CITY OF SAN ANTONIO

PURCHASING AND GENERAL SERVICES DEPARTMENT

REQUEST FOR OFFER ("RFO") NO.: 6100005966

FIRE ENGINES

Date Issued: MAY 1, 2015

RESPONSES MUST BE RECEIVED **NO LATER** THAN: MAY 8, 2015
10:00 AM

Responses may be submitted by any of the following means:
Electronic submission through the Portal
Hard copy in person or by mail

Address for hard copy responses:

Physical Address:
Purchasing & General Services
Riverview Tower
111 Soledad, Suite 1100
San Antonio, Texas 78205

Mailing Address:
Purchasing & General Services
P.O. Box 839966
San Antonio, Texas 78283-3966

For Hard Copy Submissions, Mark Envelope

"FIRE ENGINES"

Offer Due Date: 10:00 A.M., MAY 8, 2015

RFO No.: 6100005966

Offeror's Name and Address

Bid Bond: NO Performance Bond: NO Payment Bond: NO Other:

See Supplemental Terms & Conditions for information on these requirements.

Affirmative Procurement Initiative: NO DBE / ACDBE Requirements:

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

Pre-Submittal Conference * NO

* If YES, the Pre-Submittal conference will be held on at at .

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: , 210-207-3900,

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003 - INSTRUCTIONS FOR OFFERORS

Submission of Offers.

Submission of Hard Copy Offers. Submit one original offer, signed in ink, and two copies of the offer enclosed in a sealed envelope addressed to the Purchasing and General Services Department at the address and by the due date provided on the Cover Page. The name and address of offeror, the offer due date and RFO number and title shall be marked on the outside of the envelope(s). 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.

Submission of Electronic Offers. 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.

Offers sent to City by facsimile or email 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 hard copy offers, provide a cover letter with the offer, indicating it is a modified offer and that the Original offer is being withdrawn. For electronic offers, 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.

Offerors must sign the Signature Page on hard copy offers and return the RFO document to City. For electronic offers, Offeror's electronic submission, with accompanying affirmations, constitutes a binding signature for all purposes.

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

Certified Vendor Registration Form. If Offeror has not completed the 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.

Hard Copy Alternate Offers. Hard copy alternate offers must be submitted in separate sealed envelopes in the same manner as submission of other offers. Alternate offers must be marked consecutively on the envelope as Alternate Offer No. 1, 2, etc. Failure to submit alternate offers in separate envelopes may result in rejection of an offer.

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

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 bids 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 the City 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) elected City officials and their staff regarding the RFO or offers from the time the RFO has been released until the contract is posted as a City Council agenda item; 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 3 calendar days prior to the date offers are due. Questions received after the stated deadline will not be answered. Questions submitted and the 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.

Offerors and/or their agents are encouraged to contact the Small Business Office of the International and Economic Development Department for assistance or clarification with issues specifically related to the City's Small Business Economic Development Advocacy (SBEDA) Program policy and/or completion of the SBEDA form (s), if any. The point of contact is identified on the Cover Page. Contacting the Small Business Office regarding this RFO after the due date is not permitted. If this solicitation contains Affirmative Procurement Initiatives, it will be noted on the Cover Page.

If this solicitation contains DBE/ACDBE requirements, respondents and/or their agents may contact the Aviation Department's DBE/ACDBE Liaison Officer for assistance or clarification with issues specifically related to the DBE/ ACDBE policy and/or completion of the required form(s). Point of contact is Ms. Lisa Brice, who may be reached via telephone at (210) 207-3505 or through e-mail at lisa.brice@sanantonio.gov. Respondents and/or their agents may contact Ms. Brice at any time prior to the due date for submission of bids. Contacting her or her office regarding this RFO after the due date is not permitted. If this solicitation contains DBE/ACDBE requirements, it will be noted on the Cover Page.

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 an 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 may be tabulated and posted to City's website, so 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 for offers submitted in hard copy. 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, manifested by a City Ordinance, and a 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, Offerors' 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 its Ethics Code prohibit a City officer or employee, as those terms are defined in the Ethics Code, from having a financial interest in any contract with City or any City agency such as City-owned utilities. 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: the City officer or employee; his parent, child or spouse; a business entity in which he or his parent, child or spouse owns ten (10) percent or more of the voting stock or shares of the business entity, or ten (10) percent or more of the fair market value of the business entity; or a business entity in which any individual or entity above listed is a subcontractor on a City contract, a partner or a parent or subsidiary business entity.

Conflict of Interest. Effective January 1, 2006, 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 conflict of interest questionnaire with the City Clerk not later than the 7th business day after the date that the person: (1) begins contract discussions or negotiations with the City; or (2) submits to the City an application, response to a request for proposals or offers, correspondence, or another writing related to a potential agreement with the City. The conflict of interest questionnaire form is available from the Texas Ethics Commission at www.ethics.state.tx.us. Completed conflict of interest questionnaires may be mailed or delivered by hand to the Office of the City Clerk. If mailing a completed conflict of interest questionnaire, mail to: Office of the City Clerk, P.O. Box 839966, San Antonio, TX 78283-3966. If delivering a completed conflict of interest questionnaire, deliver to: Office of the City Clerk, City Hall, 2nd floor, 100 Military Plaza, San Antonio, TX 78205. Offeror should consult its own legal advisor with questions regarding the statute or form. Do not include this form with your sealed offer. The Purchasing Division will not deliver the form to the City Clerk for you.

004 - SPECIFICATIONS / SCOPE OF SERVICES

4.1 BACKGROUND:

The City of San Antonio is soliciting bids to furnish up to thirteen (13) Velocity Pumpers in support of the Fire Department in accordance with the specifications listed herein.

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

This contract is for the purchase of up to 13 pumper trucks, in accordance with the specifications stated herein. The City's fiscal year ends September 30th. Funds for 7 pumper trucks are currently available in this fiscal year's budget; therefore, 7 pumper trucks will be ordered when the San Antonio City Council approves this contract, which is anticipated to occur in fiscal year 2015. Up to 6 additional pumper trucks will be ordered at the beginning of fiscal year 2016, which begins October 1, provided funds are appropriated for the purchase in the fiscal year 2016 budget. The purchase of 6 pumper trucks is subject to and contingent upon the appropriation of funds in the fiscal year 2016 City budget. City shall have no duty to order the remaining 6 pumper trucks if sufficient funds are not appropriated. In addition, City may order fewer trucks in fiscal year 2016 if sufficient funds are appropriated therefore.

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 are to be year model 2015 or newer.

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.

All items bid must include the maximum standard manufacturer's warranty available, 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.

Authorized Warranty Provider:

Siddons-Martin Emergency Group

Warranty Provider Address:

5511 Binz-Englemann Road Kirby, Texas 78219

Delivery - 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 will 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 will 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.**

Equipment Manuals – An operator's manual per unit, to include a parts and maintenance manual or CD ROM per model of all equipment, accessories, and components will be required.

The Manufacturer's Statement of Origin (MSO), Dealer Temporary license plates/tags, proper Invoice, signed 130U form 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 will delay the payment process.

All units to be equipped at the factory with air conditioning, full headliner, fresh air heater and defroster units, minimum AM/FM OEM radio, power windows and 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 two keyless remotes (fobs)**.

All bodies and components in this bid will be installed in accordance with the appropriate Incomplete Vehicle Data Manual. Certification of compliance will 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) will not be applied to the vehicle or mounted components. Installation will 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 will 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 will 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. Vehicles delivered with bodies installed out-of state shall be delivered to the City with Texas State Inspection sticker installed prior to delivery.

All units to be equipped with safety equipment as required by the Federal Government.

All accessories and equipment will be OEM. The manufacturer will rate all equipment provided as low emission on all models available.

Fuel systems to be diesel, and a minimum 65 gallon capacity unless otherwise specified.

Maximum capacity cooling system offered by manufacturer.

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.

Vehicles to be equipped with OEM tinted glass and current State Inspection Sticker.

Unless otherwise specified under individual items, vehicles provided will have a minimum of a driver's seat and one passenger seat.

The City reserves the right to reject any and all bids and to waive irregularities and any requirements of the bid if deemed to be in the best interest of the City.

No dealership nameplates, markings or decals will be permitted on the vehicles.

4.3 BRAND NAMES: Manufacturer names, trade names, brand names, and product numbers used herein are for the purpose of describing and establishing tested, compatible, approved and acceptable products that are of the type and quality required by the City. The use of pre-approved brand names are not intended to limit competition; therefore the phrase "or equal" is added. For purposes of this contract, the proposed "or equal" products shall require close adherence to the established standards of performance and quality inherently derived and reasonably expected from the brand named products specified herein. The City shall be the sole judge of equality and suitability.

ITEM	QUANTITY	DESCRIPTION
1	13 Each	2015 Velocity CAFS Fire Engine

DELIVERY

The apparatus will be delivered under its own power to insure proper break-in of all components while the apparatus is still under warranty. A qualified delivery representative shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in proper operation, care and maintenance of the equipment delivered.

MANUAL AND SERVICE INFORMATION

At time of delivery, complete operation and maintenance manuals covering the apparatus will be provided. A permanent plate will 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.

SAFETY VIDEO
At the time of delivery one professionally produced apparatus safety video will be provided in DVD format. This video will 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, pump operation, aerial operation, and safety during maintenance.

PERFORMANCE TESTS
A road test will be conducted with the apparatus fully loaded and a continuous run of no less than ten (10) miles. During that time the apparatus will show no loss of power nor will it overheat. The transmission drive shaft or shafts and the axles will run quietly and be free of abnormal vibration or noise. The apparatus when fully loaded will not have less than 25 percent nor more than 50 percent on the front axle, and not less than 50 percent nor more than 75 percent on the rear axle. The apparatus will meet NFPA 1901 acceleration and braking requirements.

SERVICE AND WARRANTY SUPPORT
A service facility, capable of performing repairs and warranty service will be located within twenty five (25) miles of the fire department.

A manufacturer's website that will allow the ability to view the complete bill of materials for the specific apparatus, including assembly drawings, piece part drawings, and beneficial parts notations must be accessible for each apparatus. Published component catalogs, which include proprietary systems along with an extensive operator's manual library must be available for easy reference.

COMMERCIAL GENERAL LIABILITY INSURANCE
Certification of insurance coverage will be required.

SINGLE SOURCE MANUFACTURER
Manufacturer will provide an integrated approach to the design and manufacture of our products that delivers superior apparatus and a dedicated support team. The chassis, cab weldment, cab, pumphouse (including the sheetmetal enclosure, valve controls, piping and operators panel) and body will be entirely designed, tested, and hand assembled to the customer's exact specifications. The electrical system either hardwired or multiplexed, will be both designed and integrated by the manufacturer. The warranties relative to these major components (excluding component warranties such as engine, transmission, axles, pump, etc.) will be provided as a single source manufacturer.

COMPARISON REPORT
A report will be provided to allow the Sales Representative to compare the options to a previous job. The report will be provided for job match the body and pump to previous SAFD apparatus.

NFPA 2009 STANDARDS
This unit will comply with the NFPA standards effective January 1, 2009, except for fire department directed exceptions. These exceptions will be set forth in the Statement of Exceptions.

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

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

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

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

NFPA COMPLIANCY
Apparatus proposed by the bidder will 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 will be indicated in the proposal as "non-NFPA".

VEHICLE INSPECTION PROGRAM CERTIFICATION
To assure the vehicle is built to current NFPA standards, the apparatus, in its entirety, will 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 will include: all design, production, operational, and performance testing of not only the apparatus, but those components that are installed on the apparatus.

A placard will 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.

PUMP TEST
Underwriters Laboratory (UL) will test, approved, and certify the pump. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the pump manufacturer's record of pump construction details will be forwarded to the Fire Department.

GENERATOR TEST
If the unit has a generator, Underwriters Laboratory (UL) will test, approved, and certify the generator.

The test results will be provided to the Fire Department at the time of delivery.

BREATHING AIR TEST
If the unit has breathing air, manufacturer will draw an air sample from the air system and have the sample certified that the air quality meets the requirements of NFPA 1989, *Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection.*

APPROVAL DRAWING
A drawing of the proposed apparatus will be prepared and provided to the purchaser for approval before construction begins. The finalized and approved drawing will become part of the contract documents.

This drawing will indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

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

ELECTRICAL WIRING DIAGRAMS
Two (2) electrical wiring diagrams, prepared for the model of chassis and body, will be provided.

VELOCITY™ CHASSIS
The Pierce® Velocity™ is the custom chassis developed exclusively for the fire service. Chassis provided will be a new, tilt-type custom fire apparatus. The chassis will be manufactured in the apparatus body builder's facility eliminating any split responsibility. The chassis will 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 will be the manufacturer's first line tilt cab.

WHEELBASE
The wheelbase of the vehicle will be 239.00".

GVW RATING
The gross vehicle weight rating will be 49,800l lbs.

FRAME
The chassis frame will be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails will have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to 10.75" over the rear axle. Each rail will have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 in-lb over the critical regions of the frame assembly, with a section modulus of 18.96 cubic inches with an rbm of 2,275,200 in-lb over the rear axle. The frame rails will be constructed of 120,000 psi yield strength heat-treated .38" thick steel, with 3.50" wide flanges.

FRAME REINFORCEMENT
In addition, a mainframe inverted "L" liner will be provided. It will be heat-treated steel measuring 12.00" x 3.00" x .25". Each liner will 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 will be 3,976,502 pounds per rail.

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

FRONT NON DRIVE AXLE
The Oshkosh TAK-4® front axle will be of the independent suspension design with a ground rating of 22,800 lb.

Upper and lower control arms will be used on each side of the axle. Upper control arm castings will be made of 100,000-psi yield strength 8630 steel and the lower control arm casting will be made of 55,000-psi yield ductile iron.

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

Each control arm will be mounted to the center section using elastomer bushings. These rubber bushings will rotate on low friction plain bearings and be lubricated for life. Each bushing will also have a flange end to absorb longitudinal impact loads, reducing noise and vibrations.

There will 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 will 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 will be zero degrees for optimum tire life.

The ball joint bearing will 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 will be provided.

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

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

The axle will have a third party certified turning angle of 45 degrees. Front discharge, front suction, or aluminum wheels will not infringe on this cramp angle.

FRONT SUSPENSION
Front Oshkosh TAK-4™ independent suspension will be provided with a minimum ground rating of 22,800 lb.

The independent suspension system will be designed to provide maximum ride comfort. The design will 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 will have torsion bar type spring. In addition, each front wheel end will also have energy absorbing jounce bumpers to prevent bottoming of the suspension.

The suspension design will 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.

FRONT SHOCK ABSORBERS
Heavy-duty telescoping shock absorbers (KONI) will be provided on the front suspension.

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

FRONT TIRES
Front tires will be Michelin 425/65R22.50 radials, 20 ply XFE wide base tread, rated for 22,800 lb maximum axle load and 75 mph maximum speed.

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

REAR AXLE
The rear axle will be a Meritor™, Model RS-26-185, with a capacity of 27,000 lb.

TOP SPEED OF VEHICLE
A rear axle ratio will be furnished to allow the vehicle to reach a top speed of 68 MPH.

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

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

A steel encased rubber bushing will be used in the spring eye. The steel encased rubber bushing will be maintenance free and require no lubrication.

REAR OIL SEALS
Oil seals will be provided on the rear axle.

REAR TIRES
Rear tires will be four (4) Michelin 12R22.50 radials, 16 ply "all position" XZE* tread, rated for 27,120 lb maximum axle load and 75 mph maximum speed.

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

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

TIRE PRESSURE MANAGEMENT
There will be a tire pressure management system provided that will monitor each tires pressure and temperature. A 2.00" gauge located in the cab instrument panel will indicate each tires position, pressure and temperature. A wireless sensor will be mounted to each wheel for a total of eight (8) sensors.

The system will have three (3) alert levels:
Critical Low Pressure Alert
Pressure Deviation Alert
High Temperature Alert
Each alert will trigger an audible alarm and an indicator light within the gauge to signal the driver of the problem.

The system will be covered by a **five (5) year** parts and labor warranty.

HUB COVERS (front)
Stainless steel hub covers will be provided on the front axle. An oil level viewing window will be provided.

HUB COVERS (rear)
Stainless steel baby moon covers will be provided over the rear axle hubs.

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

MUD FLAPS
Mud flaps will be installed behind the front and rear wheels. The mud flaps will be black.

SPARE TIRE
A 425/65R22.50, 18 ply spare tire to match the vehicle's front tires will be provided, mounted on a steel disc wheel. All wheel surfaces will be provided with powder coat paint #90 red.

SPARE TIRE
A spare tire, 12R22.5, 16 ply, to match the vehicle's rear tires will be provided and mounted on a steel disc wheel. All wheel surfaces will be provided with powder coat paint #90 red.

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

WHEEL CHOCK BRACKETS
There will be one (1) pair of Ziamatic SQCH-44-H style horizontal mounting wheel chock brackets provided for the Ziamatic SAC-44-E folding wheel chocks. The brackets will be made of aluminum and consist of a quick release spring loaded rod to hold the wheel chocks in place. The brackets will be mounted D-1 and D-3.

ELECTRONIC STABILITY CONTROL
A vehicle control system will be provided as an integral part of the ABS brake system from Meritor Wabco.

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

AUTOMATIC TRACTION CONTROL
An anti-slip feature will be included with the ABS. The Automatic Traction Control will be used for traction in poor road and weather conditions. The Automatic Traction Control will act as an electronic differential lock that will not allow a driving wheel to spin, thereby supplying traction at all times. The ABS electronic control unit (ECU) will work with the engine ECU, sharing information concerning wheel slip. Engine ECU will 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 will be provided on the instrument panel. Activation of the switch will allow additional tire slip to let the truck climb out and get on top of deep snow or mud.

BRAKES
The service brake system will be full air type.

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

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

The rear brakes will be Meritor™ 16.50" x 7.00" cam operated with automatic slack adjusters. Dust shields will be provided.

AIR COMPRESSOR, BRAKE SYSTEM
The air compressor will be a Bendix BA-921 with 15.80 cubic feet per minute output at 1,250 RPM.

BRAKE SYSTEM
The brake system will include:

- Bendix dual brake treadle valve with vinyl covered foot surface
- Heated automatic moisture ejector on air dryer
- Total air system capacity of 4,362 cubic inches
- Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi
- Spring set parking brake system
- Parking brake operated by a push-pull style control valve
- A parking "brake on" indicator light on instrument panel

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

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

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

- Wabco System Saver 1200 air dryer with spin-on coalescing filter cartridge
- 100 Watt Heater

BRAKE LINES

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

AIR INLET/OUTLET

One (1) air inlet/outlet will be installed with the female coupling located Next to the seat riser driver's side.

This system will 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 will be controlled by a needle valve.

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

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

AIR SYSTEM FITTINGS

All the brass air system fittings will be "compression type".

ENGINE

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

Make: Detroit Diesel
Model: DD13
Power: 500 hp at 1800 rpm
Torque: 1650 lb-ft at 1200 rpm
Governed Speed: 2080 rpm
Emissions Level: EPA 2013
Fuel: Diesel
Cylinders: Six (6)
Displacement: 781 cubic inches (12.8L)
Starter: Delco 39MT
Fuel Filters: Dual cartridge style with check valve, water separator, and water in fuel sensor
Coolant Filter: Cartridge style with shut off valves on the supply and return line.

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

HIGH IDLE

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

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

ENGINE BRAKE

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

The driver will be able to turn the engine brake system on/off and have a high and medium setting.

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

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

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

FAN BELT PULLEY, PAINTED
The fan belt pulley will be painted to avoid rusting.

ENGINE AIR INTAKE
An air intake with an ember separator (to prevent road dirt, burning embers, and recirculating hot air from entering the engine) will be mounted at the front of the apparatus, on the passenger side of the engine.

The ember separator will be mounted in the air intake with flame retardant, roto-molded polyethylene housing. It will be easily accessible by the hinged access panel at the front of the vehicle.

EXHAUST SYSTEM
The exhaust system will include a diesel particulate filter (DPF) and a selective catalytic reduction (SCR) device to meet current EPA standards. The exhaust system will be stainless steel from the turbo to the inlet of the SCR device and will be 5.00" in diameter. An insulation wrap will be provided on all exhaust pipe between the turbo and SCR to minimize the transfer of heat to the cab. The exhaust will terminate horizontally ahead of the passenger side rear wheels. A tailpipe diffuser will be provided to reduce the temperature of the exhaust as it exits. Heat deflector shields will be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

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

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

There will be a full steel frame around the entire radiator core assembly. The radiator core assembly will be isolated within the steel frame by rubber inserts to enhance cooling system durability and reliability.

The radiator will 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 will be isolated from the chassis frame rails with rubber isolators.

The radiator assembly will 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 will have a built-in sight glass. The radiator will be equipped with a 15 psi pressure relief cap.

A drain port will 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.

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

COOLANT LINES
Silicone hoses will be used for all engine/heater coolant lines installed by the engine and chassis manufacturer. This will include all hoses routed to auxiliary coolers or heaters.

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

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

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

A fill inlet will 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."

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

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

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

DIESEL EXHAUST FLUID TANK
A 4.5 gallon diesel exhaust fluid (DEF) tank will be provided and mounted in the driver's side body rearward of the rear axle. The tank will be constructed of 16-gauge type 304- L stainless steel.

A .50" drain plug will be provided in a low point of the tank for drainage.

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

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

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

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

FUEL SHUTOFF
A shutoff valve will be installed in the fuel line, at the fuel tank.

FUEL COOLER
An air to fuel cooler will be installed in the engine fuel return line.

The fuel filler cap will have a retaining chain and holder provided on the fuel fill door.

TRANSMISSION
An Allison 5th generation, model EVS 4000P, electronic, torque converting, automatic transmission will be provided.

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

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

A transmission temperature gauge with red light and buzzer will be installed on the cab instrument panel.

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

The transmission ratio will be 1st - 3.51 to 1.00, 2nd - 1.91 to 1.00, 3rd - 1.43 to 1.00, 4th - 1.00 to 1.00, 5th - 0.75 to 1.00, 6th - 0.64 to 1.00, R- 4.80 to 1.00.

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

SHIFT MODE
The shifter will have a "Mode" button which will be programmed to indicate the transmission fluid level.

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

The shafts will be dynamically balanced before installation.

A splined slip joint will be provided in each driveshaft, slip joint will be coated with Glidecoat or equivalent.

STEERING
Dual Sheppard M110 steering gears, with integral heavy-duty power steering, will be provided. For reduced system temperatures, the power steering will incorporate an air to oil cooler and an Eaton model VN20F hydraulic pump with integral pressure and flow control. All power steering lines will have wire braded lines with crimped fittings.

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

STEERING WHEEL
The steering wheel will be 18.00" in diameter, have tilting and telescoping capabilities, and a four (4)-spoke design.

LOGO AND CUSTOMER DESIGNATION ON DASH
The dash panel will have an emblem containing the Pierce logo and customer name. The emblem will have three (3) rows of text for the customer's department name. There will 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 will be: San Antonio
The second row of text will be: Fire
The third row of text will be: Department

SHROUD
An aluminum shroud will be mounted over the Wabco main module located in the frame rails to deflect water and debris from above.

BUMPER
A one piece bumper manufactured from .25" formed steel with a .38" bend radius will be provided. The bumper will be a minimum of 10.00" high with a 1.50" top and bottom flange, and will extend 16.00" from the face of the cab. The bumper will be 102.00" wide with 45 degree corners and side plates. The bumper will be metal finished and painted job color.

To provide adequate support strength, the bumper will be mounted directly to the front of the C channel frame. The frame will be a bolted modular extension frame constructed of 50,000 psi tensile steel.

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

Documentation will be provided, upon request to show that the options selected have been engineered for fit up and approval for this modular bumper extension. A chart will be provided to indicate the option locations and will include but not be limited to the following options: air horns, mechanical sirens, speakers, hose trays with hose capacities, winches, lights, discharge and suction connections.

LIFT AND TOW MOUNTS WITH TOW EYES
Mounted to the frame extension will be lift and tow mounts. Incorporated in the mounts will be two (2) painted steel tow eyes. The lift and tow mounts will be designed and positioned to adapt to certain tow truck lift systems. The tow eyes will not be used for lifting of the apparatus.

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

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

TOW EYES
Two (2) cutouts will 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 will have a 0.25 radius.

The tow eyes will 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 will not be used for lifting of the apparatus.

The utility eyes will be chrome plated.

TOW EYES
Two (2) tow eyes will be mounted through the front face of the bumper.

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

The tow eyes will be mounted directly to the bumper frame.

Cutouts will be provided in the front face of the bumper to allow the tow eyes to extend out the front.

The tow eyes will be designed and positioned to allow up to a 9,000 lb. straight horizontal pull in line with the centerline of the vehicle. The tow eyes will not be used for lifting of the apparatus.

The tow eyes will be painted job color.

HOSE TRAY
A hose tray, constructed of aluminum, will be placed in the center of the bumper extension. It will be 13.00" deep ID, with 10.00" below the gravel pan and 3.00" above the gravel pan.

The tray will have a capacity of 150 feet .

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

The bottom of the tray will not protrude below the bottom of the bumper

GRAVEL PAN
A gravel pan, constructed of bright aluminum treadplate, will be furnished between the bumper and cab face.

The gravel pan will be properly supported from the underside to prevent flexing and vibration of the aluminum treadplate.

CAB
The Velocity™ cab will be designed specifically for the fire service and will be manufactured by Pierce Manufacturing.

To provide quality at the source and single source customer support, the cab will be built by the apparatus manufacturer in a facility located on the manufacturer's premises.

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

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

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

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

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

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

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

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

To reduce injuries to occupants in the seated positions, proper head clearance will be provided. The floor-to-ceiling height inside the forward cab of will be no less than 60.25". The floor-to-ceiling height inside the crew cab will be no less than 62.95" in the center position and 68.75" in the outboard positions.

The crew cab will measure a minimum of 71.50" from the rear wall to the backside of the engine tunnel (knee level) for optimal occupant legroom.

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

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

PANORAMIC WINDSHIELD
A one (1)-piece, safety glass windshield with more than 2,802 square inches of clear viewing area will be provided. The windshield will be full width and will provide the occupants with a panoramic view. The windshield will consist of three (3) layers: the outer light, the middle safety laminate, and the inner light.

The 0.114" thick outer light layer will provide superior chip resistance. The middle safety laminate layer will prevent the windshield glass pieces from detaching in the event of breakage. The inner light will provide yet another chip resistant layer. The cab windshield will be bonded to the aluminum windshield frame using a urethane adhesive. A custom frit pattern will be applied on the outside perimeter of the windshield for a finished automotive appearance.

SUNVISORS
Two (2) smoked Lexan sunvisors, 7.75" x 28.12" long, will be provided. The sunvisors will be located above the windshield with one (1) mounted on each side of the cab.

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

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

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

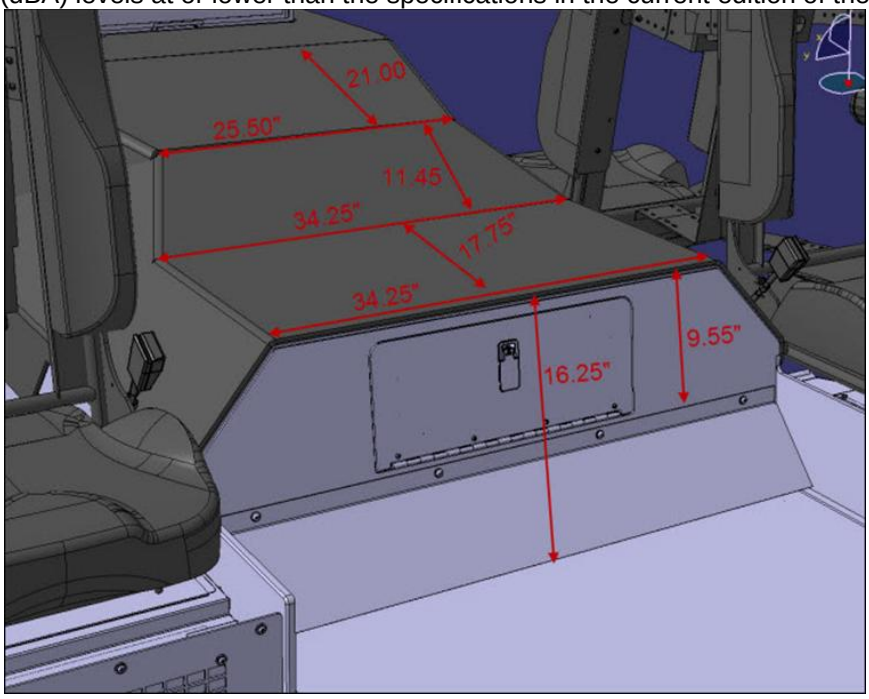
side until the hood releases from the first latch (primary latch) then to the passenger side to fully release the hood (secondary latch).

ENGINE TUNNEL
To provide structural strength, the engine tunnel sidewalls will be constructed of .50" aluminum plate that is welded to both the .25" firewall and .38" heavy wall extrusion under the crew cab floor. To maximize occupant space, the top edges will be tapered.

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

The engine tunnel will be insulated on both sides for thermal and acoustic absorption. The underside of the tunnel will be covered with 1.00" thick polyether foam that is reinforced with an aluminized face.

Thermal rating for this insulation will be -40 degrees Fahrenheit to 300 degrees Fahrenheit. The insulation will keep noise (dBA) levels at or lower than the specifications in the current edition of the NFPA 1901 standards.



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

CAB LIFT
A hydraulic cab lift system will 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 will have a backup manual override, for use in the event of an electrical failure.

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

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

The rear of the cab will 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 1/4" diameter hydraulic cylinders will be equipped with a velocity fuse that protects the cab from accidentally descending when the cab is in the tilt position.

For increased safety, a redundant mechanical stay arm will 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 will be manually stowed to its original position before the cab can be lowered.

INTERLOCK, CAB LIFT TO PARKING BRAKE
The cab lift safety system will be interlocked to the parking brake. The cab tilt mechanism will 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 will be disabled.

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

FRONT CAB TRIM
Bright finished wrap-around housings will be provided on each side of the front cab face for mounting of the headlights and front directional lights. The housings will 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.

MIRRORS
One (1) Ramco, Model 6000FFHR-750HR, polished aluminum mirror will be mounted on each of the cab doors. The mirrors will be 9.25" x 13.50", with a full flat face. An additional convex section will be bolted to the top of each mirror. The mirror head will have a highly polished aluminum finish.

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

The convex section in each mirror will be heated and adjustable with remote control.

SIDE VIEW MIRROR
An 8.00" diameter convex mirror will be provided over the officer's side front corner of the cab. The mirror will provide the driver with a view of the passenger side of the vehicle.

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

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

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

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

The forward cab and crew cab doors will be constructed of extruded aluminum with a nominal material thickness of .125". The exterior door skins will be constructed from .090" aluminum.

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

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

The cab doors will be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. The locks will be capable of activating when the doors are open or closed. The doors will remain locked if locks are activated when the doors are opened, then closed.
A full length, heavy duty, stainless steel, piano-type hinge with a .38" pin and 11 gauge leaf will be provided on all cab doors. There will be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit.

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

DOOR PANELS
The inner cab door panels will be constructed out of brushed stainless steel. The cab door panels will be removable without disconnecting door and window mechanisms.

RECESSED POCKET WITH ELASTIC COVER
To provide organized storage (clutter control) in the cab for miscellaneous equipment, the cab interior will be provided with recessed storage pockets. The pockets will be 6.50" wide x 2.12" high x 6.00" deep.

The pockets will be provided with a perforated elastic material cover to secure the equipment in the pocket. The pockets will be installed in all available mounting locations of the overhead console.

ELECTRIC WINDOW CONTROLS
Each cab entry door will be equipped with an electrically operated tempered glass window. A window control panel will be located on the door panel within easy reach of the respective occupant. Each switch will allow intermittent or auto down operation for ease of use. Auto down operation will be actuated by holding the window down switch for approximately 1/2 second. The driver control panel will contain a control switch for each cab door's window. All other door control panels will contain a single switch to operate the window within that door.

The window switches will 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.

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

There will be one (1) concealed switch on the exterior of the cab, located under the front bumper on the driver side, that operates the cab door locks.

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

DUAL STEPS
A dual step will be provided below each cab and crew cab door. The steps will be designed with a grip pattern punched into bright aluminum treadplate material providing support, slip resistance, and drainage. The steps will 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 will be 16.50" and from first step to middle step will be 12.00".

STEP LIGHTS
For reduced overall maintenance costs compared to incandescent lighting, there will be four (4) white LED, step lights provided. The lights will be installed at each cab and crew cab door, one (1) per step, 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 will provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

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

FENDER CROWNS
Stainless steel fender crowns will be installed at the cab wheel openings.

WEBBED GRAB HANDLE INTERIOR CAB DOORS
Installed on the interior of each cab door stop strap will be a red webbed grab handle. The grab handles will be securely mounted.

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

One (1) fixed window with tinted glass will be provided on each side of the cab, to the rear of the crew cab door.

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

WINDOWS, REAR
The rear wall of the crew cab will have two (2) windows, each being 8.00" wide x 14.00" high.

WINDOW INTERIOR TRIM
For improved aesthetics, the cab rear wall windows will include a vacuum formed ABS interior trim panel.

STORAGE COMPARTMENT
Provided under the forward facing crew cab seats will be a transverse compartment. The compartment will be divided into upper and lower sections by the cab floor. The upper section will be 21.50" 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 will be full width (transverse) of the crew cab. The lower section on both sides will be 21.50" wide x 15.50" high x 20.00" deep. The compartment will extend from the bottom of the cab to top of the seat riser.

There will be an access door on both sides of the cab with reverse hinged double pan doors.

Doors will be latched with recessed, polished stainless steel D-ring handles and Eberhard 106 locks. The doors will include gas shock style positive door holders.

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

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

The crew cab door grab handles will be located above the side compartment doors. The cab side access doors will be painted to match the cab exterior and the drop down door inside the cab will be constructed of polished stainless steel.

EXTERIOR ACCESS LIGHTING
Exterior compartment access lighting will consist of four (4) white On Scene Solutions Axe LED strip lights, one (1) horizontally mounted in each lower and upper exterior compartment.

BACKBOARD STORAGE
A rack will be provided for storage of one (1) backboard that will not exceed 19.00" wide x 2.50" thick.

The rack will be located in the transverse section of the crew cab compartment, below the seat box.

The backboard will be stored in stainless steel channels, accessible from either side of the apparatus.

SCUFFPLATE
A full-height brushed stainless steel scuffplate shall be installed on the inside of each of the extended cab compartment door pans.

ELECTRIC COMPARTMENT DOOR LOCKS
Two (2) electric dead bolt locks will be provided, one (1) each side of the cab, on the auxiliary exterior cab compartments. The locks will be activated by the body compartment door switch.

CAB COMPARTMENT DOOR LOCKS
All auxiliary cab compartment doors will be keyed alike. The compartment doors will also be keyed the same as the body roll-up door compartments.

CAB ROOF DRIP RAIL
For enhanced protection from inclement weather, a drip rail will be furnished on the sides of the cab. The drip rail will be constructed of bright polished extruded aluminum, and be bonded to the sides of the cab.

The drip rail will extend the full length of the cab roof.

SPECIAL TAG
There will be one (1) special tag(s) provided. The tag(s) will read Engine information panel lower on the doghouse driver’s feet.

CUP HOLDER
There will be four (4) cup holder(s) provided. Each cup holder will have self-adjusting fingers that automatically grip beverage containers of various sizes. A recess in the cup holder will allow it to hold beverage containers with handles.

The cup holder(s) will be located at customer pick-up.

MODIFICATION DOOR LOCKS
The cab and crew cab doors shall have the switch installed so that the up position opens the doors and the down position locks the doors.

WORK SURFACE
There will be a work surface provided on the forward section of the officer side of the engine tunnel. The work surface will be approximately 27.00" long and shall be constructed of .19" aluminum to allow the mounting of equipment. The work surface will be located to the left of the officer and to the rear of the defroster inlet. The work surface will be painted to match the cab interior.

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

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

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

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

To complete the cab front interior design, painted aluminum modesty panels will be provided under the dash on both sides of the cab. The driver side modesty panel will 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.

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

The headliner will be installed in both forward and rear cab sections. The crew cab headliner will be one piece. The headliner panel will be a composition of a corrugated high density polyethylene panel covered with a sound barrier and upholstery. For quick, easy access of electrical wiring, or to perform other maintenance needs, the headliner will be held in place by a dual lock fastening system.

The cab structure will include designated raceways for electrical harness routing from the front of the cab to the rear upper portion of the cab. Raceways will 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 will be covered by aluminum extrusion, while the vertical and overhead raceways will be covered by painted aluminum covers. The raceways will 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 will be laid in place.

CAB INTERIOR UPHOLSTERY
The cab interior upholstery will be red. All cab interior materials will meet FMVSS 302 (flammability of interior materials).

INTERIOR PAINT (Cab)
A rich looking interior will be provided by painting all the metal surfaces inside the cab red, vinyl texture paint.

CAB FLOOR
The cab and crew cab floor areas will 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 .25" thick closed cell foam (no water absorption) which offers a sound dampening material for reducing sound levels.

CAB DEFROSTER

To provide maximum defrost and heating performance, a 54,961BTU heater-defroster unit with 558 SCFM of air flow will be provided inside the cab. The defroster unit will be strategically located under the center forward portion of the instrument panel. For easy access, a removable metal cover will be installed over the defroster unit. The defroster will include an integral aluminum frame air filter, high performance dual scroll blowers, and ducts designed to provide maximum defrosting capabilities for the one (1) piece windshield. The defroster ventilation will be built into the design of the cab dash instrument panel and will be easily removable for maintenance. The defroster will 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 will meet or exceed SAE J382 minimum defrosting system performance requirements.

CAB/CREW CAB HEATER

Two (2) 36,702 BTU auxiliary heaters with 276 SCFM each unit of air flow will be provided inside the crew cab, one (1) in each outboard rear facing seat riser. The heaters will include high performance dual scroll blowers, one (1) for each unit. Outlets for the heaters will be located below each rear facing seat riser and below the fronts of the driver and passenger seats, for efficient airflow. An extruded aluminum plenum will be incorporated in the cab structure that will transfer heat to the forward cab seating positions.

The heater-defroster and crew cab heaters will be controlled by an integral electronic control panel. The heater control panel will allow the driver to control heat flow to the front and rear independently. The control panel will include variable adjustment for temperature and fan control, and be conveniently located on the dash in clear view of the driver. The control panel will include highly visible, progressive LED indicators for both fan speed and temperature.

AIR CONDITIONING

Due to the large space inside the cab, a high-performance, customized air conditioning system will be furnished. A 19.1 cubic inch compressor will be installed on the engine.

The air conditioning system will 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 will be run only after the cab has been heat soaked at 100 degrees Fahrenheit for a minimum of 4 hours.

A roof-mounted condenser with a 63,000 BTU output that meets and exceeds the performance specification will be installed on the cab roof.

The evaporator unit will be installed in the rear portion of the cab ceiling over the engine tunnel. The evaporator will include two (2) high performance cores and plenums with multiple outlets, one (1) plenum directed to the front and one (1) plenum directed to the rear of the cab.

There will be a hinge on the forward edge of the filter cover and two (2) quarter turn fasteners with a knob on the rear edge to allow easy access.

The evaporator unit will have a 49,000 BTU (4.08 tons) rating that meets and exceeds the performance specifications. Adjustable air outlets will be strategically located on the evaporator cover per the following:

Four (4) will be directed towards the driver’s location
Four (4) will be directed towards the officers location
Nine (9) will be directed towards crew cab area

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

The air conditioner will be controlled by dual zone integral electronic control panels for the heater, defroster and air conditioner. The cab control panel will be located in the center console. For ease of operation, the control panels will include variable adjustment for temperature and fan control.

INTERIOR CAB INSULATION

The cab walls, ceiling and engine tunnel will be insulated in all strategic locations to maximize acoustic absorption and thermal insulation. The cab will be insulated with 2.00" insulation in the rear wall, 3.00" insulation in the side walls, and 1.50" insulation in the ceiling. Headliners will be constructed from a .20" high density polyethylene corrugated material. Each headliner will be wrapped with a .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 will be insulated with a 1.50" thick open cell acoustical foam. The thermal protection of the foam will provide and R-value of four (4) per 1.00" thickness.

WINDOW DEFROST FANS
A window defrost fan will be installed on the driver side ceiling of the cab above the engine tunnel. The fan will be 6.50" diameter with four (4) blades and chrome guard. The fan will include a two (2) speed motor and a three (3) position Hi-Off-Low toggle switch. The fan will provide 250 CFM air flow.

WINDOW DEFROST FANS
A window defrost fan will be installed on the passenger side ceiling of the cab above the engine tunnel. The fan will be 6.50" diameter with four (4) blades and chrome guard. The fan will include a two (2) speed motor and a three (3) position Hi-Off-Lo toggle switch. The fan will provide 250 CFM air flow.

GRAB HANDLE
A black rubber covered grab handle will be mounted on the door post of the driver side and passenger side cab door to assist in entering the cab. The grab handle will be securely mounted to the post area between the door and windshield.

ENGINE COMPARTMENT LIGHT
An engine compartment light will be installed under the engine hood, of which the switch is an integral part. Light will have a .125" diameter hole in its lens to prevent moisture retention.

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

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

The panel will have a rubber seal for thermal and acoustic insulation. Four (4) flush latches will be provided on the access panel.

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

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

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

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

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

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

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

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

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

FRONTAL IMPACT PROTECTION
The SRS system will provide protection during a frontal or oblique impact event. The system will activate when the vehicle decelerates at a predetermined G force known to cause injury to the occupants. The cab and chassis will 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 will activate the pyrotechnic devices when the correct crash algorithm, wave form, is detected.

The SRS system will deploy the following components in the event of a frontal or oblique impact event:
Driver side front air bag.
Passenger side knee bolster air bag.
Air curtains mounted in the outboard bolster of outboard seat backs.
Suspension seats will be retracted to the lowest travel position.
Seat belts will be pre-tensioned to firmly hold the occupant in place.

SIDE ROLL PROTECTION
The SRS system will 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 will analyze the vehicle's angle and rate of roll to determine the optimal activation of the advanced occupant restraints.

The SRS system will deploy the following components in the event of a side roll:
Air curtains mounted in the outboard bolster of outboard seat backs.
Suspension seats will be retracted to the lowest travel position.
Seat belts will be pre-tensioned to firmly hold the occupant in place.

SEATING CAPACITY
The seating capacity in the cab will be six (6).

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

The seat will include the following features incorporated into the side roll protection system. Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.

A suspension seat safety system will be included. When activated in the event of a side roll, this system will pretension the seat belt and then retract the seat to its lowest travel position.
The seat will be furnished with a three (3)-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt will have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue will be stored at waist position for quick application by the seat occupant.

The seat belt receptacle will be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

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

The seat back will be an SCBA back style with 7.50 degree fixed recline angle, and will include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.
The seat will include the following features incorporated into the side roll protection system.
Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.

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

The seat will be furnished with a three (3)-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt will have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue will be stored at waist position for quick application by the seat occupant. The seat belt receptacle will be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

RADIO COMPARTMENT
A compartment for the radio amplifier will be located under the center forward facing seats in the crew cab. A drop down door with a chrome plated lift and turn latch will be provided for access. The compartment will be constructed of smooth aluminum and painted to match the cab interior. The radio control will be located in the overhead console on the passenger's side.

EMS COMPARTMENT
A rear facing EMS compartment will be provided in the crew cab at the driver side outboard position.The compartment will be 20.00" wide x 30.00" high x 26.00" deep with one (1) Amdor roll up door, non-locking, with white finish radius track style door. That is, it will travel over the top and down the back of the compartment. Front top corners of the compartment will be radiused. This will allow access through the front and top section of the compartment.

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

There will be two (2) white Amdor LED strip lights installed, one (1) each side of the compartment opening. The lights will be controlled by an automatic door switch.

STORAGE COMPARTMENT
A rear facing compartment will be provided in the crew cab behind the engine tunnel at the center position.

The compartment will be approximately 45.75" wide x 18.00" high. The compartment will be approximately 16.00" deep at the floor. The back wall of the compartment will follow the contour of the engine tunnel. In place of a door, the compartment will have a heavy black nylon webbing made of 1.00" nylon strap with a 2.00" box pattern. Side-release buckles will be used to fasten all sides of the opening.

A removal access panel will be provided in the compartment so engine fluids may be checked from inside the crew cab.

The compartment will be constructed of smooth aluminum and painted to match the cab interior.
Compartment Light
There will be two (2) white Amdor LED strip lights installed, one (1) each side of the compartment opening. The lights will be controlled by a switch just inside the compartment.

STORAGE COMPARTMENT
A rear facing radio storage compartment will be provided in the crew cab at the passenger side outboard position.

The compartment will be 20.00" wide x 16.00" high x 26.00" deep and will be provided with an access panel that screws into place. There will be ventilation holes provided in the access panel.

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

FORWARD FACING DRIVER SIDE OUTBOARD SEAT
There will be one (1) forward facing, Pierce PS6 seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat will be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric

vibration control). To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled.

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

The seat will include the following features incorporated into the side roll protection system.

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

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

The seat will be furnished with a three (3)-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt will have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue will be stored at waist position for quick application by the seat occupant. The seat belt receptacle will be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

FORWARD FACING CENTER SEATS
There will be two (2) forward facing, Pierce PS6® seats provided at the center position in the crew cab. For optimal comfort, the seats will be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seats will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled.

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

The seats will include the following feature incorporated into the side roll protection system.

A seat safety system will be included. When activated this system will pretension the seat belts around the occupants to firmly hold them in place in the event of a side roll.

The seats will be furnished with three (3)-point, shoulder type seat belts. To provide quick, easy use for occupants wearing bunker gear, the seat belts will have a minimum 130.00" shoulder length and 55.00" lap length. The seat belt tongue will be stored at waist position for quick application by the seat occupant.

The seat belt receptacle will be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belts will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

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

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

The seat will include the following features incorporated into the side roll protection system.
Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.

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

The seat will be furnished with a three (3)-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt will have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue will be stored at waist position for quick application by the seat occupant.

The seat belt receptacle will be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

PARTITION
There will be one (1) partition(s) located rear facing center EMS cabinet, located from left 1/4 of the total width looking at cabinet while facing forward- adjustable shelf will be located on the right side of cabinet, same as 26977 - see photo. Each partition will be the full vertical height of the compartment.

SHELVING
There will be two (2) shelves provided in the EMS compartment. Each shelf will be constructed of .090" aluminum with a 1.25" up-turned lip. Shelving will be infinitely adjustable by means of a threaded tightener sliding in a track.

The location will be One (1) driver side EMS cabinet and One (1) in the center EMS cabinet to the right of the partition, 3/4 width of the cabinet, same as 26977 see photo.

REAR FACING OVERHEAD STORAGE COMPARTMENT
There will be two (2) overhead rear facing storage compartments installed at the raised roof within the crew cab, on each side of the air conditioner. The compartments will be approximately 22.00" wide x 10.00" high x 20.00" deep at the bottom.

Each compartment will include one (1) lift up compartment door. Non-locking latch, paddle handle, and gas operated stay arms will be provided.

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

COMPARTMENT LIGHT
The storage compartment lighting will consist of one (1) On Scene Solutions Axe LED strip lights installed horizontally above each compartment door opening.

SEAT UPHOLSTERY
All Pierce PS6 seat upholstery will be maroon woven with black Imperial 1200 material.

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

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

SEAT EMBROIDERY
The seats in the cab and crew cab will be provided with custom embroidery. The Fire Department will determine what the embroidery will be by providing pictures at the time of order.

The embroidery will be provided on six (6) seats.

FORWARD FACING SEAT RISER
The forward facing seat riser in the crew cab will be raised up 4.00".

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

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

SEAT BELTS
All seating positions in the cab and crew cab will have red seat belts.

SEAT BELT MONITORING SYSTEM
A seat belt monitoring system (SBMS) will be provided. The SBMS will be capable of monitoring up to ten (10) seat positions indicating the status of each seat position with a green or red LED indicator as follows:
All other seats:
Seat Occupied & Buckled = Green
Seat Occupied & Unbuckled = Red
No Occupant & Buckled = Red
No Occupant & Unbuckled = Not Illuminated
Audible Alarm

The SBMS will include an audible alarm that will be activated when a red illumination condition exists and the parking brake is released, or a red illumination condition exists and the transmission is not in park.

HELMET STORAGE, PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 2009 edition, section 14.1.8.4.1 requires a location for helmet storage be provided. There is no helmet storage on the apparatus as manufactured. The fire department will provide a location for storage of helmets.

CAB DOME LIGHTS
There will be four (4) Whelen, Model 80C*EHCS, 8.00" round dual LED dome lights provided. Two (2) lights will be mounted above the inside shoulder of the driver and officer and two (2) lights will be installed and located, one (1) on each side of the crew cab.

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

The white LED's will be controlled by the door switches and one (1) switch located next to each light on the ceiling.

The color LED's will be controlled by one (1) switch located next to each light on the ceiling.

OVERHEAD MAP LIGHTS
There will be two (2) white round adjustable map lights installed in the cab:
One (1) overhead in front of the driving position.
One (1) overhead in front of the passenger's position.
Each light will include a switch on the light housing.

The light switches will be connected directly to the battery switched power.

HAND HELD LIGHT
There will be two (2) Streamlight E-Spot FireBox Vehicle Mount Systems, Model 45865, LED hand held flashlights with an orange thermoplastic body provided.

The location will be top of crew cab rear facing cabient, one each side- see photos.

The system will include the hand light, a charger and the vehicle mount system.

LOCATION OF CIRCUIT BREAKERS
The circuit breakers for the Survivor handlights will be mounted in the special breaker box for the in-service/out-of-service system located in the cab behind the driver's seat. The lights will be paired, (2) lights on (1) 10 amp breaker. The front (2) lights will be together on one 10 amp breaker. The middle (2) lights (mounted near the rear facing crew cab seats) will be together on one 10 amp breaker. The rear (2) lights (on the EMS compartment) will be together on one 10 amp breaker.

HAND HELD SPOTLIGHT
There will be four (4) lights Streamlight, Model Survivor 90503, LED flashlights with chargers and AC/DC chords provided and installed One next to the driver’s seat riser, one on the officer side engine tunnel in easy reach while belted in the seat, one each side of the rear facing compartments.
The flashlights will be connected battery direct and will charge when the chassis batteries are charging.

CAB INSTRUMENTATION

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

GAUGES

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

- Voltmeter gauge (Volts)
  Low volts (11.8 VDC)
  Amber indicator on gauge assembly with alarm
  High volts (15 VDC)
  Amber indicator on gauge assembly with alarm
  Very low volts (11.3 VDC)
  Amber indicator on gauge assembly with alarm
  Very high volts (16 VDC)
  Amber indicator on gauge assembly with alarm
- Tachometer (RPM)
- Speedometer (Primary (outside) MPH, Secondary (inside) Km/H)
- Fuel level gauge (Empty - Full in fractions)
  Low fuel (1/8 full)
  Amber indicator on gauge assembly with alarm
  Very low fuel (1/32) fuel
  Amber indicator on gauge assembly with alarm
- Engine oil pressure gauge (PSI)
  Low oil pressure to activate engine warning lights and alarms
  Red indicator on gauge assembly with alarm
- Front air pressure gauge (PSI)
  Low air pressure to activate warning lights and alarm
  Red indicator on gauge assembly with alarm
- Rear air pressure gauge (PSI)
  Low air pressure to activate warning lights and alarm
  Red indicator on gauge assembly with alarm
- Transmission oil temperature gauge (Fahrenheit)
  High transmission oil temperature activates warning lights and alarm
  Amber indicator on gauge assembly with alarm
- Engine coolant temperature gauge (Fahrenheit)
  High engine temperature activates an engine warning light and alarm
  Red indicator on gauge assembly with alarm
- Diesel Exhaust Fluid Level Gauge (Empty - Full in fractions)
  Low fluid (1/8 full)
  Amber indicator on gauge assembly with alarm

All gauges and gauge indicators will perform prove out at initial power-up to ensure proper performance.

INDICATOR LAMPS

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

The following amber telltale lamps will be present:

- Low coolant
- Trac cntl (traction control) (where applicable)
- Check engine
- Check trans (check transmission)
- Aux brake overheat (Auxiliary brake overheat)
- Air rest (air restriction)
- Caution (triangle symbol)
- Water in fuel
- DPF (engine diesel particulate filter regeneration)
- Trailer ABS (where applicable)

- Wait to start (where applicable)
- HET (engine high exhaust temperature) (where applicable)
- ABS (antilock brake system)
- MIL (engine emissions system malfunction indicator lamp) (where applicable)
- SRS (supplemental restraint system) fault (where applicable)
- DEF (low diesel exhaust fluid level)

The following red telltale lamps will be present:

- Warning (stop sign symbol)
- Seat belt
- Parking brake
- Stop engine
- Rack down

The following green telltale lamps will be provided:

- Left turn
- Right turn
- Battery on

The following blue telltale lamp will be provided:

- High beam

ALARMS

Audible steady tone warning alarm: A steady audible tone alarm will be provided whenever a warning message is present.

Audible pulsing tone caution alarm: A pulsing audible tone alarm (chime/chirp) will be provided whenever a caution message is present without a warning message being present.

Alarm silence: Any active audible alarm will 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 will intermittently chirp every 30 seconds until the alarm condition no longer exists. The intermittent chirp will act as a reminder to the operator that a caution or warning condition still exists. Any new warning or caution condition will enable the steady or pulsing tones respectively.

INDICATOR LAMP AND ALARM PROVE-OUT

Telltale indicators and alarms will perform prove-out at initial power-up to ensure proper performance.

CONTROL SWITCHES

For ease of use, the following controls will be provided immediately adjacent to the cab instrument panel within easy reach of the driver.

Emergency master switch: A molded plastic push button switch with integral indicator lamp will be provided. Pressing the switch will 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.

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

Panel backlighting intensity control switch: A three (3)-position momentary rocker switch will 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.

The following standard controls will be integral to the gauge assembly and are located below the right hand gauges. All switches have backlit labels for low light applications.

High idle engagement switch: A two (2)-position momentary rocker switch with integral indicator lamp will be provided. The first switch position is the default switch position. The second switch position will 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 will indicate when the high idle function is engaged.

"Ok To Engage High Idle" indicator lamp: A green indicator light will be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement.
The following standard controls will be provided adjacent to the cab gauge assembly within easy reach of the driver. All switches will have backlit labels for low light applications.

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

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

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

Heater, defroster, and optional air conditioning control panel: A control panel with membrane switches will be provided to control heater/defroster temperature and heater, defroster, and air conditioning fan speeds. A green LED status bar will indicate the relative temperature and fan speed settings.

Turn signal arm: A self-canceling turn signal with high beam headlight and windshield wiper/washer controls will be provided. The windshield wiper control will have high, low, and intermittent modes.

Parking brake control: An air actuated push/pull park brake control valve will be provided.

Chassis horn control: Activation of the chassis horn control will be provided through the center of the steering wheel.

CUSTOM SWITCH PANELS
The design of cab instrumentation will allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There will 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 will have backlit labels for low light applications.

DIAGNOSTIC PANEL
A diagnostic panel will be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel will allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership.

Diagnostic switches will allow engine and ABS systems to provide blink codes should a problem exist.

The diagnostic panel will include the following:
- Engine diagnostic port
- Transmission diagnostic port
- ABS diagnostic port
- SRS diagnostic port (where applicable)
- Command Zone USB diagnostic port
- Engine diagnostic switch (blink codes flashed on check engine telltale indicator)
- ABS diagnostic switch (blink codes flashed on ABS telltale indicator)
- Diesel particulate filter regeneration switch (where applicable)
- Diesel particulate filter regeneration inhibit switch (where applicable)

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

The upper right section will display, along with other configuration specific information:
- Odometer
- Trip mileage

- PTO hours
- Fuel consumption
- Engine hours

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

AIR RESTRICTION INDICATOR

A high air restriction warning indicator light LCD message with amber warning indicator and audible alarm will be provided.

"DO NOT MOVE APPARATUS" INDICATOR

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

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

DO NOT MOVE TRUCK MESSAGES

Messages will be displayed on the gauge panel LCD located forward of the steering wheel directly in front of the driver whenever the Do Not Move Truck light is active. The messages will designate the item or items not in the stowed for vehicle travel position (parking brake disengaged).

The following messages will 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 will be displayed as a caution message after the parking brake is disengaged.

SWITCH PANELS

The emergency light switch panel will have a master switch for ease of use plus individual switches for selective control. Each switch panel will contain up to six (6) rocker-type switches each rated for two hundred thousand (200,000) cycles. Panels with less than six (6) switches will include indicators or blanks. The switch panel(s) will be located in the "overhead" position above the windshield on the driver side overhead to allow for easy access.

The switches will be rocker-type and include an integral indicator light. For quick, visual indication the switch will be illuminated whenever the switch is active. A 2-ply, scratch resistant laser engraved Gravoply label indicating the use of each switch will be placed below the switches. The label will allow light to pass through the letters for improved visibility in low light conditions. Switches and light source are integral to the switch panel assembly.

WIPER CONTROL

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

SPARE CIRCUIT
There will be six (6) pair of wires, including a positive and a negative, installed on the apparatus.
The above wires will have the following features:
The positive wire will be connected directly to the battery power.
The negative wire will be connected to ground.
Wires will be protected to 10 amps at 12 volts DC.
Power and ground will terminate Three in the rear facing EMS compartment mount at the top,and three mounted in the storage box. All must be wired to the in/out service box located behind the driver's seat and switch- see photos.
Termination will be with 15 amp, power point plug with rubber cover.
Wires will be sized to 125% of the protection.
This circuit(s) may be load managed when the parking brake is set.

RECESS, DASH PANEL
The dash panel across from the officer will be recessed to accommodate the mounting of miscellaneous items. The recess will be 8.25" down x 7.81" back and 20.88" wide.

RADIO WITH CD PLAYER
There will be a Panasonic AM/FM/Weatherband stereo radio with compact disc player and MP3 jack installed.

The compact disc stereo radio will be mounted within reach of the driver.

The quantity and location of the speakers will be one (1) pair of 5.25" speakers located in the cab and one

(1) pair of 5.25" speakers located in the crew cab.

The type and location of the antenna will be a roof-mounted rubber antenna located in an open space, on the cab roof.

PUSH BUTTON MOUNTING BRACKET
A mounting bracket will be provided to be placed at preconstruction for the mounting of push button controls. The mounting bracket will be large enough for three (3) push buttons. The controls and labels will be mounted horizontally, next to each other. The bracket will be fabricated from smooth aluminum and will be unfinished.

INFORMATION CENTER
An information center employing a 7.00" diagonal color LCD display will be encased in an ABS plastic housing.

The information center will have the following specifications:
Operate in temperatures from -40 to 185 degrees Fahrenheit
An Optical Gel will be placed between the LCD and protective lens
Five weather resistant user interface switches
Black enclosure with gray decal
Sunlight Readable
Linux operating system
Minimum of 400nits rated display
Display can be changed to an available foreign language

OPERATION
The information center will be designed for easy operation for everyday use.

The page button will cycle from one screen to the next screen in a rotating fashion.

A video button will allow a NTSC signal into the information center to be displayed on the LCD. Pressing any button while viewing a video feed will return the information center to the vehicle information screens.

A menu button will provide access to maintenance, setup and diagnostic screens.

All other button labels will be specific to the information being viewed.

GENERAL SCREEN DESIGN
Where possible, background colors will be used to provide "At a Glance" vehicle information. If information provided on a screen is within acceptable limits, a green background will be used. If a caution or warning situation arises the following will occur:

An amber background/text color will indicate a caution condition.
A red background/text color will indicate a warning condition.

Every screen will include the following:
Exterior Ambient Temperature
Time (12 or 24 hour mode)
Text Alert Center:

The information center will utilize an "Alert Center" to display text messages for audible alarm tones. The text messages will be written to identify the item(s) causing the audible alarm to sound. If more than one (1) text message occurs, the messages will cycle every second until the problem(s) have been resolved. The background color for the "Alert Center" will change to indicate the severity of the "warning" message. If a warning and a caution condition occur simultaneously, the red background color will be shown for all alert center messages.
Button Labels: A label for each button will exist. The label will indicate the function for each active button for each screen. Buttons that are not utilized on specific screens will have a button label with no text.

PAGE SCREENS
The Information center will include the following screens:

Load Manager Screen: A list of items to be load managed will be provided. The list will provide:
Description of the load
Individual load shed priority: The lower the priority number the earlier the device will be shed should a low voltage condition occur.
Load Status: The screen will indicate if a load has been shed (disabled) or not shed.
"At a Glance" color features are utilized on this screen
Do Not Move Truck: The Do Not Move Truck screen will indicate the approximate location and type of item that is open or is not stowed for travel. The actual status of the following devices will be indicated:
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)
Chassis Information: The following information will be shown:
Engine RPM
Fuel Level
Battery Voltage
Engine Coolant Temperature
Engine Oil Pressure
"At a Glance" color features are utilized on this screen
Active Alarms List: This screen will show a list of all active text messages. The list items text will match the text messages shown in the "Alert Center". The date and time the message occurred is displayed with each message in the list.

MENU SCREENS
The following screens will be available through the Menu button:

View System Information: A detailed list of vehicle information:
Battery Volts
Pump Hours
Transmission Oil Temperature
Pump Engaged
Engine Coolant Level
Engine Oil Level
Oil level will only be shown when the engine is not running
Power Steering Level

Set daytime and nighttime Display Brightness:
Brightness: Increase and decrease
Default setting button
Configure Video Mode:
Set Video Contrast
Set Video Color
Set Video Tint
Set Startup Screen:
Choose the screen that will be active at vehicle power-up
Set Date & Time:
12 or 24 hour format
Set time
Set date
View Active Alarms:
Shows a list of all active alarms
Date and time of the occurrence is shown with each alarm
Silence alarms
All alarms are silenced
System Diagnostics:
Module type and ID number
Module version
Module diagnostics information:
Input or output number
Circuit number connected to that input or output
Circuit name (item connected to the circuit)
Status of the input or output
Power and Constant Current module diagnostic information:
Button functions and button labels may change with each screen.

VEHICLE DATA RECORDER
A vehicle data recorder (VDR) will be provided. The VDR will be capable of reading and storing vehicle information. The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A CD provided with the apparatus will include the programming to download the information from the VDR. A USB cable can be used to connect the VDR to a laptop to retrieve required information.

The vehicle data recorder will 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 (7-12 Seating Capacity)
Seat Belt Buckled Status - Yes/No by Position (7-12 Seating Capacity)
Master Optical Warning Device Switch - On/Off
Time - 24 Hour Time
Date - Year/Month/Day

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

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

There will be two (2) wireless radio transmit base stations, and one (1) wireless intercom only base station for up to four (1-4) intercom headset users provided.

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

The following Firecom components will be provided:

One (1) 5100D Intercom
Two (2) Single radio wireless base stations
One (1) Multiple intercom wireless base station
All necessary power and station cabling

RADIO / INTERCOM INTERFACE CABLE
The apparatus manufacturer will supply and install one (1) radio interface cable before delivery of the vehicle.

The radio equipment to be used by the customer will be provided at the pre-construction meeting.

WIRELESS UNDER HELMET HEADSET ONLY, RADIO TRANSMIT
There will be two (2) Firecom, Model UHW-51 wireless under the helmet, radio transmit headset(s) provided. A heavy duty, coiled 12 volt charging pigtail with plug will be provided Driver and Officer.

Each headset will feature:
Noise cancelling electric microphone
Flex boom rotates for left or right dress
ComLeather ear seals with 24 dB noise reduction
Red Radio Push To Talk button
Rechargeable battery operates for 24 hours on a full charge
IP-65 when worn

WIRELESS UNDER HELMET, INTERCOM ONLY HEADSET
There will be two (2) Firecom, Model UHW-54 wireless under the helmet, intercom only headset(s) provided. A heavy duty, coiled 12 volt charging pigtail with plug will be provided at the Forward facing seats.

Each headset will feature:
Noise cancelling electric microphone
Flex boom rotates 180 degrees for left or right dress
ComLeather ear seals with 24 dB noise reduction
Microphone Push On / Push Off switch
Rechargeable battery operates 24 hours on a full charge
IP-65 when worn

HEADSET HANGERS
There will be four (4) headset hanger(s) installed Match past localtions. The hanger(s) will meet NFPA 1901, Section 14.1.11, requirement for equipment mounting.

INTERFACE INTERCOM TO AM/FM RADIO
A jumper harness will be installed with a 3.5mm male jack on each end, from the Fire-Com intercom aux inlet to the AM/FM radio outlet. Auxiliary audio will be mixed with the two-way radio and intercom traffic at exactly one half the strength of the signal in the headsets.

PORTABLE RADIO CHARGER INSTALLATION
There will be four (4) customer supplied portable two-way radio chargers(s) sent to the apparatus manufacturers preferred radio installer to be installed.

TWO WAY RADIO INSTALLATION
There will be one (1) customer supplied two way radio(s) sent to the apparatus manufacturers preferred radio installer to be installed per the shipping document. No antenna mount or whip will be included in this option.

Specific radio shipping requirements will be followed.

GPS ANTENNA INSTALLATION
There will be one (1) customer supplied GPS antenna(s) sent to the apparatus manufacturers preferred installer to be installed on the roof. The antenna coax cable(s) will be run from the antenna to PASSENGER SIDE JUST BEHIND THE LIGHTBAR and a connector provided, if necessary. Specific shipping requirements will be followed.

COMPLETE MDT INSTALLATION
There will be one (1) customer supplied Mobile Data Terminal (MDT), Docking station, Mounting bracket, power supply, antenna, GPS, modem, and all cabling sent to the apparatus manufacturers preferred installer to be installed TO BE LOCATED AT PRECONSTRUCTION. Specific shipping requirements will be followed.

RADIO ANTENNA MOUNT
There will be three (3) standard 1.125", 18 thread antenna-mounting base(s) installed One each side just behind the A/C and MAKE SURE TO MOUNT THE CONE SHAPED ANTENNA OVER THE PASSENGER SIDE FOR THE SHORT RUN and the Tri band over the driver on the cab roof with high efficiency, low loss, coaxial cable(s) routed to the radio box. A weatherproof cap will be installed on the mount.

VEHICLE CAMERA SYSTEM
There will 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 will be displayed on the driver's color Mux display. Audio from the microphone on the active camera will be emitted by an amplified speaker with volume control in the blank panel to the right of the steering column.

The following components will be included:
One (1) SV-CW134639CAI Camera
One (1) Amplified speaker (if applicable)
All necessary cables

VEHICLE CAMERA GUARD
There will be one (1) aluminum treadplate guard(s) fastened over the vehicle camera(s) located REAR OF THE TRUCK.

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

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

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

COMMAND ZONE CONTROL SYSTEM
A solidstate electronics based control system will be utilized to achieve advanced operation and control of the vehicle components. A fully computerized vehicle network will consist of electronic modules located near their point of use to reduce harness lengths and improve reliability. The control system will comply with SAE J1939-11 recommended practices.

The control system will operate as a master-slave system whereas the main control module instructs all other system components. The system will contain patented Mission Critical software that maintains critical vehicle operations in the unlikely event of a main controller error. The system will 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 will 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 reprogrammable 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 Command Zone control system modules will meet the following specifications:
Module circuit board will 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 will activate status indicators and audible alarms designed to provide warning of problems before they become critical.

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

ON-BOARD ADVANCED/VISUAL ELECTRICAL SYSTEM DIAGNOSTICS
The on-board information center will include the following diagnostic information:

Text description of active warning or caution alarms
Simplified warning indicators
Amber caution light with intermittent alarm
Red warning light with steady tone alarm

All control system modules, with the exception of the main control module, will contain on-board visual diagnostic LEDs that assist in troubleshooting. The LEDs will be enclosed within the sealed, transparent module housing near the face of the module. One LED for each input or output will be provided and will illuminate whenever the respective input or output is active. Color-coded labels within the modules will encompass the LEDs for ease of identification. The LED indicator lights will provide point of use information for reduced troubleshooting time without the need for an additional computer.

ADVANCED DIAGNOSTICS
An advanced, Windows-based, diagnostic software program will be provided for this control system. The software will provide troubleshooting tools to service technicians equipped with an IBM compatible computer.

The service and maintenance software will be easy to understand and use and have the ability to view system input/output (I/O) information.

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

VOLTAGE MONITOR SYSTEM
A voltage monitoring system will be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system will provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm will activate if the system falls below 11.8 volts DC for more than two (2) minutes.

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

The studs will 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 will also be a 12-volt 100-amp ground stud located in or adjacent to the power distribution center.

ENHANCED SOFTWARE
The Command Zone control system will include the following software enhancements:

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

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

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

EMI/RFI PROTECTION

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

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

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

ELECTRICAL HARNESSING INSTALLATION

All 12-volt wiring and harnessing installed by the apparatus manufacturer will conform to specification PM-QA W-101: Pierce manufacturing Wiring Harness Specification.

To ensure rugged dependability, all wiring harnesses installed by the apparatus manufacturer will conform to the following specifications:

SAE J1128 - Low tension primary cable
SAE J1292 - Automobile, truck, truck-tractor, trailer and motor coach wiring
SAE J163 - Low tension wiring and cable terminals and splice clips
SAE J2202 - Heavy duty wiring systems for on-highway trucks
NFPA 1901 - Standard for automotive fire apparatus
FMVSS 302 - Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks and buses
SAE J1939 - Serial communications protocol
SAE J2030 - Heavy-duty electrical connector performance standard
SAE J2223 - Connections for on board vehicle electrical wiring harnesses
NEC - National Electrical Code
SAE J561 - Electrical terminals - Eyelet and spade type
SAE J928 - Electrical terminals - Pin and receptacle type A

For increased reliability and harness integrity, harnesses will be routed throughout the cab and chassis in a manner which allows the harnessing to be laid into its mounting location. Routing of harnessing which requires pulling of wires through tubes will not be allowed.

Wiring will be run in loom or conduit where exposed, and have grommets or other edge protection where wires pass through metal. Wiring will be color, function and number coded. Wire colors will be integral to each wire insulator and run the entire length of each wire. Harnessing containing multiple wires and uses a single wire color for all wires will not be allowed. Function and number codes will be continuously imprinted on all wiring harness conductors at 2.00" intervals. All wiring installed between the cab and into doors will be protected by an expandable rubber boot to protect the wiring. Exterior exposed wire connectors will be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Electrical wiring and equipment will be installed utilizing the following guidelines:

All wire ends not placed into connectors will be sealed with a heat shrink end cap. Wires without a terminating connector or sealed end cap will not be allowed.

All holes made in the roof will be caulked with silicone. Large fender washers, liberally caulked, will be used when fastening equipment to the underside of the cab roof.

Any electrical component that is installed in an exposed area will be mounted in a manner that will not allow moisture to accumulate in it. Exposed area will be defined as any location outside of the cab or body.
For low cost of ownership, electrical components designed to be removed for maintenance will be quickly accessible. For ease of use, a coil of wire will be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work.

Corrosion preventative compound will be applied to non-waterproof electrical connectors located outside of the cab or body. All non-waterproof connections will require this compound in the plug to prevent corrosion and for easy separation of the plug.

Any lights containing non-waterproof sockets in a weather-exposed area will have corrosion preventative compound added to the socket terminal area.
All electrical terminals in exposed areas will have DOW 1890 protective Coating applied completely over the metal portion of the terminal.
Rubber coated metal clamps will be used to support wire harnessing and battery cables routed along the chassis frame rails.
Heat shields will be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust will be protected by a heat shield.
Cab and crew cab harnessing will not be routed through enclosed metal tubing. Dedicated wire routing channels will be used to protect harnessing therefore improving the overall integrity of the vehicle electrical system. The design of the cab will allow for easy routing of additional wiring and easy access to existing wiring.
All braided wire harnesses will have a permanent label attached for easy identification of the harness part number and fabrication date.
All standard wiring entering or exiting the cab will be routed through sealed bulkhead connectors to protect against water intrusion into the cab.

BATTERY CABLE INSTALLATION
All 12-volt battery cables and battery cable harnessing installed by the apparatus manufacturer will conform to the following requirements:

SAE J1127 - Battery Cable
SAE J561 - Electrical terminals, eyelets and spade type
SAE J562 - Nonmetallic loom
SAE J836A - Automotive metallurgical joining
SAE J1292 - Automotive truck, truck-tractor, trailer and motor coach wiring
NFPA 1901 - Standard for automotive fire apparatus
Battery cables and battery cable harnessing will be installed utilizing the following guidelines:
All battery cables and battery harnesses will have a permanent label attached for easy identification of the harness part number and fabrication date.
Splices will not be allowed on battery cables or battery cable harnesses.
For ease of identification and simplified use, battery cables will be color coded. All positive battery cables will be red in color or wrapped in red loom the entire length of the cable. All negative battery cables will be black in color.
For ease of identification, all positive battery cable isolated studs throughout the cab and chassis will be red in color.
For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus will be coated to prevent corrosion.

ELECTRICAL COMPONENT INSTALLATION
All lighting used on the apparatus will be, at a minimum, a two (2) wire light grounded through a wired connection to the battery system. Lights using an apparatus metal structure for grounding will not be allowed.

An operational test will be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order. The results of the tests will be recorded and provided to the purchaser at time of delivery.

BATTERY SYSTEM
Six (6) 12 volt, Exide Model 31S950X3W batteries that include the following features will be provided:

- 950 CCA, cold cranking amps
- 190 amp reserve capacity
- High cycle
- Group 31
- Rating of 5700 CCA at 0 degrees Fahrenheit
- 1140 minutes of reserve capacity
- Threaded stainless steel studs

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

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

BATTERY SYSTEM
A single starting system will be provided.

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

MASTER BATTERY SWITCH
A master battery switch, to activate the battery system, will be provided inside the cab within easy reach of the driver.

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

BATTERY COMPARTMENTS
The batteries will be stored in well-ventilated compartments that are located under the cab and bolted directly to the chassis frame. The battery compartments will 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 will include formed fit heavy-duty roto-molded polyethylene battery tray inserts with drains on each side of the frame rails. The batteries will be mounted inside of the roto-molded trays.

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

BATTERY CHARGER/ AIR COMPRESSOR
A Kussmaul Pump Plus 1200, Model # 52-21-1100 single output battery charger/air compressor system will be provided. A display bar graph indicating the state of charge will be included.

The automatic charger will maintain one (1) set of batteries with a maximum output current of 40 amps.

The 12-volt air compressor will be installed to maintain the air system pressure when the vehicle is not in use.

The battery charger will be wired directly to the AC shoreline inlet.

Battery charger/compressor will be located in the front left body compartment.

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

The shoreline receptacle will be recessed behind the driver's side crew cab door.

ALTERNATOR
A Leece-Neville, model 4962PA, alternator will be provided. It will have a rated output current of 320 amps, as measured by SAE method J56. The alternator will feature an integral, self diagnostic regulator and rectifier. The alternator will be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

FRONT POWER DISTRIBUTION RELOCATION
The power distribution box located under the battery box will be moved into the pump compartment adjacent to the pump modules.

POWER DISTRIBUTION RELOCATE
The relays/selenoids and fuses located in the frame rail will be located in between the frame rails, on the driver side, as high as possible.

There will be an aluminum cover installed around the components to help deflect water and steam.

REAR POWER DISTRIBUTION MODULE LOCATION
The power modules at the rear of the truck will be located in the rear compartment R1 on the ceiling between the roll up door and the rear wall.

ELECTRICAL REQUIREMENTS
All electrical components will be mounted above the frame rails. Nothing should be hanging below the frame rails.

DEUTSCH CONNECTORS
The deutsch connectors located under the rear substructure will be raised at a level at or above the bottom of the framerail height.

SPECIAL LOCATED JUCTION BOX
The junction box normally located behind the DS front cab door step for the shoreline will be relocated to inside the cab.

LOCATION OF CIRCUIT BREAKERS
The circuit breakers for the power points mounted in the EMS compartment and on the doghouse as part of option 90207 will be mounted in the special breaker box for the in-service/out-of-service system located in the cab behind the driver's seat.

ADDITIONAL CIRCUIT BREAKERS
A box containing twenty (20), 10 amp circuit breakers will be supplied and located in behind the driver’s seat- see photo.

The box will also include a single ground stud.

The wiring going into the box will have enough slack so that the wire way cover the box is attached to can be moved out of the way, and the wiring in the wire way can be easily accessed.

The breakers will be for all circuits that are part of the "in-service/out-of-service" system.

The box will have a removable cover with a label installed that reads, "IN-SERVICE/OUT-OF-SERVICE SYSTEM".

On the inside cover of the box a label will be attached that indicates what circuit each breaker is for.

GROMMETS
Wires that pass through holes in the chassis, cab, and body will have a rubber grommet to protect the wiring in place of the standard plastic grommet.

Grommets will also be provided for the wiring passing through the door hinges, and any wiring passing through metal structure underneath the headliner in the cab.

SOME LIMITED AREAS WILL BE UNABLE TO BE PROVIDED WITH A RUBBER GROMMET, THIS WILL BE BASED ON SPACE AVAILABILITY. THOSE AREAS IN WHICH A RUBBER GROMMET WILL NOT FIT WILL HAVE SOME SORT OF PROTECTIVE LOOM INSTALLED.
MASTER SHUT OFF SWITCH, BATTERY DIRECT ITEMS
A 75 amp solonoid shut off switch will be provided for all battery direct components TBD at preconstruction try and match other units.

ELECTRONIC LOAD MANAGER
An electronic load management (ELM) system will 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 will 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 will not be allowed.

The system will include the following features:
System voltage monitoring.
A shed load will 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" will display on the information center.
Hi-Idle will 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 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

SEQUENCER
A sequencer will be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation will 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.

For improved reliability and ease of use, the load sequencing system will 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 will not be allowed.

Emergency light sequencing will operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights will be activated one by one at half-second intervals. Sequenced emergency light switch indicators will flash while waiting for activation.
When the emergency master switch is deactivated, the sequencer will deactivate the warning light loads in the reverse order.

Sequencing of the following items will 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)
HEADLIGHTS
There will be four (4) halogen HB5 replaceable round light assemblies mounted in the front chrome trim housing on each side of the cab grille.

The outside light assemblies on each side will contain a low/high headlight bulb.

The inside halogen HB5 replaceable round light assemblies will be used as daytime running lights and will be activated with the following measures:
Ignition switch turn on.
Parking brake released.
These lights will be deactivated with any one of the following measures:
Headlight switch is turned on.
High-beam flash is turned on.
Parking brake is applied.

DIRECTIONAL LIGHTS
There will be two (2) Whelen 600 series LED combination directional/marker lights provided. The lights will be located on the outside cab corners, next to the headlights.

CAB CLEARANCE/MARKER/ID LIGHTS
There will be seven (7) amber LED lights provided to indicate the presence and overall width of the vehicle in the following locations:
Three (3) amber LED identification lights will be installed in the center of the cab above the windshield.

Two (2) amber LED clearance lights will be installed, one (1) on each outboard side of the cab above the windshield.
Two (2) amber LED marker lights will be installed, one (1) on each side above the cab doors.
The three (3) identification lights located at the rear will be installed per the following:
Truck-Lite, Model 35, LED
As close as practical to the vertical centerline.
Centers spaced not less than six (6) inches or more than twelve (12) inches apart.
Red in color.
All at the same height.
The four (4) clearance lights located at the rear will be installed per the following:
Truck-Lite, Model 35, LED
To indicate the overall width of the vehicle.
One (1) each side of the vertical centerline.
All at the same height.
As near the top as practical.
To be visible from the rear and the side.
One (1) each side, facing the side.
One (1) each side, facing the rear.
Per FMVSS 108 and CMVSS 108 requirements.

REAR FMVSS LIGHTING
The rear stop/tail and directional LED lighting will consist of the following:
Two (2) Whelen, Model M6BTT red LED stop/tail lights.
Two (2) Whelen, Model M6T amber LED arrow turn lights.
Each light will be installed in a housing and include colored lenses.
Four (4) red reflectors will be provided.

BACKUP LIGHTS
There will be two (2) Whelen, Model: M6BUW, LED backup lights provided in the tail light housing.

LICENSE PLATE BRACKET
There will be one (1) license plate bracket mounted on the rear of the body.

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

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

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

LIGHT, INTERMEDIATE
There will be one (1) pair, of Truck-Lite, Model: 30080Y flange mounted amber LED light kits will be furnished, one (1) each side of the rear fender panel, in place of the standard directional/marker intermediate light. The light will double as a turn signal and marker light.
This installation will include a stainless steel cover.

CAB PERIMETER SCENE LIGHTS
There will 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 will 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.
BODY PERIMETER SCENE LIGHTS
There will be six (6) Amdor, Model AY-9500-012, 12.00" white LED light strips provided.

The lights will be mounted in the following locations:
One (1) light will be provided under the driver's side top mount pump panel access step.
One (1) light will be provided under the driver's side pump panel running board.
One (1) light will be provided under the driver's side rear step area shining to the rear.
One (1) light will be provided under the passenger's side rear step area shining to the rear.
One (1) light will be provided under the passenger's side pump panel running board.
One (1) light will be provided under the passenger's side top mount pump panel access step.
The perimeter scene lights will be activated when the parking brake is applied.
ADDITIONAL PERIMETER LIGHTS
There will be two (2) lights Amdor, Model AY-9500-012 12.00" white LED perimeter light(s) provided uNDER THE FRONT BUMPER OUTBOARD OF THE FRAME RAIL EACH SIDE.
STEP LIGHTS
Four (4) Truck-Lite, LED Model 44 step lights will be provided.

One (1) step light will be provided on each side, on the front compartment face.

Two (2) step lights at rear, will illuminate the tailboard.

LED step lights will be flush mounted on the vertical surface.

These step lights will be actuated with the pump panel light switch.
SCENE LIGHTS
There will be one (1) Fire Research, Model SPA900-Q65 scene light(s) with chrome flange(s) installed on the side of the apparatus, driver’s side upper section between the doors.

A control for the light(s) selected above will be the following:

a switch at the driver's side switch panel
opening the driver's side cab or crew cab doors
no additional switch location
no additional switch location

These lights may be load managed when the parking brake is set.
SCENE LIGHTS
There will be one (1) Fire Research, Model SPA900-Q65 scene light(s) with chrome flange(s) installed on the side of the apparatus, Passenger side upper section between the doors.

A control for the light(s) selected above will be the following:

a switch at the driver's side switch panel
opening the passenger's side cab or crew cab doors
no additional switch location
no additional switch location

These lights may be load managed when the parking brake is set.

12 VOLT LIGHTING
There will be one (1) Fire Research, Model SPA851-Q20 white 12 volt LED floodlight(s) provided with a white bezel on the front visor, centered.

The light(s) will be controlled in the following way:

a switch at the driver's side switch panel.
a switch at the pump operator's panel.
no additional switch location.
no additional switch location.

These lights may be load managed when the parking brake is applied.

12 VOLT LIGHTING
There will be two (2) Fire Research Spectra, Model SPA510-Q20 white 12 volt DC LED scene light(s) provided on top mount, pull up pole(s), located One each side of the pump panel .

The light(s) will be controlled in the following way:

a switch at the driver's side switch panel
a switch at the driver's side switch panel
a switch at the pump operator's panel
a switch at the pump operator's panel
These light(s) may be load managed when the parking brake is applied.

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

DECK LIGHTS
Two (2)-6.00" Unity AG deck lights with swivel mount will be provided at the rear of the hose bed, one (1) each side.

One (1) light will be furnished with a 160,000 candle power halogen spot bulb and the other will be furnished with a 6,000 candle power halogen flood bulb.

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

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

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

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

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

Transverse partitions will extend from 4.00" off the bottom of the tank to the underside of the top cover.
All partitions will interlock and will be welded to the tank bottom and sides.

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

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

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

A sump that is 8.00" long x 8.00" wide x 6.00" deep will be provided at the bottom of the water tank.
Sump will include a drain plug and the tank outlet.

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

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

Tank will "float" in cradle to avoid torsional stress caused by chassis frame flexing. Rubber cushions, .50" thick x 3.00" wide, will be placed on all horizontal surfaces that the tank rests on.

Stops or other provision will be provided to prevent an empty tank from bouncing excessively while moving vehicle.

Mounting system will be approved by the tank manufacturer.

Fill tower will be constructed of .50" polypropylene and will be a minimum of 8.00" wide x 14.00" long.

Fill tower will be furnished with a .25" thick polypropylene screen and a hinged cover.
An overflow pipe, constructed of 4.00" schedule 40 polypropylene, will be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle.

The water tank fill dome will be located at the water fill dome to be moved forward in the box on the driver's side, even with the foam dome fill.

One (1) sleeve will be provided in the water tank for plumbing to the rear.

HOSE BED
The hose body will be fabricated of .125"-5052 aluminum with a nominal 38,000 psi tensile strength.

The hose body width will be 68.00" inside and the upper and rear edges of side panels have a double break for rigidity.

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

The flooring of the hose bed will be removable aluminum grating with the top surface corrugated to aid in hose aeration. The grating slats will be .50" x 4.50" with spacing between the slats for hose ventilation.

Hose bed will accommodate 1000' of 5", 200' of 3", 200' of 1.75", 400' of 1.75".

HOSEBED DIVIDER
Three (3) adjustable hosebed dividers will be furnished for separating hose.

Each divider will be constructed of a .25" brushed aluminum sheet. Flat surfaces will be sanded for uniform appearance, or constructed of brushed aluminum.

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

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

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

HOSE RESTRAINT
The hose in the hosebed will be restrained by black nylon velcro straps at the top of the hosebed and a black nylon web strap netting at the top and rear of the hosebed. The netting will include quick release fasteners.

The center of the black nylon velcro strap at the front of the hosebed will be located 32.0" rearward of the cross divider.

The center of the buckle bracket mounted on the top of the side sheet flange for the black nylon web strap netting will be mounted 36.0" from the rear most edge of the side sheet (beavertail).

HOSEBED PARTITION w/COVER
A longitudinal partition will be provided between the cross divider and the front body sheet to separate a specified area for storage. The enclosed storage area will be utilized for sensitive equipment. This area will also have a hinged aluminum treadplate cover installed onto it. Cover will be hinged across the forward side and will have two L-shaped pawl latches installed and will have weather stripping installed around the perimeter to keep it as watertight as possible. Cover will be reinforced enough for a firefighter to stand on it without damage.

Height of partition will match height of the body side sheet and cross divider.

SCUFFPLATE INSIDE UPPER BEAVERTAIL
The upper inside area of the beavertails will be covered with polished stainless steel in place of the brushed stainless steel to prevent damage to painted surface when hose is removed.

RUNNING BOARDS
Running boards will be fabricated of .125" bright aluminum treadplate.

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

Running boards will be 12.75" deep and spaced .50" away from the pump panel.
A splashguard will be provided above the running board treadplate.

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

The tailboard area will be 16.00" deep.

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

REAR WALL, SMOOTH ALUMINUM/BODY MATERIAL
The rear facing surfaces of the center rear wall will be smooth aluminum.

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

Any inboard facing surfaces below the height of the hosebed will be bright aluminum treadplate.

TOW BAR
A tow bar will be installed under the tailboard at center of truck.

Tow bar will be fabricated of 1.00" CRS bar rolled into a 3.00" radius.

Tow bar assembly will be constructed of .38" structural angle. When force is applied to the bar, it will be transmitted to the frame rail.

Tow bar assembly will be designed and positioned to allow up to a 30-degree upward angled pull of 17,000 lb, or a 20,000 lb straight horizontal pull in line with the centerline of the vehicle.

Tow bar design will have been fully tested and evaluated using strain gauge testing and finite element analysis techniques.

RUNNING BOARD HOSE RESTRAINT
A pair of 2.00" wide black nylon straps with Velcro fasteners will be provided for each hose tray to secure the hose during travel. There will be Two (2) hose trays located one (1) in each side running board.

HOSE TRAY
Two (2) hose trays will be recessed one (1) in each side running board.

Capacity of the tray will be 25' of 5 ".

Rubber matting will be installed on the floor of the tray to provide proper ventilation.

COMPARTMENTATION
Body and compartments will be fabricated of .125", 5052-H32 aluminum.
Side compartments will be an integral assembly with the rear fenders.

Circular fender liners will be provided for prevention of rust pockets and ease of maintenance.

Compartment flooring will be of the sweep out design with the floor higher than the compartment door lip.

The compartment door opening will be framed by flanging the edges in 1.75" and bending out again .75" to form an angle.

Drip protection will be provided above the doors by means of bright aluminum extrusion, formed bright aluminum treadplate or polished stainless steel.

The top of the compartment will be covered with bright aluminum treadplate rolled over the edges on the front, rear and outward side. These covers will have the corners welded.

Side compartment covers will be separate from the compartment tops.

Front facing compartment walls will be covered with bright aluminum treadplate.

All screws and bolts which protrude into a compartment will have acorn nuts on the ends to prevent injury.

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

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

The support system will include .375" thick steel vertical angle supports bolted to the chassis frame rails with .625" diameter bolts.

Attached to the bottom of the steel vertical angles will be horizontal angles, with gussets welded to the vertical members, which extend to the outside edge of the body.

A steel frame will be mounted on the top of these supports to create a floating substructure which will result in a 500 lb equipment support rating per lower compartment.

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

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

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

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

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

TESTING OF BODY DESIGN
Body structural analysis has been fully tested. Proven engineering and test techniques such as finite element analysis, stress coating and strain gauging have been performed with special attention given to fatigue, life and structural integrity of the cab, body and substructure.

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

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

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

COMPARTMENTATION, DRIVER'S SIDE
A full height, roll-up door compartment ahead of the rear wheels will be provided. The interior dimensions of this compartment will be 34.50" wide x 58.25" high x 25.88" deep in the lower 26.00" of the compartment and 12.00" deep in the remaining upper portion. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The

compartment interior will be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment will be 28.75" wide x 58.25" high.

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

A roll-up door compartment over the rear wheels will be provided. The interior dimensions of this compartment will be 66.50" wide x 25.38" high x 12.00" deep. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The clear door opening of this compartment will be 58.25" wide x 25.12" high.

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

A full height, roll-up door compartment behind the rear wheels will be provided. The interior dimensions of this compartment will be 47.50" wide x 58.25" high x 25.88" deep in the lower 26.00" of height and 12.00" deep in the remaining upper section of the compartment. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The compartment interior will be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment will be 44.75" wide x 58.25" high.

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

COMPARTMENTATION, PASSENGER'S SIDE

A full height, roll-up door compartment ahead of the rear wheels will be provided. The interior dimensions of this compartment will be 34.50" wide x 58.25" high x 25.88" deep in the lower 26.00" of the compartment and 12.00" deep in the remaining upper portion. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The compartment interior will be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment will be 28.75" wide x 58.25" high. Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

A roll-up door compartment over the rear wheels will be provided. The interior dimensions of this compartment will be 66.50" wide x 25.38" high x 12.00" deep. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The clear door opening of this compartment will be 58.25" wide x 25.12" high. Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

A full height, roll-up door compartment behind the rear wheels will be provided. The interior dimensions of this compartment will be 47.50" wide x 58.25" high x 12.00" deep. A section of this compartment will be 25.88" deep x 47.50" wide x 26.00" high directly behind the rear wheels. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The compartment interior will be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment will be 44.75" wide x 58.25" high. Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

ROLLUP DOOR, SIDE COMPARTMENTS

There will be six (6) 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) will be constructed using 1.00" extruded double wall aluminum slats which will feature a flat smooth interior surface to provide maximum protection against equipment hang-up. The slats will be connected with a structural driven ball and socket hinge designed to provide maximum curtain diaphragm strength. Mounting and adjusting the curtain will be done with a clip system that connects the curtain to the balancer drum allowing for easy tension adjustment without tools. The slats will be mounted in reusable slat shoes with positive snap-lock securement.

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

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

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

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 will be located at the bottom of door with striker latches installed at the base of the side frames. Side frame mounted door strikers will include support beneath the stainless steel lift bar to prevent door curtain bounce, improve bottom seal life expectancy and to avoid false door ajar signals.

All injection molded rollup door wear components will be constructed of Type 6 nylon.
Each rollup door will have a 3.00 inch diameter balancer/tensioner drum to assist in lifting the door.

The header for the rollup door assembly will not exceed 4.00".

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

COMPARTMENTATION, REAR
A roll-up door compartment above the rear tailboard will be provided.

Interior dimensions of this compartment will be 40.00" wide x 47.38" high x 25.88" deep in the lower 38.75" of height and 15.75" deep in the remaining upper portion. Depth of the compartment will be calculated with the compartment door closed.

A louvered, removable access panel will be furnished on the back wall of the compartment.
Rear compartment will be open into the rear side compartments.

Clear door opening of this compartment will be 33.25" wide x 38.75" high.

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

ROLL-UP DOOR, REAR COMPARTMENT
There will be a rear roll up door. The door will be double faced aluminum construction, an anodized satin finish and manufactured by A&A Manufacturing (Gortite).

Lath sections will be an interlocking rib design and will be individually replaceable without complete disassembly of door.

Between each slat at the pivoting joint will be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals will allow door to operate in extreme temperatures ranging from plus 180 to minus 40 degrees Fahrenheit. Side, top and bottom seals will be provided to resist ingress of dirt and weather and be made of Santoprene.

All hinges, barrel clips and end pieces will be nylon 66. All nylon components will withstand temperatures from plus 300 to minus 40 degrees Fahrenheit.

A polished stainless steel lift bar to be provided for each roll-up door. Lift bar will be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge will be supplied over lift bar for additional area to aid in closing the door.

Door will be constructed from an aluminum box section. The exterior surface of each slat will be flat. The interior surface will be concave to provide strength and prevent loose equipment from jamming the door from inside.

To conserve space in the compartments, the spring roller assembly will not exceed 3.00" in diameter.
The header for the roll-up door assembly will not exceed 4.00".

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

DOOR GUARD
There will be seven (7) compartment doors that will 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 will be fabricated from stainless steel and installed All roll up doors.

COMPARTMENT LIGHTING
There will be seven (7) compartments with On Scene Solutions Model 700** white 12 volt DC LED compartment light strips. The strips will be centered vertically along each side of the door framing. The compartments with these strip lights will be located All compartments and place the clips 2" from the top and bottom and evenly space the other clpis 10 to 12 inches apart.

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

Light mounting clips will be installed every 4.00" to hold these lights in place.

COMPARTMENT LIGHTING
Metal clamps will be used to retain the strip lighting in all body compartments.

MOUNTING TRACKS
There will be six (6) sets of tracks for mounting shelf(s) in All side compartments. These tracks will be installed vertically to support the adjustable shelf(s), and will be full height of the compartment. The tracks will be painted to match the compartment interior.

ADJUSTABLE SHELVES
There will be 12 shelves with a capacity of 500 pounds provided. The shelf construction will consist of .188" aluminum with 2.00" sides. Each shelf will be painted to match the compartment interior. Each shelf will be infinitely adjustable by means of a threaded fastener, which slides in a track.
The shelves will be held in place by .12" thick stamped plated brackets and bolts.

The location will be two (2) in D-1 upper, One (1) D-2, three (3) in D-3 upper, three (3) P-3 upper and lower, One (1) R-1 , One (1) P-2.

PULL-OUT TRAY
There will be one (1) slide-out tray with 2.00" sides and a capacity of 500 pounds provided. Capacity rating will be in the extended position.

Slides (a minimum of two per tray) will be an undermount-roller bearing type rated at 500lbs per pair with a factor of safety of 2.

To ensure years of dependable service the slides will be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides will require no more than a 50 pound force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file will have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance will be provided upon request.

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

Tray location will be D-1.

Heavy-duty steel angle iron assembly will support the body under the compartment floor. It will be attached to the chassis frame for load transfer and to reduce stress on body.
SWING OUT TOOLBOARD
A swing out aluminum toolboard will be provided.

It will be a minimum of .188" thick with .20" diameter holes in a pegboard pattern with 1.00" centers between holes.

A 1.00" x 1.00" aluminum tube frame will be welded to the edge of the pegboard.

The board will be mounted on a pivoting device at the front of the compartment on the top and bottom to allow easy movement in and out of the compartment. The maximum tool load will be 400 pounds.

The board will have positive lock in the stowed and extended position.

The board will be mounted stationary within the compartment.

There will be One (1) toolboard(s) provided, will be painted to match compartment interior, and installed P-1.

NUTS
Lock nuts with nylon inserts will be provided on all machine screws on all exterior body compartment doors, including SCBA, fuel fill, ladder, pike pole, backboard, etc.

NUTS
Acorn nuts will be provided on all self tapping screws whenever accessible. The interior nuts will be standard black and the exterior will be stainless steel. This will include treadplate running boards, tail boards and catwalks.

COMPARTMENT MATTING w/RAMP EDGE
Red Turtle Tile matting with Yellow ramp edging will be provided on the floor of six (6) compartments. The locations are, all compartments except D-1.

RUB RAIL
Bottom edge of the side and rear of the body compartments will be trimmed with a bright aluminum extruded rub rail.

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

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

BODY FENDER CROWNS
Stainless steel fender crowns will be provided around the rear wheel openings.

A rubber welting will be installed between the body and the crown to seal the seam and restrict moisture from entering.

A dielectric barrier will be provided between the fender crown fasteners (screws) and the fender sheet metal to prevent corrosion.

HARD SUCTION HOSE
Hard suction hose will not be required.

HANDRAILS
The handrails will be 1.25" diameter anodized aluminum extrusion, with a ribbed design, to provide a positive gripping surface.

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

Drain holes will be provided in the bottom of all vertically mounted handrails.
- Three (3) handrails will be provided on each side of the top mount control panel.
- One (1) vertical handrail will be provided on the driver's and passenger side body panels, on the front bulkhead door frame.
- One (1) vertical handrail, not less than 29.00" long, will be located on each rear beavertail.
- One (1) full width horizontal handrail will be provided below the hose bed at the rear of the apparatus.
- One (1) handrail, 10.00" long, will be provided mounted Rear above R-1 side.

AIR BOTTLE STORAGE (Double)
A quantity of one (1) air bottle compartment, 15.25" wide x 7.75" tall x 26.00" deep, will be provided on the passenger side forward of the rear wheels . A polished stainless steel door with a chrome plated flush lift & turn latch will be provided to contain the air bottle. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

Inside the compartment, "W" shaped insert formed of composite materials will be provided.

AIR BOTTLE STORAGE (Single)
A quantity of two (2) air bottle compartments, 7.75" in diameter x 26.00" deep, will be provided on the driver side rearward of the rear wheels and on the passenger side rearward of the rear wheels. A polished stainless steel door with a chrome plated flush lift & turn latch will be provided to contain the air bottle. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

Inside the compartment, black rubber matting will be provided.

AIR PACK STORAGE
A total of one (1) air pack compartment(s) will be provided and located driver side forward of the rear wheels. The air pack compartment(s) will be tapered to match the profile of the space available in the fender. The compartment(s) will be approximately 15.50" wide at the top and 5.00" wide at the bottom for the wheel cutout. The compartment(s) will be 15.50" tall at the body side compartment and 6.00" tall at the wheel cutout. The compartment(s) will be 26.00" deep and have a drain hole. A stainless steel hinged door with two (2) chrome plated latches will be provided to contain the air pack. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

EXTENSION LADDER
There will be a 24', two (2) section, aluminum, Duo-Safety, Series 900-A extension ladder provided.

ROOF LADDER
There will be a 14' aluminum, Duo-Safety, Series 775-A roof ladder provided.

LADDER STORAGE
The ladders will be stored between the water tank and the passenger's side compartments.

The ladders will extend into the pump compartment just to the rear of the water pump discharges.

The ladder storage area will be enclosed as practical by means of sheet metal to protect the ladders from road dirt. The ladders that extend into the pump house will also be enclosed. A black rubber boot will be provided to enclose the ladders in the gap between the pump house and the body.

Each ladder will be stored vertically in a separate stainless steel storage trough. Each stainless steel trough will be lined with Dura-Surf nylon slides.

A bright aluminum treadplate enclosure will be provided at the rear of the body to properly contain the ladders. This enclosure will extend to the rear of the side body compartments.

The enclosure will also include a vertically hinged aluminum treadplate door with a D-handle latch to access the ladders.

FOLDING LADDER
One (1) 10' aluminum, Series 585-A Duo-Safety folding ladder will be installed in the driver side pike pole/folding ladder compartment.

PIKE POLE PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 2009 edition, Section 5.8.3 requires one (1) 8 ft or longer pike pole mounted in a bracket fastened to the apparatus.

The fire department will provide and mount the pike pole.

6 FT PIKE POLE PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 2009 edition, Section 5.8.3 requires one (1) 6 ft pike pole or plaster hook mounted in a bracket fastened to the apparatus.

The fire department will provide and mount the pike pole.

PIKE POLES/FOLDING LADDER COMPARTMENT
A compartment will be provided, recessed below the water tank tee at the rear of body, on the driver's side.

The compartment will be equipped with two (2) pvc tubes for storage of two (2) straight handled pike poles and (1) stainless steel trough for storage of (1) folding ladder.

A stainless steel door will be provided at the rear with a lift and turn latch.

Labels will be attached on the outside of door to the pike pole/folding ladder compartment and below the door of the ladder compartment that specifiy the equipment stored inside the compartments. The individual pike pole storage slots and ladder storage slots will be labeled 6 ft. pike pole, 8 ft pike pole; for ladder, 10 ft. folding, 14 ft. roof, 24 ft. 2 section.

STEPS
A folding step will be provided on the front of each fender compartment. The step will be bright finished, non-skid with a luminescent coating that is rechargeable from any light source and can hold a charge for up to 24 hours. Each step will incorporate an LED light to illuminate the stepping surface. The step can be used as a hand hold with two openings wide enough for a gloved hand.

REAR FOLDING STEPS
Bright finished, non-skid folding steps with a luminescent coating that is rechargeable from any light source and can hold a charge for up to 24 hours will be provided at the rear. Each step will incorporate an LED light to illuminate the stepping surface. The steps can be used as a hand hold with two openings wide enough for a gloved hand.

SUPPORT, ADDITIONAL, FOLDING STEPS
There will be additional support provided behind the folding step/s, Ds rear bulkhead, upper. A second flat bar reinforcement will be bolted on over the top of the first flat bar reinforcement. It will be 10" long and the same width as the first flat bar reinforcement. The additional support will be provided on a total of One (1) additional folding step.

EXTENDED SHELF BRACKET, STEP SUPPORT
The shelf bracket will extend down to provide extra support for the folding step/s, DS front bulkhead, lower - see photo. The bracket will be affixed with washers, not countersunk bolts, so as to effectively disperse the weight from the step. An extended shelf bracket will be provided on a total of One (1) additional folding step.

Four (4) additional folding steps will be located Additional Step- One each side front bulkhead, two on the passenger side rear spaced 18" aparted. The step(s) will be bright finished, non-skid, with a luminescent coating. The luminescent coating is rechargeable from any light source and can hold a charge for up to 24 hours. Each step will 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.

STIRRUP STEPS WITH TREAD GRIP
There will be two (2) stirrup style steps with cable hanger and tread grip rung provided. The step will be installed One each side below the runningboard at pump panel same location as previous SAFD units.

FLEXIBLE BODY STEPS WITH GRIP STRUT
There will be one (1) flexible cable type step with grip strut provided Driver side rear tailboard.

PUMP
Pump will be a Waterous CSU, 1500 gpm single (1) stage midship mounted centrifugal type.
Pump will be the class "A" type.
Pump will 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 will 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 will be designed for complete servicing from the bottom of the truck, without disturbing the pump setting or apparatus piping.

Pump case halves will be bolted together on a single horizontal face to minimize chance of leakage and facilitate ease of reassembly. No end flanges will be used.
Discharge manifold of the pump will be cast as an integral part of the pump body assembly and will 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 will 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 will be stainless steel, accurately ground to size. It will be supported at each end by sealed, anti-friction ball bearings for rigid precise support. Impeller will have flame plated hubs assuring maximum pump life and efficiency despite any presence of abrasive matter in the water supply.
Bearings will be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals.

No special or sleeve type bearings will be used.

Pump will be equipped with a self-adjusting, maintenance-free, mechanical shaft seal.
The mechanical seal will consist of a flat, highly polished, spring fed carbon ring that rotates with the impeller shaft. The carbon ring will press against a highly polished stainless steel stationary ring that is sealed within the pump body.

In addition, a throttling ring will 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 will not deteriorate, nor will the pump lose prime, while drafting if the seal fails during pump operation.

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

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

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

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

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

Another green indicator light will be installed adjacent to the hand throttle on the pump panel and indicate either the pump is engaged and the road transmission is in pump gear, or the road transmission is in neutral and the pump is not engaged. This indicator light will be labeled "Warning: Do not open throttle unless light is on".

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

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

AUXILIARY COOLING SYSTEM
A supplementary heat exchange cooling system will be provided to allow the use of water from the discharge side of the pump for cooling the engine water. The heat exchanger will be cylindrical type and will be a separate unit. The heat exchanger will be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger will be plumbed to the master drain valve.

INTAKE RELIEF VALVE
An Elkhart relief valve will be installed on the suction side of the pump preset at 125 psig.
Relief valve will have a working range of 75 psig to 250 psig.

Outlet will terminate below the frame rails with a 2.50" National Standard hose thread adapter and will have a "do not cap" warning tag.

Control will be located behind an access door at a side pump panel.

PRESSURE GOVERNOR
This apparatus will 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 will permit a predetermined pressure of RPM to be set. The preset pressure or RPM will be displayed on the message display of the "Total Pressure Governor". The preset will be easily adjustable by the operator

The pressure sensor governor system will 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 will have two (2) modes of operation: pressure mode or rpm mode.
When in the pressure mode, the PSG system will automatically maintain the discharge pressure set by the operator regardless of flow (within engine/pump operating capabilities).

In the rpm mode, the PSG system will automatically maintain a set engine speed, regardless of engine load (within engine operation capabilities).
A pump cavitation protection feature will be provided which will return the engine to idle should the pump cavitate.

The pressure controller will incorporate monitoring for engine coolant temperature, oil pressure, and battery voltage.

PRIMER SYSTEM
A Waterous electric pump priming system conforming to standards outlined in the current edition of NFPA

1901 will be furnished with the apparatus.
One (1) VPO electric motor driven rotary vane primer will be provided.
One (1) VAP vacuum activated priming valve will be plumbed main pump.
One (1) momentary push-button control will be located at the pump operator's panel.

The push button control system control will operate an electric priming motor and the priming valve will automatically open during priming and close when the primer is deactivated.

LIGHT, ADDITIONAL, FOR THERMAL RELIEF VALVE
A two (2) of 2" diameter Whelen model T0800FBR blue LED grommet mounted lights, will be provided in addition to the standard light for indication when the thermal relief valve is operating.

Lights will be located in On the passenger side and driver’s side on the upper front corner of the pump house near the top mount control pump panel, facing to the side of the truck so light is visible from the ground.

These lights will be activated with the main thermal valve indicator light on the pump panel.

DRAIN TUBING SPECIAL INSTRUCTIONS
Change the copper master drain tubing to push lock hose and fittings. This is due to drain lines breaking during transport.

THERMAL RELIEF VALVE
A Hale TRV120-L thermal protection device will 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 120 Degrees F (49 C).

The thermal protection device will include a red warning light and audible alarm. The warning light with a test switch will be mounted on the pump operator panel.

The discharge line will be 3/8 inch diameter tubing plumbed to ground.

PUMP MANUALS
Two (2) pump manuals from the pump manufacturer will be furnished in compact disc format with the apparatus. The manuals will cover pump operation, maintenance, and parts.

PLUMBING
All inlet and outlet plumbing, 3.00" and smaller, will be plumbed with either stainless steel pipe or synthetic rubber hose reinforced with high-tensile polyester braid. Small diameter secondary plumbing such as drain lines will be stainless steel, brass or hose.

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

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

All lines will drain through a master drain valve or will be equipped with individual drain valves. All individual drain lines for discharges will be extended with a hose to drain below the chassis frame.

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

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

MAIN INLET CAPS, PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 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 fire department will provide both caps for the main pump inlets.

VALVES
Two (2) full flow Waterous valves will be used for the side 2.50" discharges. All remaining ball valves, 3.00" or less, will be Akron Brass brand.

The Waterous valves will have a solid bronze ball that is chromium plated for a hard, durable surface. The spring loaded floating seal assembly requires no adjustment yet provides a tight seal against both pressure and vacuum pressures.

The Akron valves will 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.

INLET (Left side)
On the left side pump panel will be one (1) 2.50" auxiliary suction, terminating in 2.50" National Standard Hose Thread. The auxiliary suction will be provided with a strainer, chrome swivel and plug.
Inlet valve location will be behind the pump panel.

ANODE, INLET
A pair of sacrificial zinc anodes will be provided in the water pump inlets to protect the pump from corrosion.

INLET CONTROL
There will be one (1) inlet. Gating shall be accomplished at the top-mount control panel by means of a control lever, similar to that used for the discharges.

INLET BLEEDER VALVE
A .75" bleeder valve will be provided for each side gated inlet. The valves will be located behind the panel with a swing style handle control extended to the outside of the panel. The handles will be chrome plated and provide a visual indication of valve position. The swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. The water discharged by the bleeders will be routed below the chassis frame rails.

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

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

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

DISCHARGE OUTLETS (Left Side)
There will be two (2) discharge outlets with a 2.50" valve on the left side of the apparatus, terminating with a male 2.50" National Standard hose thread adapter.

DISCHARGE OUTLETS (Right Side)
There will be one (1) discharge outlet with a 2.50" valve on the right side of the apparatus, terminating with a male 2.50" National Standard hose thread adapter.

DISCHARGE OUTLET, 5.00"
There will be a 5.00" discharge outlet with a 4.00" Akron valve installed on the right side of the apparatus, terminating with male a 5.00" National Standard hose thread adapter. This discharge outlet will be actuated with a handwheel control at the pump operator's control panel.
An indicator will be provided to show when the valve is in the closed position.

DISCHARGE OUTLET (Rear)
There will be one (1) discharge outlet piped to the rear of the hose bed, on driver's side, installed so proper clearance is provided for spanner wrenches or adapters. Plumbing will consist of 2.50" piping along with a 2.50" full flow ball valve with the control from the pump operator's panel.

DISCHARGE CAPS
Chrome plated, rocker lug, caps with chains will be furnished for all side discharge outlets.

The caps will be the Pierce VLH, which incorporates a Pierce exclusive thread design to automatically relieve stored pressure in the line when disconnected.

OUTLET BLEEDERS
A .75" bleeder valve will 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 will be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles will be chrome plated and provide a visual indication of valve position.

The swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders will be located at the bottom of the pump panel. They will be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders will be routed below the chassis frame rails.

ELBOWS, LEFT SIDE OUTLETS
The 2.50" discharge outlets, located on the left side pump panel, will 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 will be the Pierce VLH, which incorporates a Pierce exclusive thread design to automatically relieve stored pressure in the line when disconnected.

ELBOWS, RIGHT SIDE OUTLETS
The 2.50" discharge outlets, located on the right side pump panel, will 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 will be the Pierce VLH, which incorporates a Pierce exclusive thread design to automatically relieve stored pressure in the line when disconnected.

ELBOWS, REAR OUTLETS
The 2.50" discharge outlets, located at the rear of the apparatus, will 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 will be the Pierce VLH, which incorporates a Pierce exclusive thread design to automatically relieve stored pressure in the line when disconnected.

ELBOW, 5.00" OUTLET
The 5.00" outlet will be furnished with a 5.00"(F) National Standard hose thread x 5.00" Storz elbow adapter with Storz cap.

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

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

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

TELESCOPIC PIPING
The deluge riser piping will include a 18.00" Task Force Model XG18 Extend-A-Gun extension.

This extension will be telescopic to allow the deluge gun to be raised 18.00" increasing the range of operation.

A position sensor will be provided on the telescopic piping that will activate the "do not move vehicle" light inside the cab when the monitor is in the raised position.

MONITOR
A Task Force Crossfire XFC-52 monitor package will be furnished and properly installed on the deluge riser. The monitor will include a M-R nozzle, 10" stream straightener and quad stacked tips. The portable base unit with folding legs and a safety valve will have (2) 2.50" female NST inlets. The monitor will be painted as provided by monitor manufacturer.

The deluge riser Extend-a-Gun will have provisions for direct mounting a Task Force CrossFire monitor.

SPEEDLAYS WITH TRAY
Ahead of the pump enclosure will be two (2) 1.75" speedlay hose beds. Each bed will have a 2.00" preconnect line with a 2.00" quarter-turn ball valve and terminate with a 1.50" National Standard hose thread 90 degree swivel. The swivel will be located at the top of the speedlay compartment to allow easy removal of the hose in either direction.

Individual controls for the speedlays will be at the pump operator's panel.

Each compartment will be capable of carrying 200 feet of 1.75" double jacketed hose with the one (1) compartment located above the other.

A removable tray will be provided for each speedlay hosebed. The speedlay trays will be constructed of black poly to provide a lightweight sturdy tray. Two (2) hand holes will be in the floor and additional hand holes will be provided in the sides for easy removal and installation from the compartment. The floor of the trays will be perforated to allow for drainage and hose drying. The bottom of the speedlay compartments will be lined with stainless steel to allow the tray to slide with ease. Scuffplates will be provided on both sides, at the sides and bottom of each opening to protect the paint.

SPEEDLAY HOSE RESTRAINT
A black 2.00" nylon webbing design with a 2.00" box pattern will be provided across each end of two (2) speedlay(s) to secure the hose during travel. The webbing will be permanently attached at the top of the speedlay opening. 2.00" web straps will loop through footman loops located at the opposite end of the permanently attached webbing. The straps will attach with velcro straps fasteners.

BOOSTER HOSE REELS
Two (2) Hannay electric rewind booster hose reels will be installed over the pump in a recessed open compartment, one each side.

The rewind provided on each reel will be horizontal versus the standard vertical.

The exterior finish of the reel will be painted job color matching the body exterior.

A polished stainless steel roller and guide assembly will be mounted on each side of the apparatus.

Discharge controls will be provided at the pump operator's panel. Plumbing to the reels will consist of 1.50" Aeroquip hose and a 1.50" valves.

Reel motor will be protected from overload with an automatic reset circuit breaker of no less than 50 amps.

Two (2) electric rewind control switches will be provided, one (1) installed on each pump panel.

BOOSTER HOSE
There will be two different sizes of booster hose on two reels installed on the vehicle.

The passenger's side reel will have 200' of 1.00" diameter hose and the driver's side reel will have 200' of .75" diameter hose. Both hoses will be equipped with chrome plated Barway, or equal couplings on each reel.

Working pressure of the booster hoses will be a minimum of 800 psi.
Capacity of the hose reels will be 200' of 1.00" on the passenger side and 200' of .75" on the driver side.

BOOSTER REEL HOSE RESTRAINT
A two (2) tulip clip style clamp part no. 72-0011 will be provided for restraining the booster reel hose.
The tulip clip will be attached to the body or pumphouse in One side on the rear body front bulkhead, 17" above the running board to the inside of the folding step - see photos.
Cover

An aluminum 4-way cover will be installed over the hose reel motor solenoid and wiring on two (2) hose reel(s). The cover will protect the solenoid and wiring from damage if loose equipment is stored in the cargo bay.

HUSKY 12 FOAM SYSTEM
A Pierce Husky 12 foam proportioning system will be provided that is an on demand, automatic proportioning, single point, direct injection system suitable for all types of Class "A" & "B" foam concentrates, including the high viscosity (6000 cps), alcohol resistant Class B foams. Operation will be based on direct measurement of water flow, and remain consistent within the specified flows and pressures. The system will automatically balance and proportion foam solution at rates from 0.1% to 9.9% regardless of variations in water pressure and flow, up to the maximum rated capacity of the foam concentrate pump.

The design of the system will allow operation from draft, hydrant, or relay operation. This will provide a versatile system to meet the demands at a fire.
System Capacity

The system will have the ability to deliver the following minimum foam solution flow rates at accuracies that meet or exceed NFPA requirements at a pump rating of 250 PSI.

200GPM @ 6%
400GPM @ 3%
1200 GPM @ 1%

Class A foam setting in .1 % increments from .1% to 1%. Typical settings of 1%, .5% and .3% (Maximum capacity will be limited to the plumbing and water pump capacity)
Control System

The system will be equipped with a digital electronic control display located on the pump operator's panel.

Push button controls will be integrated into the panel to turn the system on/off, control the foam percentage, direct which foam to use on a multi-tank system, and to set the operation modes (automatic, manual, draft, calibration, or flush).

The percent of injection will have presets for class A and class B foam. These presets can be changed at the fire department as desired. The percent of injection will be able to be easily changed at the scene to adjust to changing demands.

In order to minimize the use of abbreviations and interpretations, system information will be displayed on the panel by way of .50 tall LEDs that total fourteen characters (two lines of 7 each). System on and foam pump on indicator lights will also be included. Information displayed will include mode of operation (automatic, manual, draft, calibration, or flush), foam supply selected (Class A or Class B), water total, foam total, foam percentage, remaining gallons, and time remaining.

The control display will direct a microprocessor, which receives input from the systems water flow meter while also monitoring the position of the foam concentrate pump. The microprocessor will compare the values of the water flow

versus the position/rate of the foam pump, to ensure the proportion rate is accurate. One (1) check valve will be installed in the plumbing to prevent foam from contaminating the water pump.

Low Level, Foam Tank
The control head will display a warning message when the foam tank in use is below a quarter tank.

Hydraulic Drive System
The foam concentrate pump will be powered by a hydraulic drive system, which is automatically activated, whenever the vehicle water pump is engaged. A system that drives the foam pump via an electric motor will not be acceptable. A large parasitic electric load used to power the foam pump can cause an overload of the chassis electrical system.

Hydraulic oil cooler will be provided to automatically prevent overheating of the hydraulic oil, which is detrimental to system components. The oil/water cooler will be designed to allow continuous system operation without allowing hydraulic oil temperature to exceed the oil specifications.

The hydraulic oil reservoir will be of four (4) gallons minimum capacity and will also be of sufficient size to minimize foaming and be located to facilitate checking oil level or adding oil without spillage or the need to remove access panels.
Foam Concentrate Pump
The foam concentrate pump will be of positive displacement, self-priming; linear actuated design, driven by the hydraulic motor. The pump will be constructed of brass body; chrome plated stainless steel shaft, with a stainless steel piston. In order to increase longevity of the pump, no aluminum will be present in its construction.

A relief system will be provided which is designed to protect the drive system components and prevent over pressuring the foam concentrate pump

The foam concentrate pump will have minimum capacity for 12 gpm with all types of foam concentrates with a viscosity at or below 6000 cps including protein, fluoroprotein, AFFF, FFFP, or AR-AFFF. The system will deliver only the amount of foam concentrate flow required, without recirculating foam back to the storage tank. Recirculating foam concentrate back to the storage tank can cause agitation and premature foaming of the concentrate, which can result in system failure. The foam concentrate pump will be self-priming and have the ability to draw foam concentrate from external supplies such as drums or pails.
External Foam Concentrate Connection
An external foam pick-up will be provided to enable use of a foam agent that is not stored on the vehicle.

The external foam pick-up will be designed to allow continued operation after the on-board foam tank is empty. The external foam pick-up will be designed to allow use with training foam or colored water for training purposes.
Panel Mounted Strainer / External Pick-Up Connection

A bronze body strainer / connector unit will be provided. The unit will be mounted to the pump panel. The external foam pick-up will be one (1) - 1.00" male connection with chrome-plated cap integrated to a 2.00" strainer cleanout cap. A check valve will be installed in the pick-up portion of the cleanout cap. A basket style stainless steel screen will be installed in the body of the strainer / connector unit. Removal of the 2.00" cleanout cap will be all that is required to gain access to and remove the stainless steel basket screen. The strainer / connector unit will be ahead of the foam concentrate pump inlet port to insure that all agent reaching the foam pump has been strained.

Pick-Up Hose
A 1.00" flexible hose with an end for insertion into foam containers will be provided. The hose will be supplied with a 1.00" female swivel NST thread swivel connector. The hose will be shipped loose.

Discharges
The foam system will be plumbed to seven (7) discharges. The discharges capable of dispensing foam will be two (2) speedlays, Two (2) booster reels, deckgun,passenger side 2.5" ,and rear 2.5".

System Electrical Load
The foam proportioning will not impose an electrical load on the vehicle electrical system any greater than five (5) amps at 12VDC.

Tank Selector
An electric valve will be used for the foam supply valve. The foam supply valve will be controlled at the foam system control head for ease of operation. The supply valve will be electric, remote controlled, to eliminate air pockets in the foam tank supply hose.
Maintenance Message

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

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

FOAM GENERATING SYSTEM, CAF
A Pierce Hercules® system rated to provide 200 cfm capacity for generating compressed air foam will be provided. The system will supply five (5) discharges with compressed air foam. It will be capable of providing foam solution or compressed air foam from any of the specified CAFS discharges simultaneously. In addition, the consistency of the compressed air foam (wet to dry) from each discharge will be adjustable. All CAF capable discharges will have the discharge valve control, air injection control, and discharge pressure gauge mounted in a group on the operator's panel. Each CAF capable discharge will feature a wafer type check valve to prevent reverse flows of compressed air foam that is integrated into the discharge valve. The wafer check valve will be a type and design approved by the manufacturer of the discharge valve.

DISCHARGES TO CAF CAPABLE
The two (2) speedlays, passenger side booster reel, passenger side 2.5" ,and rear 2.5" discharges will be capable of discharging compressed air foam. There is no second pump on the vehicle.

AIR COMPESSOR
A Pierce Hercules® oil flooded rotary screw compressor rated at 200cfm @ 150psig will be provided. The compressor will be mounted between the chassis frame rails. The compressor will be driven by the vehicle transmission through a clutch type PTO. All components of the system will be sized and rated for the system to deliver compressed air, uninterrupted, for up to 2 hours at a time without undue stresses, vibrations, or overheating. The air compressor will be capable of delivering the rated capacity of the compressor when the fire pump is delivering 400gpm @ 150psi from tank or draft.

All components of the air compressor system will be readily available on the domestic air compressor market (USA). The compressor will be designed and assembled by Pierce Manufacturing using standard components available to air compressor OEM's.

The PTO will be a 10 bolt SAE type mounted to the PTO opening of the vehicle's Allison transmission. The PTO will be rated for at least 20 percent more torque throughput than the air compressor will demand.

The air/oil separator for the compressor system will be easily serviced. The separator will be inside the air/oil receiver tank. The separator will consist of two stages. The first stage being a centrifuge arrangement engineered into the tank. The second stage will be a dual cartridge arrangement featuring an "inside to outside" flow of the air through the cartridges. The separation system will be capable of a 250 SCFM flow at 40 psi tank pressure. The allowable oil carry over will be no more than 10 parts per million oil in air.

A steel air/oil receiver tank will be provided. The tank will be constructed and tested to the applicable standards as addressed by NFPA 1901 for CAF system air compressor tanks. The tank will be mounted in a manner that allows easy access to the fill opening and the level sight gauges. The tank will be of the vertical type with the minimum pressure valve of the compressor system integrated into the top of the tank. The minimum pressure valve will be rotatable to facilitate different discharge arrangements from the tank.

The compressor lubricant will be filtered by cartridge type filter. The filter will have a 25 micron rating and a safety bypass valve. The filter assembly will be mounted and located in a manner that allows easy service. A thermostat valve will be integrated into the oil filter assembly's housing. The thermostat will route lubricant to the oil cooler to maintain the compressors temperature between minimum and maximum limits.

A water/oil cooler will be provided to cool the compressor. The cooler will be sized to meet the duty cycle requirements as specified. The oil cooler will use water from the vehicle fire pump as the cooling medium and will be protected from freezing by adequate drains and other means.

A heavy duty, automotive type, dry element air cleaner will be provided. The air cleaner will be mounted in such a manner as to be easily serviced. The air cleaner will be mounted, or the inlet of the filter routed, in such a manner that the air cleaner intakes fresh air from outside the vehicle body.
The system will have the following safety or monitoring devices.

Minimum pressure valve
Compressor lube temperature gauge
Compressor system pressure gauge
Air flow meter
Compressor lube temperature warnings, audible and visible
High pressure relief valve on receiver tank
Applicable warning and information decals

The compressors PTO controls will be installed in such a manner as to render the PTO inoperative if the fire pump is not engaged. Further, the air compressor's PTO engagement will be prevented at compressor pressures above 10 psi at compressor re-start. The air compressor will be controlled by a modulating inlet valve mounted on the air compressors inlet port. A controller will be provided that can sense air pressure and controls the delivery volume of the air compressor while maintaining a constant pressure. The controller will feature an automatic balancing system to maintain the air pressure within plus or minus 5% of the discharge pressure of the fire pump, throughout a pressure range of 60psi to 175psi.

The compressor system will have operator’s controls at the pump panel for the following functions.

Automatic pressure regulation, to match the compressor discharge pressure to the pump discharge pressure.

Fixed pressure regulation, to set the air pressure at on pressure for the use of air tools, etc.

PTO engagement switch

PTO engaged indicator light
AIR TOOL OUTLET
A 1.00" air outlet supplied by the foam system compressor will be provided on one of the pump panels.

This outlet will have a chrome plated 1.0" FNST swivel fitting at the panel and a valve behind the pump panel. The outlet will be capable of supplying the capacity of the compressor. A mating 1.0" MNST x 1.0" NPT fitting will be supplied with loose equipment.

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

CAFS ENGAGEMENT AIR SOLENOID
The air solenoid for the CAFS engagement will be mounted 6.00" higher than standard.

LABEL, FOAM TANK FILL VALVE DOOR, SAN ANTONIO
A label will be applied to the outside of the foam tank fill valve door on the lower part of the driver side pump panel. The label will be the same label as is put on the inside of the door.

The fire department will order one (1) vehicle with this foam system. A demonstration will be provided at the fire department, on the operation of the foam system.

This demonstration will include:
- Review of the foam system manual, highlighting key areas.
- A walk around review of the system components, on the finished truck.
- A hands on foam system start-up and foam discharge session.
- Instructions on the use of the manual overrides.
- The proper way to shutdown and flush the foam system.

FOAM TANK
The foam tank will be an integral portion of the polypropylene water tank. The cell will have a capacity of 30 gallons of foam with the intended use of Class A foam. The brand of foam stored in this tank will be Phos-Chek. The foam cell will not reduce the capacity of the water tank. The foam cell will have a screen in the fill dome and a breather in the lid.

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

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

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

Compartment will be mounted on chassis frame rails with rubber biscuits in a four point pattern to allow for chassis frame twist.

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

PUMP MOUNTING
Pump will be mounted to a substructure which will be mounted to the chassis frame rail using rubber isolators. The mounting will allow chassis frame rails to flex independently without damage to the fire pump.

PUMP CONTROL PANELS (Top Mount)
All pump controls and gauges to be properly marked and located above the pump to the rear of the walkway. Operator to face the rear of the truck when viewing the control panel from the operating position.
The control panel will be in two planes.

Both planes to be full width of the pump house.

The upper plane will contain the pump master gauges, engine monitoring gauges, electrical switches, and foam controls (if applicable). The upper plane will be hinged at the bottom with a full length stainless steel hinge. The fasteners used to hold the panel in the upright position will be quarter turn type. Vinyl covered cable or chains will be used to hold the gauge panel in the dropped position.

The lower plane is to contain all the line pressure gauges and valve control rods. The line pressure gauge will be mounted directly below the corresponding discharge control handle and recessed within the same chrome plated casting for quick identification. All outlet and inlet controls will be the lever type with direct linkage utilizing bell cranks and universal swivels to the valve itself. The control levers will be made of a .62" (minimum) stainless steel rod.

The gauge and valve control bezels will be removable from the face of the pump panel for ease of maintenance.

IDENTIFICATION TAGS
Identification tags for the discharge controls will be recessed within the same bezel. The discharge identification tags will be color coded, with each discharge having its own unique color.

All remaining identification tags will be mounted on the pump panel in chrome plated bezels.

The side pump panels will be easily removable for ease of maintenance.

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

WALKWAY
A 19.00" wide walkway will be provided for access to the top control panel. The walkway will be constructed of bright aluminum treadplate and properly reinforced.

There will be six (6) white LED lights provided to illuminate the walkway. The lights will come on with the body perimeter lights.

Bright aluminum treadplate will be installed below the rear windows of the cab, as a minimum, to protect the paint on the rear of the cab.

WALKWAY TOOL COMPARTMENT
A tool compartment will be provided on each side of the walkway. Each compartment will have an aluminum treadplate door and will be equipped with two (2) white LED lights with chrome bezels, one (1) in each compartment.
Pump Panel Configuration
The pump panel configuration will be arranged and installed in an organized manner that will provide user-friendly operation. Pump panel layout to be determined at pre-construct.

PUMP AND GAUGE PANEL
The pump and gauge panels will be constructed of black vinyl covered aluminum, to allow easy identification of the gauges and controls and to eliminate glare.

The black vinyl will be bonded to the aluminum by the company that supplies the metal.

A polished aluminum trim molding will be provided around each panel.

The driver's and passenger's side pump panels will be removable and fastened with swell type fasteners.

PUMP COMPARTMENT LIGHT
A pump compartment light will be provided inside the right side pump enclosure and accessible through a door on the pump panel.

A .125" weep hole will be provided in each light lens, preventing moisture retention.

PUMP PANEL GAUGES AND CONTROLS
The following will be provided on the pump and gauge panels in a neat and orderly fashion. These gauges will 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

INDICATOR LIGHTS @ PUMP PANEL
The following indicator lights will be provided at the pump panel. These will be in addition to the indicators included with the pressure controller.
- Check Transmission Warning Indicator Light
- Stop Engine Warning Indicator Light
- Check Engine Warning Indicator Light.
- Pump Hourmeter

PUMP OVERHEAT INDICATOR LIGHT
A pump overheat indicator light with bell, manufactured by M.C. Products, will be installed at the pump operator's panel.

The bell will be located in the pump area on the wall toward the rear of the truck passenger side.

GAUGES, VACUUM and PRESSURE
The pump vacuum and pressure gauges will be liquid filled and manufactured by Class 1, Inc.

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

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

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

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

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

PRESSURE GAUGES
The individual "line" pressure gauges for the discharges will be Class 1 interlube filled.

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

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

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

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

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

WATER LEVEL GAUGE
A Fire Research, Model WLA2000 series electric water level gauge will be provided on the operator's panel, that registers water level by means of 9 LEDs. They will be at 1/8 level increments with a tank empty LED. The LEDs will be a bright type that is readable in sunlight, and have a full 180 degree of clear viewing.

To further alert the pump operator, will have a warning flash when the tank volume is less than 25%, and will have "Down Chasing LEDs" when the tank is almost empty.

The level measurement will be ascertained by sensing the head pressure of the fluid in the tank or cell.

WATER LEVEL GAUGE, CAB SIDES
There will be two (2) additional water level indicator, Whelen, Model: PSTANK, LED module, installed on the side of the back section between rear door and body.

This light module will include four (4) colored levels, and function similar to the water level indicator located at the operators panel:
First green module indicates a full water level.
Second blue module indicates a water level above 3/4 full.
Third amber module indicates a water level above 1/2 full.
Last red module indicates a water level above 1/4 full and empty.
Above 1/4 this light will be steady burning.
At empty this light will be flashing.
This module will be activated when the parking brake is set.

FOAM LEVEL GAUGE
An electric foam level gauge will be provided on the operator's panel, that registers foam level by means of nine (9) LEDs. They will be at 1/8 level increments with a tank empty LED. The LEDs will be a bright type that is readable in sunlight, and have a full 180 degree of clear viewing.

To further alert the pump operator, will have a warning flash when the tank volume is less than 25 percent, and will have Down Chasing LEDs when the tank is almost empty.

The level measurement will be ascertained by sensing the head pressure of the fluid in the tank or cell.

This method provides accuracy with an array of multiviscosity foams.

LIGHT SHIELDS
Illumination will be provided by three (3) On Scene Solutions, Model Night Stick, LED 18.00 lights at each pump control panel for controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus and the equipment provided on it. External illumination will be a minimum of five (5) foot-candles on the face of the device. Internal illumination will be a minimum of four (4) foot-lamberts.

Lights will be installed under a stainless steel shield. A light will come on above the pump panel when the pump is OK to pump. This is to afford the operator some illumination when first approaching the control panel. A green pump engaged indicator will come on at the operator's panel when the pump is in OK to Pump mode. The remaining lights to be actuated from a switch located on the pump panel.

AIR HORN SYSTEM
Two (2) Buell air horns will be provided and located in the front bumper, recessed Outside of the frame rails one each side. The horn system will be piped to the air brake system wet tank utilizing .38" tubing.

A pressure protection valve will be installed in-line to prevent loss of air in the air brake system.

AIR HORN CONTROL
The air horns will be actuated by a push button located on officer side instrument panel and by the horn button in the steering wheel. The driver will 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.

ELECTRONIC SIREN
A Whelen, Model: 295SLSA1, electronic siren with noise canceling microphone will be provided.

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

Siren head will be located on a swivel bracket mounted on the headliner so that it is accessible to both the driver and officer. The swivel bracket will be capable of rotating a minimum of 180 degrees.

SIREN CONTROL
The electronic siren will be controllable on the siren head and horn ring only. No foot switches will be required.

The driver will 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.

SPEAKER
There will be two (2) speakers provided. Each speaker will be a Whelen, Model SA122FMA, cast aluminum, 100-watt, flange mount with natural aluminum finish. Each speaker will be connected to the siren amplifier.

There will be one speaker recessed in the passenger side and one speaker recessed in the driver side of the front bumper.

MECHANICAL SIREN, (Auxiliary)
A Federal Q2B siren will be furnished. A siren brake button will be installed on the switch panel.
The control solenoid will be powered up after the emergency master switch is activated.
The mechanical siren will be recessed in the front bumper in the center. The siren will be properly supported using the bumper framework.

MECHANICAL SIREN CONTROL
The mechanical siren will 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 will be installed on the officer side engine tunnel special bracket- see photo.

The switch will be a chrome push button style.

LIGHTBAR
There will be one (1) 72.00" Whelen Freedom, Model FN**VLED, lightbar mounted on the cab roof.
The lightbar will include the following:
Six (6) red flashing LED modules facing forward.
Two (2) white flashing LED modules facing forward.
Two (2) red flashing corner LED modules, one (1) in each front corner.
Two (2) red flashing corner LED modules, one (1) in each rear corner.
One (1) GTT Model 795 LED Opticom™ with national standard high priority.
The color of the lenses will be clear.

Two (2) switches located on a cab switch panel will control this lightbar.

One (1) switch will control all the warning lights.
One (1) switch will control the traffic light controller.
The white warning lights and the traffic light controller will be disabled when the parking brake is applied.

ADDITIONAL CAB ROOF SIDE LIGHTBARS
There will be two (2) 24.00" Whelen, Freedom, mini LED lightbars mounted on the roof, one (1) on each side, over the crew cab doors.

Each lightbar will include the following:
Two (2) red flashing corner LED modules.
One (1) blue flashing forward LED module.
These lightbars will be activated with the roof light.
The lenses of each lightbar will be clear.
The lights in the lightbars may be load managed when the parking brake is applied.

WARNING LIGHTS (Cab Face)
Four (4) Whelen Model M6*C LED flashing warning lights will be installed on the cab face, above the headlights, mounted in a common bezel.
The driver's side front outside warning light to be red.
The driver's side front inside warning light to be red.
The passenger's side front inside warning light to be blue.
The passenger's side front outside warning light to be blue.
All four (4) lights will include a clear lens.
There will be a switch located in the cab, on the switch panel, to control the four (4) lights.
The inside lights may be load managed if colored or disabled if white, when the parking brake is set.

SIDE ZONE LOWER LIGHTING
Six (6) Whelen Model M6* LED flashing warning lights with bezels will be located in the following positions:
Two (2) lights, one (1) each side on the bumper extension.
The side front lights to be red.
Two (2) lights, Between the rear cab door and back of body.
The side middle lights to be blue.
Two (2) lights, as close to over the rear wheels as possible.
The side rear lights to be red.
All six (6) lights will include a clear lens.
There will be a switch located in the cab on the switch panel to control the lights.

INTERIOR CAB DOOR WARNING LIGHTS
Four (4) Whelen, model M4*C LED flashing warning lights will be provided, one (1) on each cab and crew cab door pan.
The color will be amber.
Each light will include a lens that is clear.
Each light will be activated by the door jam switch of the associated door.

SIDE WARNING LIGHTS
There will be two (2) Whelen, Model WIONSMC* LED light(s) provided and located on the rear corner of the truck between the compartment and back body corner vertical about 6 to 8 inches from the rub rail.
The color of each light will be red LED with a clear lens.
Each light will be provided with a chrome plated ABS flange.
The light(s) will be activated with the side warning switch.

SIDE WARNING LIGHTS
There will be two (2) Whelen, Model WIONSMC* LED light(s) provided and located near the rear body in the rub rail one each side.

The color of each light will be red LED with a clear lens.
Each light will be provided with a chrome plated ABS flange.
The light(s) will be activated with the side warning switch.

REAR ZONE LOWER LIGHTING
Two (2) Whelen, Model M6*C LED flashing warning lights with bezels will be located at the rear of the apparatus.
The driver's side rear light to be red.
The passenger's side rear light to be blue.

Both lights will include a lens that is clear.
There will be a switch located in the cab on the switch panel to control the lights.

WARNING LIGHTS (Rear)
There will be two (2) Whelen Model M6*C LED flashing warning light(s) with bezel(s) provided One each side upper rear bulk head.
The color of these light(s) will be amber.
These light(s) will be controlled with the rear upper warning switch.
These light(s) will include a lens that is clear.

REAR OF HOSE BED WARNING LIGHTS
There will be two (2) Whelen Rota-Beam, Model R316*F, 4.00" high x 7.19" wide beacons with clear domes provided.
The rear zone upper lights to be red in color.
There will be a switch located in the cab on the switch panel to control the beacons.
The rear warning lights will be mounted on top of the compartmentation with all wiring totally enclosed. The rear deck lights will be mounted on the beavertails high as possible.

TRAFFIC DIRECTING LIGHT
There will be one (1) Whelen model TAM65, 36.00" long x 2.84" high x 2.24" deep, amber LED traffic directing light installed at the rear of the apparatus.

The Whelen model TACTLD1 control head will be included with this installation.
The auxiliary warning mode will be activated with the control head only.
This traffic directing light will be recessed with a stainless steel trim plate at the rear of the apparatus as high as practical.
The traffic directing light control head will be located within a heavy duty swivel bracket centered between the driver and passenger.

This swivel bracket will enable the driver access as well as the passenger.
A short demonstration and test of the foam system using foam will be provided for the customer at pick-up.

LOOSE EQUIPMENT
The following equipment will be furnished with the completed unit:
- One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit.

NFPA REQUIRED LOOSE EQUIPMENT, PROVIDED BY FIRE DEPARTMENT
The following loose equipment as outlined in NFPA 1901, 2009 edition, section 5.8.2 and 5.8.3 will be provided by the fire department. All loose equipment will be installed on the apparatus before placed in emergency service, unless the fire department waives NFPA section 4.21.
800 ft (60 m) of 2.50" (65 mm) or larger fire hose.
400 ft (120 m) of 1.50" (38 mm), 1.75" (45 mm), or 2.00" (52 mm) fire hose.
One (1) handline nozzle, 200 gpm (750 L/min) minimum.
Two (2) handline nozzles, 95 gpm (360 L/min) minimum.
One (1) playpipe with shutoff and 1.00" (25 mm), 1.125" (29 mm), and 1.25" (32 mm) tips.
One (1) SCBA complying with NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services*, for each assigned seating position, but not fewer than four (4), mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer.
One (1) spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s).
One (1) first aid kit.
Four (4) combination spanner wrenches mounted in bracket(s) fastened to the apparatus.
Two (2) hydrant wrenches mounted in brackets fastened to the apparatus.
Four (4) ladder belts meeting the requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components* (if equipped with an aerial device).
One (1) double female 2.50" (65 mm) adapter with National Hose threads, mounted in a bracket fastened to the apparatus.
One (1) double male 2.50' (65 mm) adapter with National Hose threads, mounted in a bracket fastened to the apparatus.
One (1) rubber mallet, for use on suction hose connections, mounted in a bracket fastened to the apparatus.
Two (2) salvage covers each a minimum size of 12 ft x 14 ft (3.7 m x 4.3 m).
One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two (2) at the shoulders, two (2) at the sides, and one (1) at the front.

Five (5) fluorescent orange traffic cones not less than 28.00" (711 mm) in height, each equipped with a 6.00" (152 mm) retro-reflective white band no more than 4.00" (152 mm) from the top of the cone, and an additional 4.00" (102 mm) retro-reflective white band 2.00" (51 mm) below the 6.00" (152 mm) band.
Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities.
One (1) automatic external defibrillator (AED).
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, will be carried mounted in brackets fastened to the apparatus.
If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side will be carried. Any intake connection larger than 3.00" (75 mm) will include a pressure relief device that meets the requirements of 16.6.6.
If the apparatus does not have a 2.50" National Hose (NH) intake, an adapter from 2.50" NH female to a pump intake will be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.
If the supply hose carried has other than 2.50" National Hose (NH) threads, adapters will be carried to allow feeding the supply hose from a 2.50" NH thread male discharge and to allow the hose to connect to a 2.50" NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

SOFT SUCTION HOSE, PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 2009 edition, section 5.7.2 requires a minimum of 20 ft of suction hose or 15 ft of supply hose.

Hose is not on the apparatus as manufactured. The fire department will provide suction or supply hose.
DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 2009 edition, section 5.8.3 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 will provide and mount the extinguisher.
WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 2009 edition, section 5.8.3 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 will provide and mount the extinguisher.
AXE, FLATHEAD, PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 2009 edition, Section 5.8.3 requires one (1) flathead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department will provide and mount the axe.
AXE, PICKHEAD, PROVIDED BY FIRE DEPARTMENT
NFPA 1901, 2009 edition, Section 5.8.3 requires one (1) pickhead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department will provide and mount the axe.

PAINT - BODY PAINTED TO MATCH CAB
The exterior custom cab and body painting procedure will consist of a seven (7) step finishing process as follows:
1. Manual Surface Preparation - All exposed metal surfaces on the custom body will be thoroughly cleaned and prepared for painting. Surfaces that will not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum treadplate. Each imperfection on the exterior metal surface will be removed or filled and then sanded smooth for a smooth appearance. All seams will be sealed before painting.
2. Chemical Cleaning and Treatment - The aluminum surfaces will be properly cleaned using a 4-phase, high pressure and high temperature acid etching system. All steel surfaces will be properly treated using a 3-phase, high temperature, cleaning/phosphatizing system. Surfaces are chemically cleaned to remove all dirt, oil, grease and metal oxides to ensure the subsequent coatings bond well. An ultra pure water final rinse of 25 parts per million solids or less, will be applied to final rinse all metal surfaces at the conclusion of the metal treatment process. This final rinse ensures all chemical residues are removed and that no minerals, (salts), from the water dry onto the metal surface and remain under the primers and topcoats. These salts can lead to blistering and under film corrosion.
3. Primer/Surfacer Coats - A minimum of two (2) mil dry, (.002), of two component urethane primer/surfacer will be hand applied to the chemically treated metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface. The primer is a high solids and low VOC paint.
4. Hand Sanding to Ultra Fine FinishThe primer/surfacer coat is lightly sanded with mild abrasive paper to an ultra smooth finish. This hand finish process is critical to produce the smooth mirror like finish in the topcoat.
5. Sealer Primer Coat A two- (2) component sealer primer coat is applied over the sanded primer to again build toward the final smooth finish. This layer of primer sealer also gives additional corrosion protection.

6. Topcoat Paint Two (2) coats of an automotive grade, two component acrylic urethane paint are applied to provide the lasting beauty and durability. The acrylic urethane topcoat contains a clear coat resin chemistry that creates the high gloss and depth of image. This type of topcoat provides the best resistance against acid rain and other more common chemicals.
7. Clearcoat - Two (2) coats of an automotive grade two (2) component urethane will be applied. Lap style doors will be clear coated to match the body. Roll-up doors will not be clear coated and the standard roll-up door warranty will apply.
A cyclic corrosion test, (General Motors test GM-9540), of 40 cycles will be required before making changes to the exterior coating process. Exterior coating systems, (excluding the undercarriage components), must achieve a 1/16 or less maximum creep from the scribe for aluminum and an 1/8 or less maximum creep from the scribe for galvanneal after 40 cycles in the General Motors GM-9540 test.
Each batch of color topcoat, together with the finish painted vehicle, is tested for precise color match. Visual color match will be checked following ASTM D-1729, (American Standard Testing Methods), procedures using CIE, (International Commission on Illumination), D75 Northern Daylight light source. Instrumental color match will follow ASMT D-2244 procedures with a maximum delta E of 1.0 for whites, 1.4 for yellows, blues, greens and 1.5 for reds.
All removable items such as brackets, compartment doors, door hinges, trim, etc. will be removed and painted separately to insure paint behind all mounted items. Body assemblies that can not be finish painted after assembly will be finish painted before assembly.
The cab will be two-tone, with the upper section painted # 10 White and lower section of the cab and body painted # 90 Red.

PAINT - ENVIRONMENTAL IMPACT
Contractor will meet or exceed all current State (his) regulations concerning paint operations. Pollution control will include measures to protect the atmosphere, water and soil. Controls will include the following conditions:
- Topcoats and primers will be chrome and lead free.
- Metal treatment chemicals will be chrome free. The wastewater generated in the metal treatment process will be treated on-site to remove any other heavy metals.
- Particulate emission collection from sanding operations must have a 99.99% efficiency factor.
- Particulate emissions from painting operations will be collected by a dry filter or water wash process. If the dry filter means is used, it must have an efficiency rating of 98.00%. Water wash systems will be 99.97% efficient.
- Water from water wash booths will be reused. Solids will be removed mechanically on a continual basis to keep the water clean.
- Paint wastes are disposed of in an environmentally safe manner. They are used as fuel in kilns used in the cement manufacturing process - thereby extracting energy from a waste material.
- Empty metal paint containers will be cleaned, crushed and recycled to recover the metal.
- Solvents used in clean-up operations will be collected, recycled on-site, or sent off-site for distillation and returned for reuse. Residue from the distillation operation will be used as fuel in off-site cement kilns.
Additionally, the finished apparatus will not be manufactured with or contain products that have ozone depleting substances. Contractor will, upon demand, present evidence that his manufacturing facility meets the above conditions and that it is in compliance with his State EPA rules and regulations.

PAINT CHASSIS FRAME ASSEMBLY
The chassis frame assembly will be painted # 90 Red 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 will 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

WHEELS, ACCENT STRIPE
All exposed outer edge wheel surfaces will be painted with a Silver accent strip on outer edge accent stripe.

PAINT, FRONT WHEELS
All wheel surfaces, inside and outside, will be provided with powder coat paint #90 red.

PAINT, REAR WHEELS
All wheel surfaces, inside and outside, will be provided with powder coat paint #90 red.

FUEL TANK LABEL
The manufacturer's label on the fuel tank will be taped off so that it does not get painted.

COMPARTMENT INTERIOR PAINT
The compartment interior will be painted with a gray spatter finish for ease of cleaning and to make it easier to touch up scratches and nicks.

REFLECTIVE STRIPES
Three (3) reflective stripes will be provided across the front of the vehicle and along the sides of the body. The reflective band will 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.

CHEVRON STRIPING ON THE FRONT BUMPER
There will be alternating chevron striping located on the front bumper.
The colors will be red and fluorescent yellow green diamond grade.
The size of the striping will be 6.00".

CHEVRON STRIPING, REAR
There will be alternating chevron striping located on the rear-facing vertical surface of the apparatus. The rear surface, excluding the rear compartment door, will be covered.
The colors will be red and fluorescent yellow green diamond grade.
Each stripe will be 6.00" in width.
This will meet the requirements of NFPA 1901, 2009 edition, which states that 50% of the rear surface will be covered with chevron striping.

REFLECTIVE STRIPE OUTLINE
There will be a .25" ruby red outline stripe applied to the top and bottom of the reflective band located on the body only.
There will be three (3) reflective outline stripes required.

REFLECTIVE STRIPE INSIDE RUBRAILS
A reflective stripe will be provided inside the extruded aluminum rubrails. The reflective material will be ruby red. There will be a quantity of six (6) rubrails striped.

CHEVRON STRIPING ON REAR ROLL UP COMPARTMENT
There will be alternating chevron striping located on the rear roll up door.
The colors will be red and fluorescent yellow green diamond grade.
Each stripe will be 6.00" in width.

CHEVRON, INVERTED "V" STRIPING ON CAB AND CREW CAB DOORS
There will be alternating chevron striping located on the inside of each cab and crew cab door.
The striping will consist of the following colors:
The first color will be fluorescent yellow green diamond grade
The second color will be red diamond grade
The size of the striping will be 4.00".

LETTERING
There will be reflective lettering, 3.00" high, with outline provided. There will be 27 letters provided.

SIGN PANELS
A pair of sign panels 2.75" x 8.0" will be fabricated from brushed aluminum sheet and installed on the sides of the pumphouse immediately below the blue LED pump overheat lights, one on each side. 1.0" high red reflective lettering will be applied to each panel to spell out "PUMP" on the top line and "OVERHEAT" on the bottom line.

LETTERING
There will be reflective lettering, 20.00" high, with no outline or shade provided. There will be four (4) letters provided.

LETTERING
There will be reflective lettering, 4.00" high, with outline provided. There will be ten (10) letters provided.

LETTERING
There will be reflective lettering, 2.00" high, with outline provided. There will be 18 letters provided.

LETTERING
There will be reflective lettering, 6.00" high, with outline provided. There will be three (3) letters provided.

LETTERING
There will be reflective lettering, 5.00" high, with outline provided. There will be four (4) letters provided.

FIRE APPARATUS PARTS CD MANUAL
There will be two (2) custom parts manuals for the complete fire apparatus provided in CD format with the completed unit. The manuals will 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 will be specifically written for the chassis and body model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

SERVICE PARTS INTERNET SITE
The service parts information included in these manuals shall also be available on the factory website. The website should offer additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website should also feature electronic search tools to assist in locating parts quickly.

CHASSIS SERVICE CD MANUALS
There will be two (2) CD format chassis service manuals containing parts and service information on major components provided with the completed unit.
The manual will 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 will be specifically written for the chassis model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

CHASSIS OPERATION CD MANUALS
There will be two (2) CD format chassis operation manuals provided.

ONE (1) YEAR MATERIAL AND WORKMANSHIP
A basic apparatus limited warranty certificate shall be included with this proposal.

THREE (3) YEAR MATERIAL AND WORKMANSHIP
The custom chassis limited warranty certificate shall be included with this proposal.

ENGINE WARRANTY
A Detroit Diesel five (5) year limited engine warranty will be provided.

STEERING GEAR WARRANTY
A Sheppard three (3) year limited steering gear warranty shall be provided.

FIFTY (50) YEAR STRUCTURAL INTEGRITY
The Pierce custom chassis frame and crossmembers limited warranty certificate, WA0038, is included with this proposal.

FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY
The Pierce TAK-4 suspension limited warranty certificateshall be included with this proposal.

REAR AXLE TWO (2) YEAR MATERIAL AND WORKMANSHIP WARRANTY
A Meritor axle limited warranty certificateshall be included with this proposal.

ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY
A Meritor Wabco™ABS brake system limited warranty certificateshall be included with this proposal.

TEN (10) YEAR STRUCTURAL INTEGRITY
The custom cab limited warranty certificateshall be included with this proposal.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION
A cab limited pro-rated paint warranty certificate shall be included with this proposal.

FIVE (5) YEAR MATERIAL AND WORKMANSHIP
The Pierce Command Zone electronics limited warranty certificate shall be included with this proposal.

CAMERA SYSTEM WARRANTY
A fifty four (54) month warranty shall be provided for the camera system**.**

TRANSMISSION WARRANTY
The transmission will have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty will be provided by Allison Transmission.

TRANSMISSION COOLER WARRANTY
The transmission cooler will carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a 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.

WATER TANK WARRANTY
A UPF poly water tank limited warranty certificateshall be included with this proposal.

TEN (10) YEAR STRUCTURAL INTEGRITY
The apparatus body limited warranty certificateshall be included with this proposal.

PUMP WARRANTY
A Waterous pump limited warranty certificate shall be included with this proposal.

TEN (10) YEAR PUMP PLUMBING WARRANTY
The apparatus plumbing limited warranty certificate shall be included with this proposal.

FOAM SYSTEM WARRANTY
The Husky 12 foam system limited warranty certificate shall be included with this proposal.
TEN (10) YEAR PRO-RATED PAINT AND CORROSION
A body limited pro-rated paint warranty certificate shall be included with this proposal.

ONE (1) YEAR MATERIAL AND WORKMANSHIP
The graphics fading and deterioration limited warranty limited warranty certificate shall be included with this proposal.

VEHICLE STABILITY CERTIFICATION
The fire apparatus manufacturer will provide a certification stating the apparatus complies with NFPA 1901, current edition, section 4.13, Vehicle Stability. The certification will be provided at the time of bid.

ENGINE INSTALLATION CERTIFICATION
The fire apparatus manufacturer will 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 will be provided at the time of bid.

POWER STEERING CERTIFICATION
The fire apparatus manufacturer will provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification will be provided at the time of bid.

CAB INTEGRITY CERTIFICATION
The certification must state that the cab must 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 will be subjected to a roof crush force of 22,050 lbs. 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 will be subjected to a roof crush force of 100,000 lbs. This value exceeds the ECE 29 criteria by nearly 4.5 times.
- Side Impact
The same cab will 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 will see in a rollover incident.
- Frontal Impact
The same cab will withstand a frontal impact of 32,600 ft-lbs of force using a moving barrier in accordance with SAE J2420.
- Additional Frontal Impact
The same cab will 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 will withstand all tests without any measurable intrusion into the survival space of the occupant area.
The certification will be available at the time of delivery.

CAB DOOR DURABILITY CERTIFICATION
Robust cab doors help protect occupants. Cab doors will survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder will 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.

WINDSHIELD WIPER DURABILITY CERTIFICATION
Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers will 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 will certify that the wiper system design has been tested and that the wiper system has met these criteria.

ELECTRIC WINDOW DURABILITY CERTIFICATION
Cab window roll-up systems can cause maintenance problems if not designed for long service life. The window regulator design will complete 30,000 complete up-down cycles and still function normally when finished. The bidder will 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.

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 will withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder will certify that each anchor design was pull tested to the required force and met the appropriate criteria.

SEAT MOUNTING STRENGTH
Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design will be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder will certify that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

CAB DEFROSTER CERTIFICATION
Visibility during inclement weather is essential to safe apparatus performance. The defroster system will 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 will certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

CAB HEATER CERTIFICATION
Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. The cab heaters will warm the cab 75 F from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder will certify that a substantially similar cab has been tested and has met these criteria.

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 will cool the cab from a heat-soaked condition at 100 degrees Fahrenheit to an average of 67 degrees Fahrenheit in 30 minutes. The bidder will certify that a substantially similar air conditioning system has been tested and has met these criteria. The certification will be available at the time of delivery.

AMP DRAW REPORT
The bidder will 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 will provide the following:

Documentation of the electrical system performance tests.
A written load analysis, which will include the following:
The nameplate rating of the alternator.
The alternator rating under the conditions specified per:
Applicable NFPA 1901 or 1906 (Current Edition).
The minimum continuous load of each component that is specified per:
Applicable NFPA 1901 or 1906 (Current Edition).
Additional loads that, when added to the minimum continuous load, determine the total connected load.
Each individual intermittent load.
All of the above listed items will 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 399-12 through BUYBOARD.

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.

All Or None Bid.

City of San Antonio will make award to one vendor only.

Insurance.

A) Prior to the commencement of any work under this Agreement, Bidder shall furnish copies of all required endorsements and completed Certificate(s) of Insurance to the City's Finance Department, which shall be clearly labeled "*Fire Engines*" 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. The 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 the City. The City shall have no duty to pay or perform under this Agreement until such certificate and endorsements have been received and approved by the City's Finance Department. No officer or employee, other than the City's Risk Manager, shall have authority to waive this requirement.

B) The 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.

C) A Bidder's financial integrity is of interest to the City; therefore, subject to Bidder's right to maintain reasonable deductibles in such amounts as are approved by the City, Bidder shall obtain and maintain in full force and effect for the duration of this Agreement, and any extension hereof, at Bidder'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. Broad form Commercial General Liability Insurance to include coverage for the following: a. Premises/Operations *b. Independent Contractors c. Products/Completed Operations d. Personal Injury e. Contractual Liability f. Damage to property rented by you *if applicable	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 f. $100,000

D) Bidder agrees to require, by written contract, that all subcontractors providing goods or services hereunder obtain the same insurance coverages required of Bidder herein, and provide a certificate of insurance and endorsement that names the Bidder and the CITY as additional insureds. Respondent shall provide the 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.

E) As they apply to the limits required by the City, the 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). Bidder 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. Bidder 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

F) Bidder agrees that with respect to the above required insurance, all insurance policies are to contain or be endorsed to contain the following provisions:

- Name the 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 the 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 the 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 the City.

- 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.

G) Within five (5) calendar days of a suspension, cancellation or non-renewal of coverage, Bidder shall provide a replacement Certificate of Insurance and applicable endorsements to City. City shall have the option to suspend Bidder'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.

H) In addition to any other remedies the City may have upon Bidder's failure to provide and maintain any insurance or policy endorsements to the extent and within the time herein required, the City shall have the right to order Bidder to stop work hereunder, and/or withhold any payment(s) which become due to Bidder hereunder until Bidder demonstrates compliance with the requirements hereof.

I) Nothing herein contained shall be construed as limiting in any way the extent to which Bidder may be held responsible for payments of damages to persons or property resulting from Bidder's or its subcontractors' performance of the work covered under this Agreement.

J) It is agreed that Bidder's insurance shall be deemed primary and non-contributory with respect to any insurance or self insurance carried by the City of San Antonio for liability arising out of operations under this Agreement.

K) 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 the City shall be limited to insurance coverage provided..

L) Bidder 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 righ ts 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 – SUPPLEMENTAL INFORMATION RELATED TO STATE OF TEXAS CONFLICT OF INTEREST REQUIREMENT
Attachment C – VETERAN-OWNED SMALL BUSINESS 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.

Address for Invoices. All original invoices must be sent 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.

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 IILC.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.

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, 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, whether electronically or by paper, 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.

If submitting your offer by paper, 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	Jeffrey A. Doran
Name of Business	Siddons-Martin Emergency Group
Street Address	14233 Interdrive West
City, State, Zip Code	Houston, Texas 77032
Email Address	jdoran@siddons-martin.com
Telephone No.	1-800-784-6806
Fax No.	281-442-0850
City's Solicitation No.	RFX# 6100005966

Jeffrey A. Doran - Sales- Contract Manager

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 - ATTACHMENTS

ITEM	QUANTITY	DESCRIPTION
1	13 each	2015 Velocity CAFS Fire Engine

PRICE EACH: $ 643,690.28 based on P O by September 30, 2015 for any units ordered after, a 3% price increase to contract must be added

TOTAL: $ 8,367,973.60 for 13 units prior to September 30, 2015

CAB & CHASSIS YEAR, MAKE & MODEL:

2015 Pierce Velocity 2016 Depending on p o issue date

SPECIFIC MAKE & MODEL OF TRANSMISSION OFFERED:

Allison 5th Gen 4000 EVS P

SPECIFIC MAKE & MODEL OF ENGINE OFFERED (INCLUDE SAE NET HP):

Detroit DD13 500 hp, 1650 lb-ft

CAB & CHASSIS WARRANTY: Cab Structural Warranty 10 Year, Chassis 3 year

BODY WARRANTY: Body Structural 10 year

DELIVERY: Delivery will be made within 270-300 calendar days after receipt of purchase order.

MANUFACTURER CUT-OFF DATE: September 30, 2015

INDICATE THE LAST DAY THAT THE CITY CAN PLACE ORDERS UNDER THIS CONTRACT WITHOUT MISSING THE PRODUCTION CUT OFF DATE: September 30, 2015.

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. Price increase of 3% will be applied after October 1, 2015

ITEM	QUANTITY	DESCRIPTION
2	1 each	BUYBOARD FEE

BUYBOARD FEE: $ $1,500.00 per Purchase Order EACH $ _____ TOTAL

Authorized Warranty Provider:

Siddons-Martin Emergency Group

Warranty Provider Address:

5511 Binz-Engleman Road Kirby, Texas 78219

Prompt Payment Discount: _____0_____% _____days. (If no discount is offered, Net 30 will apply.