allow 360 degrees rotation of the aerial while connecting all electrical circuits through the rotation point. A minimum of 36 collector rings shall be provided that are capable of supplying 20 amp continuous service. All collector rings shall be enclosed and protected with desiccant plugs against condensation and corrosion. No oil or silicone shall be used.

4.334.64 WATER SWIVEL: Water shall be transferred to the aerial waterway by means of a 5.00" internal diameter waterway, through the swivel, permitting 360 degree continuous rotation.

4.334.65 13-BIT ABSOLUTE ENCODER: The aerial ladder shall be equipped with a 13-Bit Absolute Encoder, CAN-based, which provides 8192 counts per shaft turn for position and direction reference.

The 13-Bit Absolute Encoder shall provide a unique binary word to reference each position and direction for all 360 degrees of rotation.

If the power is interrupted for any reason, the 13-Bit Absolute Encoder shall allow power to be returned to the system without having to re-zero the settings.

The 13-Bit Absolute Encoder shall be an integral part of a microprocessor based control system.

4.334.66 ELECTRICAL SYSTEM: The 100' platform shall utilize the Pierce Command ZoneTM System. The system shall consist of the following components:

A tethered, CAN-based, stabilizer control shall be provided. The tethered control shall be weatherproof and oil resistant. The stabilizer control shall be illuminated with a LED strip light in the face of the unit. The electrical connection at the tethered control shall be permanently attached by a strained relieved coil cord that shall allow the operator to move at least 14 feet away from the electrical connection for operation.

A. Remote Stabilizer Controls

B. Brightness control

C. Weatherproof and oil resistant

D. One (1) green "power" indicator light

E. One (1) red "stabilizer not stowed" indicator light

F. One (1) electric push button for level assist

G. One (1) electric push button for the emergency power unit

H. One (1) electric joystick for each stabilizer control:

I. Extend/retract function

J. Raise/lower function

K. One (1) green "stabilizer fully extended" indicator light for each stabilizer

L. One (1) green "firm on ground" indicator light for each stabilizer

M. Control System Modules

N. Each of the control system modules shall be configured as follows:

O. Sealed to a NEMA 4X rating

P. Operating range from -40 degrees F to 156 degrees F (-40 degrees C to 70 degrees C)

Q. Communicate using J1939 data link

R. Two (2) diagnostic LED lights

S. One (1) green light that illuminates when module has power (B+) andground

T. One (1) red light that flashes to indicate the module is capable ofcommunicating via the data link

U. Up to 16 diagnostic LEDs on each module

V. Ground matrix identification system

W. The following control system modules shall be used:

X. Control Module

Y. Main controller for the system

Z. USB connection allows for computer diagnostics

AA. Power Module

BB. Built-in fault sensing

CC. Eight (8) digital outputs

DD. Pulse width modulating (PWM) capable

EE. 10A continuous per output

FF. Circuit protection based on actual current draw (not affected by heat)

GG. Current Control Module

HH. Built-in fault sensing

II. Three (3) analog inputs

JJ. Eight (8) digital outputs

KK. Pulse width modulating (PWM) capable

LL. 3A continuous per output

MM. Closed Loop System

NN. Circuit protection based on actual current draw (not affected by heat)

OO. Input Module

PP. 16 software selectable (digital or analog) inputs

QQ. Output Module

RR. 16 digital outputs

SS. Input/Output Module

TT. Eight (8) software selectable (digital or analog) inputs

UU. Eight (8) digital outputs

4.335 AERIAL LIGHTS: There shall be two (2) Fire Research SoBrite, SRA110-07A*, 12 volt DC LED lights provided as tracking lights:

A. One (1) light shall be mounted on the driver's side of the base section of the ladder

B. One (1) light shall be mounted on the passenger's side of the base section of the ladder

C. Power to the tracking lights shall be controlled by a switch at the turntable operators platform and the basket.

D. There shall be one (1) Fire Research Spectra, Model SPA100-Q15*, 12 volt DC LED floodlight provided at the front of the basket.

E. The tip lights shall be controlled by platform/tip, turntable, driver side cab switch panel, and passenger side cab switch panel.

F. The painted parts of this light assembly to be black.

G. The lights shall be mounted below the handrail height so as not to increase the overall height of the unit.

4.334.67 AERIAL LOCATOR LIGHT: There shall be two (2) beacons installed at the aerial tip for the purpose of locating the aerial device while in operation. The beacons shall be Whelen Model L31H*F, LED. Both beacons shall be activated whenever the aerial is raised from the cradle. The color of the locator light shall be amber. The lens color shall be the same color as the LED's. The lights may be load managed when the parking brake is applied.

4.334.68 STABILIZER WARNING LIGHTS: There shall be our (4) Whelen®, Model M6*C, LED flashing warning lights with Whelen, Model M6FC, chrome flanges installed, one (1) on each stabilizer cover panel. The front stabilizer pan lights shall be red LED with a clear lens. The rear stabilizer pan lights shall be red LED with a clear lens. These warning lights shall be activated by the same switch as the side warning lights.

4.334.69 STABILIZER BEAM WARNING LIGHTS: Two (2) 4.00" diameter red LED flashing lights shall be mounted on each stabilizer, one (1) facing forward and one (1) facing rearward. The lights shall be Grote Supernova 40 series LED lights. The lights shall be recessed in the horizontal beam of the stabilizer. These warning lights shall be activated with the aerial master switch.

4.334.70 STABILIZER SCENE LIGHTS: There shall be one (1) Amdor®, Model AY-LB-12HW012, 190 lumen, 12" long, white LED strip light installed under each stabilizer beam to illuminate the surrounding area. A total of four (4) lights shall be installed. The lights shall be activated by the aerial master switch.

4.334.71 PLATFORM 120-VOLT ELECTRIC SYSTEM: Two (2) Fire Power 120-volt 20 amp three (3)-wire type with weather resisting cover receptacles with weatherproof covers shall be provided in the aerial platform. The receptacles shall be located at the rear of the basket. Each receptacle shall be supplied from individual branch circuits protected by dedicated 20 amp/120-volt circuit breakers. All wiring shall be sized to and conform to the latest edition of NEC standards. The circuit shall be labeled "Aerial Ckt #1"

4.334.72 120 VOLT SIDE PLATFORM LIGHTING: There shall be one (1) Fire Research Spectra, Model SPA260-K20, 20,000 lumens 120 volt AC surface mount LED light(s) with black bezel(s) provided passenger side only. Due to the light optics the lights shall be installed so the light is directed downward.

These light(s) shall be switched at the platform/tip, turntable, and driver side and passenger side cab.

4.334.73 COMMUNICATION SYSTEM: An Atkinson three (3)-way communications system shall be provided. The communication system shall be furnished between the platform, the pump operator's panel and the turntable operator's position. The master control located at the turntable control console shall have the transmitting and receiving volume controls along with the push to talk button. A self-contained "hands-off" speaker microphone shall be located in the platform which shall require no operator attention to transmit or receive.

4.334.74 BREATHING AIR: Breathing air shall be supplied to the aerial platform. The air system shall incorporate one (1), 437 cubic foot, 4500-psi cylinder. To allow the turntable operator an unobstructed view of the platform the cylinder shall be mounted on the right side of the ladder. The air cylinder shall be interconnected through a pressure regulator located at the air cylinder. A shutoff valve with guard shall be provided on the cylinder. At the platform, the breathing air shall be accessible via two (2) quick couplings for air masks. These shall have a Hansen brass 3000 series coupling. One (1) coupling shall be located at the front of the basket on the right side and one (1) coupling shall be located at the rear of the basket on the left hand side. There shall be [Breathing Air Mask Box]. A 100' recharge hose shall be provided for refilling the air cylinder without having to remove the tank from its mounting.

The breathing air cylinder shall be designed and constructed to conform to the requirements of the United Nations (UN) on the transportation of dangerous goods.

4.334.75 BREATHING AIR LEVEL AND WARNING SYSTEM: The level of breathing air remaining shall be visible on the LCD display at all operating positions. The display shall incorporate a low-pressure warning circuit that activates an audible alarm when 20% of maximum air cylinder capacity remains. A second, louder audible alarm shall activate when the remaining air level drops to 10% of maximum air cylinder capacity.

4.334.76 AIR BOTTLE LETTERING: The cylinder for the breathing air mounted on the aerial device shall have white colored lettering for the graphics.

4.334.77 RAISED AERIAL PEDESTAL: The aerial pedestal shall be raised to accommodate the height of the cab.

4.334.78 LYFECOMBO™BRACKETS: One (1) set of brackets shall be supplied and mounted to the front of the platform basket. The brackets have been designed to increase firefighter safety and add to the functionality of the aerial device. The brackets shall have three (3) functions that include: securing the roof ladder to the basket to allow firefighter access below the basket, two (2) rappelling arms to serve as an anchor point which allow rappelling from the basket, and mounting bars to allow the secure mounting of a rescue basket for transporting patients using the aerial. Each bracket shall be easily removable using two (2) positively latched, 1.00" diameter aluminum pins.

LyfeLadder™support brackets shall be incorporated into the design of the 3-in-1 option brackets. The brackets shall be designed to mount an 875A Duo-Safety roof ladder up to 20 feet long securely in place. The ladder shall be secured through its beams and one (1) rung, by a 1.00" diameter aluminum rod capable of being positively latched in place and able to withstand a minimum of a 500lb load while maintaining a minimum of a two to one (2:1) safety factor. There shall also be a latch to keep the ladder in a vertical position at all times that shall attach to a rung 28.00" below the primary attachment point. Strain gauging and testing shall have been completed on the system (ladder and complete holding device) providing the above criteria has been met. A set of nylon guides shall be provided to aid in positioning the roof ladder on the mounting brackets.

LyfeEye™ rappelling brackets shall be provided. The LyfeEye brackets shall be incorporated into the design of the 3-in-1 option brackets. Each bracket in the set shall have a forged stainless steel eyebolt with a 1.38" inside diameter for use as a rappel line anchor. Each bracket shall have a capacity of 300 lbs.

LyfeSupport™ rescue basket support bars shall be provided. The bars shall be incorporated into the design of the 3-in-1 option brackets. The bars shall be easily removable from the 3-in-1 bracket to allow for individual storage of these bars when they are not needed. Two (2) quick clip basket straps shall be used to secure the rescue basket to the brackets.

4.334.79 AERIAL MOTION HOURMETER: There shall be an aerial in motion hour meter provided under the turntable console. The hour meter shall be activated when the dead man switch is activated.

4.334.80 SWITCH: There shall be a switch installed that shall activate the Do Not Move Truck Indicator circuit when the battery switch is on, the turntable console cover is opened and the parking brake is released.

4.334.81 AERIAL TURNTABLE MANSAVER™ BARS: ManSaver™ bars shall be installed at the aerial turntable.

4.334.82 AERIAL WATERWAY: The aerial waterway shall be capable of being supplied by either a midship mounted pump or an external water source through a 5.00" intake at the rear of the apparatus.

A 5.00" water swivel shall be installed below the aerial turntable permitting the ladder to rotate 360 degrees continuously.

A 5.00" water swivel shall be installed at the aerial heel pivot pin that shall permit water tower operations of -11.5 degrees to 76 degrees. The heel pivot pin shall not be integral with the waterway swivel at any point. The waterway design shall allow complete servicing of the waterway swivel without disturbing the heel pivot pin.

A telescoping aluminum waterway shall be installed on the side of the aerial ladder sections. The waterway shall consist of a 5.00" diameter tube for the base section, 4.50" diameter tube for the mid-section and 4.00" diameter tube for the fly section.

A 1.50" drain shall be provided for the waterway with the control at the rear of the unit.

4.334.83 WATERWAY SEALS: The waterway seals shall be of type-B PolyPak design, composed of nitroxile seal and a nitrile wiper, which together offer maximum stability and extrusion resistance on the waterway. The seal shall be capable of withstanding pressures up to 2000 psi, temperatures in excess of 250 degrees Fahrenheit and have resistance to all foam generating solutions. The seals shall be internally lubricated.

The waterway seals shall have automatic centering guides constructed of synthetic thermal polymer. The guides shall provide positive centering of the extendible sections within each other and the base section to insure longer service life and smoother operation.

4.334.84 PLATFORM WATER SYSTEM: A 4.00" (internal diameter) water swivel shall connect the fly section waterway to the platform waterway. The water swivel shall permit water tower operations from -11.5 degrees to 76 degrees. The water shall be routed from the swivel to a 4.00" gear operated butterfly valve on the front of the platform using a 4.00" 6061 pipe. The deluge gun shall be bolted onto the butterfly valve.

A 2.50" preset pressure relief valve shall be provided in the waterway system. It shall be designed to protect the aerial waterway from excess pressure. It shall dump water to the ground when operating.

A shower nozzle rated at 75 gpm shall be provided beneath the platform for heat protection for the platform personnel. A direct linkage control for the shower nozzle shall be provided.

One (1) - 2.50" preconnect shall be provided at the front of the platform. The preconnect shall be gated at the platform. The preconnect shall be furnished with 2.50" NST threads and chrome plated cap.

4.334.85 AERIAL MONITOR: There shall be two (2) Task Force Tips monitors provided at the platform.

One (1) shall be a Y4-M21A-P double hand wheel controlled monitor with a TFT YST-4NN stacked tips.

One (1) shall be Y4-E21A-P electric monitor with a TFT 2000 gpm Model M-ERP2000 electric nozzle.

The controls for the electronic monitor shall be located at the platform and the turntable control console.

4.334.86 WATERWAY FLOWMETER: Waterway flow, including total water flowed, shall be monitored by the microprocessor. An LCD display shall be located at the upper and lower control stations.

4.334.87 REAR INLET: A 5.00" NST inlet to the aerial waterway shall be provided at the rear of the apparatus, on the driver's side. It shall be furnished with a 5.00" chrome plated adapter and a 5.00" rocker lug chrome plated cap.

4.334.88 AERIAL FLOW TEST WITH PITOT GAUGE: The end user shall witness their aerial flow water while here for their final inspection. A Pitot gauge shall also be utilized during the flow test as requested by the customers.

4.334.89 MANUALS: The aerial manufacturer shall provide two (2) operator maintenance manuals and two (2) wiring diagrams pertaining to the aerial device.

4.334.90 INITIAL INSTRUCTION: On initial delivery of the fire apparatus, the contractor shall supply a qualified representative to demonstrate the apparatus and provide initial instruction to the fire department regarding the operation, care, and maintenance of the apparatus for a period of three (3) consecutive days.

4.334.91 TOOLS - The following tools shall be provided for retorquing of all specified bolts as recommended by the manufacturer:

A. Torque Wrench
B. All Required Extensions, Sockets and Adapters
C. 4-to-1 Multiplier

4.334.92 INITIAL INSTRUCTION - On initial delivery of the fire apparatus, the contractor shall supply a qualified representative to demonstrate the apparatus and provide initial instruction to the fire department regarding the operation, care, and maintenance of the apparatus for a period of three (3) days.

4.334.93 MAINTENANCE EDUCATION - Education shall be provided to the City of San Antonio Fire Department services personnel at the Fire Department services facility. This education shall cover items such as but not limited to Engine, transmission, suspension or aerial device maintenance or repair. The instructor(s) shall be fully knowledgeable and have the full support of Pierce Manufacturing to teach such education.

4.334.94 LOOSE EQUIPMENT - One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit shall be provided at delivery.

4.334.95 NFPA REQUIRED LOOSE EQUIPMENT PROVIDED BY FIRE DEPARTMENT - The following loose equipment as outlined in NFPA 1901, 2016 edition, section 8.9.3 shall be provided by the fire department.

A. Two (2) 3 ft - 4 ft plaster hooks with D handles mounted in brackets fastened to the apparatus.
B. Two (2) crowbars.
C. Two (2) claw tools.
D. Two (2) 12 lb (5 kg) sledgehammers.
E. One (1) SCBA complying with NFPA 1981 for each assigned seating position, but not fewer than four (4), mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer.
F. One (1) spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s).
G. One (1) first aid kit.
H. Six (6) salvage covers, each a minimum size of 12 ft × 18 ft (3.6 m × 5.5 m).
I. Four (4) combination spanner wrenches.
J. Two (2) scoop shovels.
K. One (1) pair of bolt cutters, 24" (0.6 m) minimum.
L. Four (4) ladder belts meeting the requirements of NFPA 1983.
M. One (1) 150 ft (45 m) light-use life safety rope meeting the requirements of NFPA 1983.
N. One (1) 150 ft (45 m) general-use life safety rope meeting the requirements of NFPA 1983.
O. Two (2) 150 ft (45 m) utility ropes having a breaking strength of at least 5000 lb (2300 kg).
P. One (1) box of tools to include the following:
Q. one (1) hacksaw with three (3) blades
R. one (1) keyhole saw
S. one (1) 12" (.3 m) pipe wrench
T.-one (1) 24" (.6 m) pipe wrench
U. one (1) ballpeen hammer
V. one (1) pair of tin snips
W. one (1) pair of pliers
X. one (1) pair of lineman's pliers
Y. assorted types and sizes of screwdrivers
Z. assorted adjustable wrenches
AA. assorted combination wrenches
BB. One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, Standard for High Visibility Public Safety Vests, and have a five-point breakaway feature that includes two (2) at the shoulders, two (2) at the sides, and one (1) at the front.
CC. Five (5) fluorescent orange traffic cones not less than 28.00" (711 mm) in height, each equipped with a 6.00" (152 mm) retro-reflective white band no more than 4.00" (152 mm) from the top of the cone, and an additional 4.00" (102 mm) retro-reflective white band 2.00" (51 mm) below the 6.00" (152 mm) band.
DD. Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities.

EE. One (1) automatic external defibrillator (AED).

FF. One (1) double female 2.50" adapter with National Hose Threads (if equipped with a fire pump).

GG. One (1) double male 2.50" adapter with National Hose Threads (if equipped with a fire pump).

HH. One (1) rubber mallet, for use on suction hose connections (if equipped with a fire pump).

II. Two (2) hydrant wrenches (if equipped with a fire pump).

JJ. If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, shall be carried mounted in brackets fastened to the apparatus (if equipped with a fire pump).

KK. If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3.00" (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6 (if equipped with a fire pump).

LL. If the apparatus does not have a 2.50" National Hose (NH) intake, an adapter from 2.50" NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake (if equipped with a fire pump).

MM. If the supply hose carried has other than 2.50" National Hose (NH) threads, adapters shall be carried to allow feeding the supply hose from a 2.50" NH thread male discharge and to allow the hose to connect to a 2.50" NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake (if equipped with a fire pump).

4.334.96 DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT - NFPA 1901, 2016 edition, section 8.9.3 requires one (1) approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus. The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher.

4.334.97 WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT - NFPA 1901, 2016 edition, section 8.9.3 requires one (1) 2.5 gallon or larger water extinguisher mounted in a bracket fastened to the apparatus. The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher.

4.334.98 FLATHEAD AXE PROVIDED BY FIRE DEPARTMENT - NFPA 1901, 2016 edition, Section 8.9.3 requires two (2) flathead axes mounted in brackets fastened to the apparatus. The axes are not on the apparatus as manufactured. The fire department shall provide and mount the axes.

4.334.99 PICKHEAD AXES PROVIDED BY FIRE DEPARTMENT -NFPA 1901, 2016 edition, Section 8.9.3 requires three (3) pickhead axes mounted in brackets fastened to the apparatus. The axes are not on the apparatus as manufactured. The fire department shall provide and mount the axes.

4.334.100 PAINT - The exterior custom cab and body painting procedure shall consist of a seven (7) step finishing process as follows:

A. Manual Surface Preparation - All exposed metal surfaces on the custom cab and body shall be thoroughly cleaned and prepared for painting. Imperfections on the exterior surfaces shall be removed and sanded to a smooth finish. Exterior seams shall be sealed before painting. Exterior surfaces that shall not be painted include; chrome plating, polished stainless steel, anodized aluminum and bright aluminum treadplate.

B. Chemical Cleaning and Pretreatment - All surfaces shall be chemically cleaned to remove dirt, oil, grease, and metal oxides to ensure the subsequent coatings bond well. The aluminum surfaces shall be properly cleaned and treated using a high pressure, high temperature 4 step Acid Etch process. The steel and stainless surfaces shall be properly cleaned and treated using a high temperature 3 step process specifically designed for steel or stainless. The chemical treatment converts the metal surface to a passive condition to help prevent corrosion. A final pure water rinse shall be applied to all metal surfaces.

C. Surfacer Primer - The Surfacer Primer shall be applied to a chemically treated metal surface to provide a strong corrosion protective basecoat. A minimum thickness of 2 mils of Surfacer Primer is applied to surfaces that require a Critical aesthetic finish. The Surfacer Primer is a two-component high solids urethane that has excellent sanding properties and an extra smooth finish when sanded.

D. Finish Sanding - The Surfacer Primer shall be sanded with a fine grit abrasive to achieve an ultra-smooth finish. This sanding process is critical to produce the smooth mirror like finish in the topcoat.

E. Sealer Primer - The Sealer Primer is applied prior to the Basecoat in all areas that have not been previously primed with the Surfacer Primer. The Sealer Primer is a two-component high solids urethane that goes on smooth and provides excellent gloss hold out when topcoated.

F. Basecoat Paint - Two coats of a high performance, two component high solids polyurethane basecoat shall be applied. The Basecoat shall be applied to a thickness that shall achieve the proper color match. The Basecoat shall be used in conjunction with a urethane clear coat to provide protection from the environment.

G. Clear Coat - Two (2) coats of Clear Coat shall be applied over the Basecoat color. The Clear Coat is a two-component high solids urethane that provides superior gloss and durability to the exterior surfaces. Lap style and roll-up doors shall be Clear Coated to match the body. Paint warranty for the roll-up doors shall be provided by the roll-up door manufacture.

H. Each batch of basecoat color is checked for a proper match before painting of the cab and the body. After the cab and body are painted, the color is verified again to make sure that it matches the color standard. Electronic color measuring equipment is used to compare the color sample to the color standard entered into the computer. Color specifications are used to determine the color match. A Delta E reading is used to determine a good color match within each family color.

I. All removable items such as brackets, compartment doors, door hinges, and trim shall be removed and separately if required, to ensure paint behind all mounted items. Body assemblies that cannot be finish painted after assembly shall be finish painted before assembly.

J. Pierce Manufacturing paint finish quality levels for critical areas of the apparatus (cab front and sides, body sides and doors, and boom lettering panels) meet or exceed the Cadillac/General Motors GMW15777 global paint requirements. Orange peel levels meet or exceed the #6 A.C.T. standard in critical areas. These requirements are met in order for the exterior paint finish to be considered acceptable. The Pierce Manufacturing written paint standards shall be available upon request.

K. The cab shall be two-tone, with the upper section painted #10 white along with a shield design on the cab face and lower section of the cab and body painted #90 red.

4.334.101 PAINT - ENVIRONMENTAL IMPACT - Contractor shall meet or exceed all current State regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water and soil. Controls shall include the following conditions:

A. Topcoats and primers shall be chrome and lead free.

B. Metal treatment chemicals shall be chrome free. The wastewater generated in the metal treatment process shall be treated on-site to remove any other heavy metals.

C. Particulate emission collection from sanding operations shall have a 99.99% efficiency factor.

D. Particulate emissions from painting operations shall be collected by a dry filter or water wash process. If the dry filter is used, it shall have an efficiency rating of 98.00%. Water wash systems shall be 99.97% efficient

E. Water from water wash booths shall be reused. Solids shall be removed on a continual basis to keep the water clean.

F. Paint wastes are disposed of in an environmentally safe manner.

G. Empty metal paint containers shall be to recover the metal.

H. Solvents used in clean-up operations shall be recycled on-site or sent off-site for distillation and returned for reuse.

I. Additionally, the finished apparatus shall not be manufactured with or contain products that have ozone depleting substances. Contractor shall, upon demand, present evidence that the manufacturing facility meets the above conditions and that it is in compliance with his State EPA rules and regulations.

4.334.102 PAINT CHASSIS FRAME ASSEMBLY - The chassis frame assembly shall be painted to match the lower job color before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc. Components that are included with the chassis frame assembly that shall be painted are:

- Frame rails
- Frame liners
- Cross members
- Axles
- Suspensions
- Steering gear
- Battery boxes
- Bumper extension weldment
- Frame extensions
- Body mounting angles
- Rear Body support substructure (front and rear)
- Pump house substructure
- Air tanks
- Fuel tank
- Castings
- Individual piece parts used in chassis and body assembly
- Components treated with epoxy E-coat protection prior to paint:
- Two (2) C-channel frame rails
- Two (2) frame liners
- The E-coat process shall meet the technical properties shown.

4.334.102 PAINT, FRONT WHEELS - All wheel surfaces, inside and outside, shall be provided with powder coat paint #90 red.

4.334.103 PAINT, REAR WHEELS - All wheel surfaces, inside and outside, shall be provided with powder coat paint #90 red.

4.334.104 AERIAL DEVICE BOOM SUPPORT PAINT - The aerial device boom support shall be painted job color to match lower body paint color.

4.334.105 FUEL TANK LABEL - The manufacturer's label on the fuel tank shall be taped off so that it does not get painted.

4.334.106 COMPARTMENT INTERIOR PAINT - The compartment interior shall be painted with a gray spatter finish for ease of cleaning and to make it easier to touch up scratches and nicks.

4.334.107 AERIAL TURNTABLE PAINT COLOR - All aerial device ladder components above the rotation point that are not chrome plated or stainless steel shall have a natural swirl finish. All buy out components, such as monitor, nozzle, gauges, etc. shall be supplied as received from the vendor. Turntable, console, lift cylinders, and extension cylinders shall be sanded to remove any metal flakes and smooth any rough surfaces. These components shall be prime painted with an epoxy primer and finished painted with a durable white 10 high quality paint (manufacturer's standard brand). The support structure, rotation motor, components below the rotation point, and the stabilizers shall be painted high gloss black. The tip of the ladder shall be painted a contrasting color for high visibility.

4.334.108 REFLECTIVE STRIPES - Three (3) reflective stripes shall be provided across the front of the vehicle and along the sides of the body. The reflective band shall consist of a 1.00" white stripe at the top with a 1.00" gap then a 6.00" white stripe with a 1.00" gap and a 1.00" white stripe on the bottom.

4.334.109 CHEVRON STRIPING ON THE FRONT BUMPER - There shall be alternating chevron striping located on the front bumper. The colors shall be red and fluorescent yellow green diamond grade. The size of the striping shall be 6.00".

4.334.110 REAR CHEVRON STRIPING - There shall be alternating chevron striping located on the rear-facing vertical surface of the apparatus. Covered surfaces shall include the rear wall, aluminum doors, and rear bumper. Rear compartment doors and stainless steel access doors shall not be covered.

A. The colors shall be red and fluorescent yellow green diamond grade.

B. Each stripe shall be 6.00" in width.

C. This shall meet the requirements of the current edition of NFPA 1901, which states that 50% of the rear surface shall be covered with chevron striping.

4.334.111 REFLECTIVE STRIPE ON STABILIZERS -There shall be 4.00" wide alternating red diamond grade and fluorescent yellow green diamond grade reflective chevron stripes provided on the forward and rear facing sides of all four (4) aerial stabilizers. The stripes shall be angled at a 45 degree angle.

4.334.112 JOG(S) IN REFLECTIVE BAND - The reflective band located on each side of the apparatus body shall contain one (1) jog(s) and shall be angled at approximately 45 degrees when installed.

4.334.113 REFLECTIVE STRIPE INSIDE RUBRAILS - A reflective stripe shall be provided inside the extruded aluminum rubrails. The reflective material shall be red (tomato red). There shall be a quantity of ten (10) rubrails striped.

4.334.114 INVERTED "V" CHEVRON STRIPING ON CAB AND CREW **CAB DOORS** - There shall be alternating chevron striping located on the inside of each cab and crew cab door. The striping shall consist of the following colors:

- The first color shall be red diamond grade
- The second color shall be fluorescent yellow green diamond grade
- The size of the striping shall be 4.00".

4.334.115 LETTERING - Twenty-one (21) to forty (40) reflective lettering, 3.00" high, with [Outline, Lettering] shall be provided.

4.334.116 LETTERING/NUMERALS ON CAB GRILLE - Up to six (6) painted letters/numerals with outline, as determined by the fire department, shall be provided on the cab grille.

4.334.117 LETTERING/NUMERALS ON CAB GRILLE - Three (3) painted letters/numerals with outline, as determined by the fire department, shall be provided on the cab grille.

4.334.118 LETTERING/NUMERALS ON CAB GRILLE - Up to six (6) painted letters/numerals with outline, as determined by the fire department, shall be provided on the cab grille.

4.334.119 FIRE APPARATUS PARTS USB MANUAL - There shall be two (2) custom parts manuals for the complete fire apparatus provided in USB format with the completed unit. The manuals shall contain the following:

- Job number
- Part numbers with full descriptions
- Table of contents
- Parts section sorted in functional groups reflecting a major system, component, or assembly
- Parts section sorted in alphabetical order
- Instructions on how to locate parts
- The manuals shall be specifically written for the chassis and body model being purchased. It shall not be a generic manual for a multitude of different chassis and bodies.

4.334.120 SERVICE PARTS INTERNET SITE - The service parts information included in these manuals are also available on the factory website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly.

4.334.121 CHASSIS SERVICE USB MANUALS - There shall be two (2) USB format chassis service manuals containing parts and service information on major components provided with the completed unit.

The manual shall contain the following sections:

- Job number
- Table of contents
- Troubleshooting
- Front Axle/Suspension
- Brakes
- EngineTires
- Wheels
- Cab
- Electrical, DC
- Air Systems
- Plumbing
- Appendix
- The manual shall be specifically written for the chassis model being purchased. It shall not be a generic manual for a multitude of different chassis and bodies.

4.334.122 CHASSIS OPERATION USB MANUALS - There shall be two (2) USB format chassis operation manuals provided.

4.334.122.1 Software - Software to maintain the apparatus shall be included in purchase. This shall include items such as (but not limited to) software for Detroit Diesel, Allison Transmission and Wabco systems.

4.334.123 VEHICLE STABILITY CERTIFICATION - The fire apparatus manufacturer shall provide a certification stating the apparatus complies with NFPA 1901, current edition, section 4.13, Vehicle Stability. The certification shall be provided at the time of bid.

4.334.124 ENGINE INSTALLATION CERTIFICATION - The fire apparatus manufacturer shall provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification shall be provided at the time of bid.

4.334.125 POWER STEERING CERTIFICATION - The fire apparatus manufacturer shall provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification shall be provided at the time of bid.

4.334.126 CAB INTEGRITY CERTIFICATION - The fire apparatus manufacturer shall provide a cab integrity certification with this proposal. The certification shall state that the cab has been tested and certified by an independent third-party test facility. Testing events shall be documented with photographs, real-time and high-speed video, vehicle accelerometers, cart accelerometers, and a laser speed trap. The fire apparatus manufacturer shall provide a state-licensed professional engineer to witness and certify all testing events. Testing shall meet or exceed the requirements below:

- European Occupant Protection Standard ECE Regulation No.29.
- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.
- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks.
- Roof Crush
- The cab shall be subjected to a roof crush force of 22,050 lb. This value meets the ECE 29 criteria and is equivalent to the front axle rating up to a maximum of 10 metric tons.
- Additional Roof Crush
- The same cab shall be subjected to a roof crush force of 100,000 lbs. This value exceeds the ECE 29 criteria by nearly 4.5 times.

A. Side Impact - The same cab shall be subjected to dynamic preload where a 13,275 lb moving barrier slams into the side of the cab at 5.5 mph at a force of 13,000 ft-lbs. This test is part of the SAE J2422 test procedure and more closely represents the forces a cab shall see in a rollover incident.

B. Frontal Impact - The same cab shall withstand a frontal impact of 32,600 ft-lbs of force using a moving barrier in accordance with SAE J2420.

C. Additional Frontal Impact - The same cab shall withstand a frontal impact of 65,200 ft-lbs of force using a moving barrier, (twice the force required by SAE J2420). The same cab shall withstand all tests without any measurable intrusion into the survival space of the occupant area.

4.334.127 CAB DOOR DURABILITY CERTIFICATION - Robust cab doors help protect occupants. Cab doors shall survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder shall certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear.

4.334.128 WINDSHIELD WIPER DURABILITY CERTIFICATION -Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers shall survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles. The bidder shall certify that the wiper system design has been tested and that the wiper system has met these criteria.

4.334.129 ELECTRIC WINDOW DURABILITY CERTIFICATION - Cab window roll-up systems can cause maintenance problems if not designed for long service life. The window regulator design shall complete 30,000 complete up-down cycles and still function normally when finished. The bidder shall certify that sample doors and windows similar to those provided on the apparatus have been tested and have met these criteria without malfunction or significant component wear.

4.334.130 SEAT BELT ANCHOR STRENGTH - Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design shall withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder shall certify that each anchor design was pull tested to the required force and met the appropriate criteria.

4.334.131 SEAT MOUNTING STRENGTH - Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design shall be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder shall certify that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

4.334.132 CAB DEFROSTER CERTIFICATION - Visibility during inclement weather is essential to safe apparatus performance. The defroster system shall clear the required windshield zones in accordance with SAE J381 Windshield Defrosting Systems Test Procedure and Performance Requirements - Trucks, Buses, and Multipurpose Vehicles. The bidder shall certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

4.334.133 CAB AIR CONDITIONING PERFORMANCE CERTIFICATION - Good cab air conditioning temperature and air flow performance keeps occupants comfortable, reduces humidity, and provides a climate for recuperation while at the scene. The cab air conditioning system shall cool the cab from a heat-soaked condition at 100 degrees Fahrenheit to an average of 67 degrees Fahrenheit in 30 minutes. The bidder shall certify that a substantially similar air conditioning system has been tested and has met these criteria. The certification shall be available at the time of delivery.

4.334.134 AMP DRAW REPORT - The bidder shall provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system. The manufacturer of the apparatus shall provide the following:

A. Documentation of the electrical system performance tests.
B. A written load analysis, which shall include the following:
C. The nameplate rating of the alternator.
D. The alternator rating under the conditions specified per:
E. Applicable NFPA 1901 or 1906 (Current Edition).
F. The minimum continuous load of each component that is specified per:
G. Applicable NFPA 1901 or 1906 (Current Edition).
H. Additional loads that, when added to the minimum continuous load, determine the total connected load.
I. Each individual intermittent load.
J. All of the above listed items shall be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).

005 - SUPPLEMENTAL TERMS & CONDITIONS

Original Contract Term.

This contract shall begin upon the effective date of the ordinance awarding the contract, or date specified in the award letter if this contract does not exceed $50,000. This contract shall terminate upon completion of all work described herein or delivery of all goods ordered, as applicable.

Cooperative Contract Provisions.

Term Consistent with Cooperative Contract. Notwithstanding anything to the contrary herein, no new orders may be placed hereunder after the expiration or termination of the underlying cooperative contract. Renewals cannot extend beyond the term of the underlying cooperative contract. Extensions cannot extend beyond the term of the underlying cooperative contract.

Contract Documents. The terms and conditions for performance and payment of compensation for this contract are set forth in the following contract documents, true and correct copies of which are attached hereto and fully incorporated herein for all purposes:

This Request for Offer, including any attachments identified herein and addenda issued by City prior to acceptance of an offer from Offeror;

Any Purchase Orders Issued hereunder by City of San Antonio ("City"); and

Exhibit I – All applicable terms and conditions of the Cooperative Purchasing Contract number FS12-19 through HGAC.

Order of Priority of Contract Documents. Should a conflict arise among the provisions of the contract documents, this RFO and any Purchase Order issued hereunder shall govern over Exhibit I, unless otherwise specifically provided herein.

This RFO includes the following: Instructions to Offerors, General Terms and Conditions, Supplemental Terms and Conditions, Product Specifications and Description of Services, Definitions, Price Schedule, any Attachments identified herein.

Warranty.

The warranty specified in Exhibit 1, if any, a minimum of 90-days product guarantee, or the manufacturer's standard commercial warranty, whichever is greater, shall apply to all products and/or services purchased under this RFO, unless otherwise specified in the Specifications/Scope of Services section of this RFO. This warranty shall provide for replacement of defective merchandise, parts, and labor, and shall include pick-up of the defective merchandise from City and delivery of the replacement(s) to the same location. The warranty shall be effective from the date of acceptance of the merchandise, or completion of the service, as applicable.

Rejection of Disclaimers of Warranties & Limitations Of Liability.

ANY TERM OR CONDITION IN EXHIBIT I, OR IN ANY DOCUMENT FURNISHED BY VENDOR, DISCLAIMING THE IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR ATTEMPTING TO LIMIT VENDOR'S LIABILITY SHALL BE OF NO FORCE OR EFFECT, AND SHALL BE STRICKEN FROM THE CONTRACT DOCUMENTS AS IF NEVER CONTAINED THEREIN.

Insurance.

Prior to the commencement of any work under this Agreement, Vendor shall furnish copies of all required endorsements and completed Certificate(s) of Insurance to the City's Finance Department, which shall be clearly labeled "SAFD-PURCHASE OF LADDER TRUCKS" in the Description of Operations block of the Certificate. The Certificate(s) shall be completed by an agent and signed by a person authorized by that insurer to bind coverage on its behalf. City will not accept a Memorandum of Insurance or Binder as proof of insurance. The certificate(s) must have the agent's signature and phone number, and be mailed, with copies of all applicable endorsements, directly from the insurer's authorized representative to City. City shall have no duty to pay or perform under this Agreement until such certificate and endorsements have been received and approved by City's Finance Department. No officer or employee, other than City's Risk Manager, shall have authority to waive this requirement.

City reserves the right to review the insurance requirements of this Article during the effective period of this Agreement and any extension or renewal hereof and to modify insurance coverages and their limits when deemed necessary and prudent by City's Risk Manager based upon changes in statutory law, court decisions, or circumstances surrounding this Agreement. In no instance will City allow modification whereby City may incur increased risk.

A Vendor's financial integrity is of interest to City; therefore, subject to Vendor's right to maintain reasonable deductibles in such amounts as are approved by City, Vendor shall obtain and maintain in full force and effect for the duration of this Agreement, and any extension here of, at Vendor's sole expense, insurance coverage written on an occurrence basis, unless otherwise indicated, by companies authorized to do business in the State of Texas and with an A.M Best's rating of no less than A- (VII), in the following types and for an amount not less than the amount listed below:

TYPE	AMOUNTS
1. Workers' Compensation 2. Employers' Liability	Statutory $1,000,000/$1,000,000/$1,000,000
3. Broad form Commercial General Liability Insurance to include coverage for the following: a. Premises operations b. Independent Contractors c. Products/completed operations d. Personal/ Advertising Injury e. Contractual Liability f. Damage to property rented by you	For Bodily Injury and Property Damage of $1,000,000 per occurrence; $2,000,000 General Aggregate, or its equivalent in Umbrella or Excess Liability Coverage
4. Business Automobile Liability a. Owned/leased vehicles b. Non-owned vehicles c. Hired Vehicles	Combined Single Limit for Bodily Injury and Property Damage of $1,000,000 per occurrence
5. Umbrella or Excess Liability Coverage	$5,000,000 per occurrence combined limit Bodily Injury (including death) and Property Damage. (per occurrence limit depends on scope of operation)

Vendor agrees to require, by written contract, that all subcontractors providing goods or services hereunder obtain the same insurance coverages required of Vendor herein, and provide a certificate of insurance and endorsement that names Vendor and City as additional insureds. Vendor shall provide City with said certificate and endorsement prior to the commencement of any work by the subcontractor. This provision may be modified by City's Risk Manager, without subsequent City Council approval, when deemed necessary and prudent, based upon changes in statutory law, court decisions, or circumstances surrounding this agreement. Such modification may be enacted by letter signed by City's Risk Manager, which shall become a part of the contract for all purposes.

As they apply to the limits required by City, City shall be entitled, upon request and without expense, to receive copies of the policies, declaration page, and all endorsements thereto and may require the deletion, revision, or modification of particular policy terms, conditions, limitations, or exclusions (except where policy provisions are established by law or regulation binding upon either of the parties hereto or the underwriter of any such policies). Vendor shall be required to comply with any such requests and shall submit a copy of the replacement certificate of insurance to City at the address provided below within 10 days of the requested change. Vendor shall pay any costs incurred resulting from said changes.

City of San Antonio
Attn: Finance Department
P.O. Box 839966
San Antonio, Texas 78283-3966

Vendor agrees that with respect to the above required insurance, all insurance policies are to contain or be endorsed to contain the following provisions:

Name City, its officers, officials, employees, volunteers, and elected representatives as additional insureds by endorsement, as respects operations and activities of, or on behalf of, the named insured performed under contract with City, with the exception of the workers' compensation and professional liability policies;

Provide for an endorsement that the “other insurance” clause shall not apply to the City of San Antonio where City is an additional insured shown on the policy;

Workers’ compensation, employers’ liability, general liability and automobile liability policies will provide a waiver of subrogation in favor of City; and

Provide advance written notice directly to City of any suspension, cancellation, non-renewal or material change in coverage, and not less than ten (10) calendar days advance notice for nonpayment of premium.

Within five (5) calendar days of a suspension, cancellation or non-renewal of coverage, Vendor shall provide a replacement Certificate of Insurance and applicable endorsements to City. City shall have the option to suspend Vendor’s performance should there be a lapse in coverage at any time during this contract. Failure to provide and to maintain the required insurance shall constitute a material breach of this Agreement.

In addition to any other remedies City may have upon Vendor’s failure to provide and maintain any insurance or policy endorsements to the extent and within the time herein required, City shall have the right to order Vendor to stop work hereunder, and/ or withhold any payment(s) which become due to Vendor hereunder until Vendor demonstrates compliance with the requirements hereof.

Nothing herein contained shall be construed as limiting in any way the extent to which Vendor may be held responsible for payment of damages to persons or property resulting from Vendor’s or its subcontractors’ performance of the work covered under this Agreement.

It is agreed that Vendor’s insurance shall be deemed primary and non-contributory with respect to any insurance or self insurance carried by City for liability arising out of operations under this Agreement.

It is understood and agreed that the insurance required is in addition to and separate from any other obligation contained in this Agreement and that no claim or action by or on behalf of City shall be limited to insurance coverage provided.

Vendor and any subcontractors are responsible for all damage to their own equipment and/or property.

Incorporation of Attachments.

Each of the attachments listed below is an essential part of this contract, which governs the rights and duties of the parties, incorporated herein by reference, and shall be interpreted in the order of priority as appears below, with this document taking priority over all attachments:

Attachment A – Price Schedule
Attachment B – Veteran-Owned Small Business Program Tracking Form

006 - GENERAL TERMS & CONDITIONS

Electronic Offer Equals Original. If Vendor is submitting an electronic offer, City and Vendor each agree that this transaction may be conducted by electronic means, as authorized by Chapter 322, Texas Business & Commerce Code, known as the Electronic Transactions Act.

Delivery of Goods/Services.

Destination Contract. Vendor shall deliver all goods and materials F.O.B., City of San Antonio's designated facility, inside delivery, freight prepaid, to the address provided in this RFO or, if different, in the Purchase Order. Vendor shall bear the risk of loss until delivery. Freight charges will be paid only when expedited delivery is requested and approved in writing by City. Vendor shall be responsible for furnishing necessary personnel or equipment and/or making necessary arrangements to off load at City of San Antonio facility, unless otherwise noted herein.

Failure to Deliver. When delivery is not met as provided for in the contract, City may make the purchase on the open market, with any cost in excess of the contract price paid by Vendor, in addition to any other direct, indirect, consequential or incidental damages incurred by City as a result thereof. In addition, Vendor may be removed from City's list of eligible bidders.

Purchase Orders. Each time a City department wishes to place an order against this contract, it will issue Vendor a purchase order. Vendor must have the purchase order before making any delivery.

Acceptance by City. City shall have a reasonable time (but not less than 30 days) after receipt to inspect the goods and services tendered by Vendor. City at its option may reject all or any portion of such goods or services which do not, in City's sole discretion, comply in every respect with all terms and conditions of the contract. City may elect to reject the entire goods and services tendered even if only a portion thereof is nonconforming. If City elects to accept nonconforming goods and services, City, in addition to its other remedies, shall be entitled to deduct a reasonable amount from the price thereof to compensate City for the nonconformity. Any acceptance by City, even if non-conditional, shall not be deemed a waiver or settlement of any defect in such goods and services.

Testing. After award of contract, City may, at its sole option, test the product delivered to ensure it meets specifications. Initial testing shall be at City's expense. However, if the product does not to meet specifications, Vendor shall reimburse City for the costs of testing. City may withhold the cost of testing from any amounts owed to Vendor under this or any other contract, or invoice Vendor for same. If invoiced, Vendor shall pay City within 30 calendar days' of the invoice.

Invoicing and Payment.

Invoice Submissions. City requires all original, first time invoices to be submitted directly to the Accounts Payable section of the Finance Department. The preferred method of delivery is electronically to the following e-mail address:

accounts.payable@sanantonio.gov.

Invoices submitted electronically to the e-mail address above must be in separate .pdf format file. Multiple invoices cannot be submitted in a single .pdf file; however, Vendor may submit multiple, separate invoice files in a single e-mail. Any required documentation in support of the invoice should be compiled directly behind the invoice in the same .pdf file. Each electronically submitted file must have a unique identifying name that is not the same as any other file name.

Invoices submitted by electronic submission are only considered "original" when the submission comes directly from the Vendor to Accounts Payable using this e-mail address. Vendor may courtesy copy the ordering City department personnel on the e-mail.

Vendors not able to submit invoices with the required file formatting above may mail original invoices, on white paper only, to: City of San Antonio, Attn: Accounts Payable, P.O. Box 839976, San Antonio, Texas 78283-3976.

Information Required On Invoice.

All invoices must be in a form and content approved by City. City may require modification of invoices if necessary in order to satisfy City that all billing is proper and pursuant to the terms of the contract. Invoices are required to show each City Purchase Order Number. Invoices must be legible. Items billed on invoices must be specific as to applicable stock, manufacturer, catalog or part number (if any). All invoices must show unit prices for each item being billed, the quantity of items being billed and the total for each item, as well as the total for all items on the invoice. If prices are based on list prices basis, then the list prices, the percentage discount or percentage surcharge, net unit prices, extensions and net total prices must be shown. Prompt payment discounts offered shall be shown separately on the invoice.

Payment by City.

In accordance with the Texas Prompt Payment Act, City shall have not less than 30 days to pay for goods or services. Time for payment, including payment under discount terms, will be computed from the later of: (1) the date City receives conforming goods under the contract; (2) the date performance of the service under the contract is completed; or (3) the date City receives a correct and valid invoice for the goods or services. Payment is deemed to be made on the date of mailing of the check. Payment is made in US dollars only.

This provision shall not apply where there is a bona fide dispute between City and Vendor about the goods delivered or the service performed that causes the payment to be late, or where the invoice is not mailed to the address provided herein.

The payment amount due on invoices may not be manually altered by City personnel. Once disputed items are reconciled, Vendor must submit a corrected invoice or a credit memorandum for the disputed amount. City will not make partial payments on an invoice where there is a dispute.

NECESSITY OF TIMELY INVOICE / WAIVER OF PAYMENT. NOTWITHSTANDING THE FORGOING, CITY CANNOT PAY FOR ANY GOODS OR SERVICES WITHOUT AN INVOICE. VENDOR MUST INVOICE CITY NO LATER THAN 90 CALENDAR DAYS FROM THE DATE GOODS ARE DELIVERED OR SERVICES RENDERED. FAILURE TO SUBMIT AN INVOICE WITHIN SAID 90 DAY SHALL NEGATE ANY LIABILITY ON THE PART OF CITY AND CONSTITUTE A **WAIVER** BY VENDOR OF ANY AND ALL RIGHT OR CLAIMS TO COLLECT MONEYS THAT VENDOR MAY RIGHTFULLY BE OTHERWISE ENTITLED TO FOR GOODS OR SERVICES PERFORMED.

The total price for all goods and/or services is shown on the Price Schedule. No additional fees or expenses of Vendor shall be charged by Vendor nor be payable by City. The parties hereby agree that all compensable expenses of Vendor are shown on the Price Schedule. If there is a discrepancy on the Price Schedule between the unit price for an item, and the extended price, the unit price shall govern.

Amendments. Except where the terms of this contract expressly provide otherwise, any alterations, additions, or deletions to the terms hereof, shall be effected by amendment, in writing, executed by both City and Vendor. The Director of the Purchasing and General Services Department, or Director's designee, shall have authority to execute amendments on behalf of City without further action by the San Antonio City Council, subject to and contingent upon appropriation of funds for any increase in expenditures by City.

Termination.

Termination-Breach. Should vendor fail to fulfill in a timely and proper manner, as determined solely by the Director, its material obligations under this contract, or violate any of the material terms of this contract, City shall have the right to immediately terminate the contract in whole or in part. Notice of termination shall be provided in writing to the Vendor, effective upon the date set forth in the notice. City may, in City's sole discretion, provide an opportunity for Vendor to cure the default. If City elects to offer an opportunity to cure, City shall provide notice to Vendor specifying the matters in default and the cure period. If Vendor fails to cure the default within the cure period, City shall have the right, without further notice, to terminate the contract in whole or in part. Such termination shall not relieve Vendor of any liability to the City for damages sustained by virtue of any breach by Vendor.

Termination-Notice. City may terminate this contract, in whole or in part, without cause. City shall be required to give Vendor notice ten days prior to the date of termination of the contract without cause.

Termination-Funding. City retains the right to terminate this contract at the expiration of each of City's budget periods. This contract is conditioned on a best efforts attempt by City to obtain and appropriate funds for payment of any debt due by City herein.

Termination by City may be effected by Director, without further action by the San Antonio City Council.

Independent Contractor. Vendor covenants and agrees that it is an independent contractor and not an officer, agent, servant or employee of City. City shall not be liable for any claims which may be asserted by any third party occurring in connection with the services to be performed by Vendor under this contract and that Vendor has no authority to bind City. The doctrine of respondeat superior shall not apply as between City and Vendor.

INDEMNIFICATION.

VENDOR covenants and agrees to FULLY INDEMNIFY, DEFEND and HOLD HARMLESS, CITY and the elected officials, employees, officers, directors, volunteers and representatives of CITY, individually and collectively, from and against any and all costs, claims, liens, damages, losses, expenses, fees, fines, penalties, proceedings, actions, demands, causes of action, liability and suits of any kind and nature, including but not limited to, personal or bodily injury, death and property damage, made upon CITY directly or indirectly arising out of, resulting from or related to VENDOR'S activities under this Agreement, including any acts or omissions of VENDOR, any agent, officer, director, representative, employee, consultant or subcontractor of VENDOR, and their respective officers, agents employees, directors and representatives while in the exercise of the rights or performance of the duties under this Agreement. The indemnity provided for in this paragraph shall not apply to any liability resulting from the negligence of CITY, it s officers or employees, in instances where such negligence causes personal injury, death, or property damage. IN THE EVENT VENDOR AND CITY ARE FOUND JOINTLY LIABLE BY A COURT OF COMPETENT JURISDICTION, LIABILITY SHALL BE APPORTIONED COMPARATIVELY IN ACCORDANCE WITH THE LAWS FOR THE STATE OF TEXAS, WITHOUT, HOWEVER, WAIVING ANY GOVERNMENTAL IMMUNITY AVAILABLE TO CITY UNDER TEXAS LAW AND WITHOUT WAIVING ANY DEFENSES OF THE PARTIES UNDER TEXAS LAW. In addition, Vendor agrees to indemnify, defend, and hold City harmless from any claim involving patent infringement, trademarks, trade secrets, and copyrights on goods supplied.

The provisions of this INDEMNITY are solely for the benefit of the parties hereto and not intended to create or grant any rights, contractual or otherwise, to any other person or entity. VENDOR shall advise CITY in writing within 24 hours of any claim or demand against CITY or VENDOR known to VENDOR related to or arising out of VENDOR's activities under this AGREEMENT and shall see to the investigation and defense of such claim or demand at VENDOR's cost. CITY shall have the right, at its option and at its own expense, to participate in such defense without relieving VENDOR of any of its obligations under this paragraph.

Assignment. Except as otherwise stated herein, Vendor may not sell, assign, pledge, transfer or convey any interest in this contract, nor delegate the performance of any duties hereunder, by transfer, by subcontracting or any other means, without the consent of Director. As a condition of such consent, if such consent is granted, Vendor shall remain liable for completion of the services and provision of goods outlined in this contract in the event of default by the successor vendor, assignee, transferee or subcontractor. Any attempt to transfer, pledge or otherwise assign this Contract without said written approval, shall be void ab initio and shall confer no rights upon any third person.

Ownership of Documents. Pursuant to Texas Local Government Code Chapter 201, any and all Records produced by Vendor pursuant to the provisions of this contract are the exclusive property of City; and no such Record shall be the subject of any copyright or proprietary claim by Vendor. The term "Record" as used herein shall mean any document, paper, letter, book, map, photograph, sound or video recording, microfilm, magnetic tape, electronic medium, or other information recording medium, regardless of physical form or characteristic. Vendor understands and acknowledges that as the exclusive owner of any and all such Records, City has the right to use all such Records as City desires, without restriction.

Records Retention.

Vendor and its subcontractors, if any, shall properly, accurately and completely maintain all documents, papers, and records, and other evidence pertaining to the services rendered hereunder ("Documents"), and shall make such Documents available to City at their respective offices, at all reasonable times and as often as City may deem necessary during the contract period, including any extension or renewal hereof, and the record retention period established herein, for purposes of audit, inspection, examination, and making excerpts or copies of same by City and any of its authorized representatives.

Vendor shall retain any and all Documents produced as a result of services provided hereunder for a period of four years ("Retention Period") from the date of termination of the contract. If, at the end of the Retention Period, there is litigation or other questions arising from, involving or concerning these Documents or the services provided hereunder, Vendor shall retain the records until the resolution of such litigation or other such questions. Vendor acknowledges and agrees that City shall have access to any and all such Documents at any and all times, as deemed necessary by City, during said Retention Period. City may, at its election, require Vendor to return the documents to City at Vendor's expense prior to or at the conclusion of the Retention Period. In such event, Vendor may retain a copy of the documents.

Vendor shall notify City, immediately, in the event Vendor receives any requests for information from a third party, which pertain to the Documents referenced herein. Vendor understands and agrees that City will process and handle all such requests.

S.B. 943 – Disclosure Requirements for Certain Government Contracts. For contracts (1) with a stated expenditure of at

least $1 million in public funds for the purchase of goods or services by the City, or (2) that result in the expenditure of at least $1 million in public funds for the purchase of goods or services by the City in a given fiscal year, Vendor acknowledges that the requirements of the Texas Public Information Act, Government Code, Chapter 552, Subchapter J, pertaining to the preservation and disclosure of Contracting Information maintained by the City or sent between the City and a vendor, contractor, potential vendor, or potential contractor, may apply to this RFO and any resulting contract. Vendor agrees that the contract can be terminated if Vendor knowingly or intentionally fails to comply with a requirement of that subchapter.

By submitting an offer, Offeror warrants and certifies, and a contract awarded pursuant to this RFO is made in reliance thereon, that it, has not knowingly or intentionally failed to comply with this subchapter in a previous offer or contract. City hereby relies on Vendor's certification, and if found to be false, City may reject the offer or terminate the Contract for material breach.

Severability. If any clause or provision of this contract is held invalid, illegal or unenforceable under present or future federal, state or local laws, including but not limited to the City Charter, City Code, or ordinances of the City of San Antonio, Texas, then and in that event it is the intention of the parties hereto that such invalidity, illegality or unenforceability shall not affect any other clause or provision hereof and that the remainder of this contract shall be construed as if such invalid, illegal or unenforceable clause or provision was never contained herein. It is also the intention of the parties hereto that in lieu of each clause or provision of this contract that is invalid, illegal, or unenforceable, there be added as a part of the contract a clause or provision as similar in terms to such invalid, illegal or unenforceable clause or provision as may be possible, legal, valid and enforceable.

Compliance with Law. Vendor shall provide and perform all services required under this Agreement in compliance with all applicable federal, state and local laws, rules and regulations.

Certifications. Vendor warrants and certifies that Vendor and any other person designated to provide services hereunder has the requisite training, license and/or certification to provide said services, and meets all competence standards promulgated by all other authoritative bodies, as applicable to the services provided herein.

Non-waiver of Performance. Unless otherwise specifically provided for in this Agreement, a waiver by either Party of a breach of any of the terms, conditions, covenants or guarantees of this Agreement shall not be construed or held to be a waiver of any succeeding or preceding breach of the same or any other term, condition, covenant or guarantee herein contained. Further, any failure of either Party to insist in any one or more cases upon the strict performance of any of the covenants of this Agreement, or to exercise any option herein contained, shall in no event be construed as a waiver or relinquishment for the future of such covenant or option. In fact, no waiver, change, modification or discharge by either party hereto of any provision of this Agreement shall be deemed to have been made or shall be effective unless expressed in writing and signed by the party to be charged. No act or omission by a Party shall in any manner impair or prejudice any right, power, privilege, or remedy available to that Party hereunder or by law or in equity, such rights, powers, privileges, or remedies to be always specifically preserved hereby.

Venue. Venue of any court action brought directly or indirectly by reason of this contract shall be in Bexar County, Texas. This contract is made and is to be performed in Bexar County, Texas, and is governed by the laws of the State of Texas.

Non-discrimination. As a condition of entering into this agreement, Vendor represents and warrants that it will comply with City's Commercial Nondiscrimination Policy, as described under Section III.C.1 of the SBEDA Ordinance. As part of such compliance, Vendor shall not discriminate on the basis of race, color, religion, ancestry or national origin, sex, age, marital status, sexual orientation, or on the basis of disability or other unlawful forms of discrimination in the solicitation, selection, hiring or commercial treatment of subcontractors, vendors, suppliers, or commercial customers, nor shall Vendor retaliate against any person for reporting instances of such discrimination. Vendor shall provide equal opportunity for subcontractors, vendors and suppliers to participate in all of its public sector and private sector subcontracting and supply opportunities, provided that nothing contained in this clause shall prohibit or limit otherwise lawful efforts to remedy the effects of marketplace discrimination that have occurred or are occurring in City's Relevant Marketplace. Vendor understands and agrees that a material violation of this clause shall be considered a material breach of this agreement and may result in termination of this agreement, disqualification of Vendor from participating in City contracts, or other sanctions. This clause is not enforceable by or for the benefit of, and creates no obligation to, any third party. Vendor shall include this nondiscrimination clause in all subcontracts for the performance of this contract.

As a party to this contract, Vendor understands and agrees to comply with the Non-Discrimination Policy of the City of San Antonio contained in Chapter 2, Article X of the City Code and further, shall not discriminate on the basis of race, color,

religion, national origin, sex, sexual orientation, gender identity, veteran status, age or disability, unless exempted by state or federal law, or as otherwise established herein.

Attorney's Fees. The Parties hereto expressly agree that, in the event of litigation, each party hereby waives its right to payment of attorneys' fees.

Prohibition on Contracts with Companies Boycotting Israel.

Texas Government Code §2271.002 provides that a governmental entity may not enter into a contract with a company for goods or services, unless the contract contains a written verification from the company that it:

(1) Does not boycott Israel; and
(2) Will not boycott Israel during the term of the contract.

This section only applies to a contract that:

(1) is between a governmental entity and a company with 10 or more full-time employees; and
(2) has a value of $100,000 or more that is to be paid wholly or partly from public funds of the governmental entity.

"Boycott Israel" means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes.

"Company" means a for-profit organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of those entities or business associations that exists to make a profit. This term does not include a sole proprietorship.

By submitting an offer to or executing contract documents with the City of San Antonio, Company hereby verifies that it does not boycott Israel, and will not boycott Israel during the term of the contract. City hereby relies on Company's verification. If found to be false, City may terminate the contract for material breach

Contracts with Companies Engaged in Business with Iran, Sudan, or Foreign Terrorist Organization Prohibited. Texas Government Code §2252.152 provides that a governmental entity may not enter into a governmental contract with a company that is identified on a list prepared and maintained under Texas Government Code §§2270.0201 or 2252.153. Vendor hereby certifies that it is not identified on such a list and that it will notify City should it be placed on such a list while under contract with City. City hereby relies on Vendor's certification. If found to be false, or if Vendor is identified on such list during the course of its contract with City, City may terminate the Contract for material breach.

Delinquent Taxes. In the event that Vendor is or subsequently becomes delinquent in the payment of taxes owed to the City of San Antonio, City reserves the right to deduct any delinquent taxes from payments that City may owe to the delinquent Vendor as a result of this contract.

Binding Contract. This contract shall be binding on and inure to the benefit of the parties hereto and their respective heirs, executors, administrators, legal representatives, and successors and assigns, except as otherwise expressly provided for herein.

Entire Agreement. This contract, including City's final electronically posted online version, together with its authorizing ordinance, and its price schedule(s), attachments, addendums, purchase orders, and exhibits, if any, constitutes the final and entire agreement between the parties hereto and contains all of the terms and conditions agreed upon. No other agreements, oral or otherwise, regarding the subject matter of this contract shall be deemed to exist or to bind the parties hereto, unless same be in writing, dated subsequent to the date hereof, and be duly executed by the parties, in accordance with the Amendment provision herein. **Parties agree that City's final electronically posted online version of this solicitation contains the agreed upon specifications, scope of services, and terms and conditions of this contract, and shall control in the event of a conflict with any printed version signed and submitted by Vendor.**

007 - SIGNATURE PAGE

By submitting an offer, Offeror represents that:

(s)he is authorized to bind Offeror to fully comply with the terms and conditions of City's Request for Offer for the prices stated therein;

(s)he has read the entire document, including the final version issued by City, and agreed to the terms therein;

Offeror is in good standing with the Texas State Comptroller's Office; and

to the best of his/her knowledge, all information is true and correct.

Complete the following and sign on the signature line below. Failure to sign and submit this Signature Page will result in rejection of your offer.

Offeror Information

Please Print or Type

Vendor ID No.	V10013064
Signer's Name	Travis Walden
Name of Business	Siddons-Martin Emergency Group
Street Address	1362 E. Richey Rd
City, State, Zip Code	Houston, Texas 77073
Email Address	travis.walden@siddons-martin.com
Telephone No.	512-848-5847
Fax No.	512-868-8290
City's Solicitation No.	RFO 6100013327

Signature of Person Authorized to Sign Offer

008 - STANDARD DEFINITIONS

Whenever a term defined by the Uniform Commercial Code ("UCC"), as enacted by the State of Texas, is used in the Contract, the UCC definition shall control, unless otherwise defined in the Contract.

All-or-None Offer - an RFO in which City will award the entire contract to one offeror only.

Alternate Offer - two or more offers with substantive variations in the item or service offered from the same offeror in response to a solicitation.

Assignment - a transfer of claims, rights or interests in goods, services or property.

Bid Bond - security to ensure that Offeror (a) will not withdraw the offer within the period specified for acceptance, and (b) will furnish any required bonds and any necessary insurance within the time specified in the solicitation.

City - the City of San Antonio, a Texas home-rule municipal corporation.

Contractor - the offeror whose offer is accepted by City and is, therefore, the person, firm or entity providing goods or services to City under a contract.

Director – the Director of City's Purchasing & General Services Department, or Director's designee.

Line Item - a listing of items in an offer for which an offeror is expected to provide separate pricing.

Offer - a complete, signed response to an RFO that, if accepted, would bind Offeror to perform the resultant contract.

Offeror - a person, firm or entity that submits an offer in response to a solicitation. The offeror whose offer is accepted by City may also be referred to herein as Contractor, Vendor or Supplier.

Payment Bond - a particular form of security provided by the contractor to protect City against loss due to the contractor's failure to pay suppliers and subcontractors.

Performance Bond - a particular form of security provided by the contractor to protect City against loss due to the contractor's inability or unwillingness to complete the contract as agreed.

Performance Deposit - security provided by the contractor to protect City against loss due to the contractor's inability or unwillingness to complete the contract as agreed.

Pre-Submittal Conference - a meeting conducted by City, held in order to allow offerors to ask questions about the proposed contract and particularly, the contract specifications.

Purchase Order - a validly issued order placed by an authorized City department for the purchase of goods or services, written on City's standard purchase order form, and which is the vendor's authority to deliver to and invoice City for the goods or services specified in an RFO for the price stated in vendor's offer.

Specifications - a description of what City requires and what Offeror must offer; a description of the physical or functional characteristics of a product or material, or the nature of a service or construction item.

Subcontractor - a person, firm or entity providing goods or services to a vendor to be used in the performance of the vendor's obligations under the contract with City.

Supplier - the offeror whose offer is accepted by City and is, therefore, the person, firm or entity providing goods or services to City under a contract.

Vendor - the offeror whose offer is accepted by City and is, therefore, the person, firm or entity providing goods or services to City under a contract.

009 – ATTACHMENT A - PRICE SCHEDULE

ITEM	QUANTITY	DESCRIPTION
1	3	Pierce Velocity® Ladder Truck with Platform**—FY2021 PRICING**

PRICE EACH: $ 1,495,530.00 TOTAL $ 4,486,590.00

YEAR, MAKE & MODEL OF TRUCK OFFERED: 2021 Pierce Velocity Aerial Platform

SPECIFIC MAKE & MODEL OF ENGINE OFFERED (INCLUDE SAE NET HP):

Detroit Diesel DD13 - 525 HP

TRUCK WARRANTY:

1 Year

TRUCK WARRANTY SERVICE PROVIDER FACILITY NAME:

Siddons-Martin Emergency Group - Kirby Facility

TRUCK WARRANTY SERVICE PROVIDER FACILITY ADDRESS:

5511 Binz-Engleman Rd

Kirby, Texas 78219

DELIVERY WILL BE MADE WITHIN 395 CALENDAR DAYS AFTER ISSUANCE OF PURCHASE ORDER.

PRODUCTION CUT-OFF DATE: February 1, 2021

INDICATE THE LAST DAY THAT THE CITY CAN PLACE ORDERS UNDER THIS CONTRACT WITHOUT MISSING THE PRODUCTION CUT OFF DATE: February 1, 2021

BID PRICES SHALL REMAIN FIRM FOR ALL ORDERS PLACED PRIOR TO THIS CUT OFF DATE. IN THE EVENT THAT CITY DOES NOT AWARD A CONTRACT PRIOR TO PRODUCTION CUT OFF DATE, CAN BIDDER PROVIDE BID ITEMS, AT THE BID PRICE SUBMITTED, AFTER THE PRODUCTION CUT OFF DATE? No.

ITEM	QUANTITY	DESCRIPTION
2	1	Pierce Velocity® Ladder Truck with Platform**—FY2022 PRICING**

PRICE EACH: $1,555,350.00 TOTAL $1,555,350.00

YEAR, MAKE & MODEL OF TRUCK OFFERED: 2022 Pierce Velocity Aerial Platform

SPECIFIC MAKE & MODEL OF ENGINE OFFERED (INCLUDE SAE NET HP):

Paccar MX13 510 HP

TRUCK WARRANTY:

1 Year

TRUCK WARRANTY SERVICE PROVIDER FACILITY NAME:

Siddons-Martin Emergency Group - Kirby Facility

TRUCK WARRANTY SERVICE PROVIDER FACILITY ADDRESS:

5511 Binz-Engleman Rd

Kirby, Texas 78219

DELIVERY WILL BE MADE WITHIN 395 CALENDAR DAYS AFTER ISSUANCE OF PURCHASE ORDER.

PRODUCTION CUT-OFF DATE: February 1, 2022

INDICATE THE LAST DAY THAT THE CITY CAN PLACE ORDERS UNDER THIS CONTRACT WITHOUT MISSING THE PRODUCTION CUT OFF DATE: February 1, 2022.

BID PRICES SHALL REMAIN FIRM FOR ALL ORDERS PLACED PRIOR TO THIS CUT OFF DATE. IN THE EVENT THAT CITY DOES NOT AWARD A CONTRACT PRIOR TO PRODUCTION CUT OFF DATE, CAN BIDDER PROVIDE BID ITEMS, AT THE BID PRICE SUBMITTED, AFTER THE PRODUCTION CUT OFF DATE? No.

ITEM	QUANTITY	DESCRIPTION
3	2	Cooperative Fee

Price Each $ 2,000

Total $ 4,000

$2000 within 15 days per unit

Prompt Payment Discount:_____%_____days (If no discount is offered, Net 30 will apply).

*****Please include HGAC worksheet with your bid submission.*****