LOC/jlm
10/29/15
Item No. 6

AN ORDINANCE 2015-10-29-0912

ACCEPTING AN OFFER FROM SIDDONS-MARTIN EMERGENCY GROUP, UTILIZING THE HGAC COOPERATIVE CONTRACT, TO PROVIDE TWO REPLACEMENT VELOCITY AERIAL PLATFORM TRUCKS FOR THE SAN ANTONIO FIRE DEPARTMENT FOR A TOTAL COST OF $2,335,106.00, FUNDED FROM THE EQUIPMENT RENEWAL AND REPLACEMENT FUND.

* * * * *

WHEREAS, an offer was submitted by Siddons-Martin Emergency Group to provide the City of San Antonio Fire Department with two velocity aerial platform trucks for a total cost of $2,335,106.00, using the Houston-Galveston Area Council contract # FS12-13; and

WHEREAS, this purchase meets the requirements under the terms of the Houston/Galveston Area Council of Governments Cooperative Purchasing Agreement adopted by the City of San Antonio on October 10, 1996 through Resolution No. 96-41-48; **NOW THEREFORE:**

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF SAN ANTONIO:

SECTION 1. The offer from Siddons-Martin Emergency Group to provide the City of San Antonio Fire Department with two velocity aerial platform trucks for a cost of $2,335,106.00 is hereby accepted, subject to and contingent upon the deposit of all required bonds, performance deposits, insurance certificates and endorsements. A copy of the bid tabulation sheet and contract are attached hereto and incorporated herein for all purposes as **Exhibit I**.

SECTION 2. Funding for this ordinance in the amount of $2,335,106.00 is available as part of the Fiscal Year 2016 budget in Fund 72001000, Cost Center 3503200001 and General Ledger 5501055. Payment not to exceed the budgeted amount is authorized to Siddons-Martin Emergency Group and should be encumbered with a purchase order.

SECTION 3. The financial allocations in this Ordinance are subject to approval by the Director of Finance, City of San Antonio. The Director of Finance may, subject to concurrence by the City Manager or the City Manager's designee, correct allocations to specific SAP Fund Numbers, SAP Project Definitions, SAP WBS Elements, SAP Internal Orders, SAP Fund Centers, SAP Cost Centers, SAP Functional Areas, SAP Funds Reservation Document Numbers, and SAP GL Accounts as necessary to carry out the purpose of this Ordinance.

SECTION 4. This ordinance is effective immediately upon passage by eight affirmative votes; otherwise it is effective on the tenth day after passage.

PASSED AND APPROVED this 29th day of October, 2015.

M A Y O R
Ivy R. Taylor

ATTEST:

Leticia M. Vacek, City Clerk

APPROVED AS TO FORM:

Martha G. Sepeda, Acting City Attorney

Agenda Item:	**6 (in consent vote: 5, 6, 7, 8, 9A, 10, 12A, 12B, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25A, 25B)**
Date:	10/29/2015
Time:	10:27:24 AM
Vote Type:	Motion to Approve
Description:	An Ordinance accepting an offer from Siddons-Martin Emergency Group, utilizing the HGAC cooperative contract, to provide two replacement Velocity Aerial Platform Trucks for the San Antonio Fire Department for a total cost of $2,335,106.00, funded from the Equipment Renewal and Replacement Fund. [Ben Gorzell, Chief Financial Officer; Troy Elliott, Director, Finance]
Result:	Passed

Voter	Group	Not Present	Yea	Nay	Abstain	Motion	Second
Ivy R. Taylor	Mayor		x				
Roberto C. Treviño	District 1		x				x
Alan Warrick	District 2		x			x	
Rebecca Viagran	District 3		x				
Rey Saldaña	District 4		x				
Shirley Gonzales	District 5	x					
Ray Lopez	District 6	x					
Cris Medina	District 7		x				
Ron Nirenberg	District 8		x				
Joe Krier	District 9		x				
Michael Gallagher	District 10		x				

EXHIBIT I

City of San Antonio Bid Tabulation

Opened:	September 14, 2015		
For:	SAFD-Aerial Platform Trucks		**HGAC**
6100006588		SC	Siddons-Martin Emergency Group 14233 Interdrive West Houston, TX 77032 1-800-784-6806
Item	**Description**	**Est. Qty**	
1	2015 Velocity Aerial Platform Trucks	2 Each	
	Price Each		$1,166,553.00
	Price Total		$2,333,106.00
	Year, Make & Model Cab & Chassis		2016 Pierce Velocity 100' Aerial Platform
	Make & Model of Transmission		Allison EVS 4000 PR
	Make & Model of Engine		Detroit Diesel DD13 500 hp
	Cab & Chassis Warranty		10 year structural; 3 yr chassis
	Body Warranty		1 year basic, 10 year structural
	Manufacturer Cut-Off Date		November 30 ,2015
	Last Day to Place Orders		November 30 ,2015
	Firm Pricing		No
2	HGAC Fee	1 Each	$2,000.00
	Warranty Provider		Siddons-Martin Emergency Group
	Warranty Provider Address		5511 Binz-Engleman Road, Kirby, Texas 78219
	Delivery		300-360 Days
	Payment Terms		Net 30
	Total Award		$2,335,106.00

CITY OF SAN ANTONIO

PURCHASING AND GENERAL SERVICES DEPARTMENT

REQUEST FOR OFFER ("RFO") NO.: 6100006588

SAFD-AERIAL PLATFORM TRUCKS

Date Issued: SEPTEMBER 4, 2015

RESPONSES MUST BE RECEIVED **NO LATER** THAN: SEPTEMBER 14, 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

"SAFD-AERIAL PLATFORM TRUCKS"

Offer Due Date: 10:00 A.M., SEPTEMBER 14, 2015

RFO No.: 6100006588

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,

002 - TABLE OF CONTENTS

No table of contents entries found.

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.

State of Texas Conflict of Interest Questionnaire (Form CIQ). Chapter 176 of the Texas Local Government Code requires that persons, or their agents, who seek to contract for the sale or purchase of property, goods, or services with the City, shall file a completed Form CIQ with the City Clerk if those persons meet the requirements under §176.066(a) of the statute.

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

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

https://www.ethics.state.tx.us/filinginfo/conflict_forms.htm

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

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

When completed, the CIQ Form and the CIQ-A Form should be submitted together, either by mail or hand delivery, to the Office of the City Clerk. If mailing, mail to:

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

If delivering by hand, deliver to:

Office of the City Clerk, City Hall, 2nd floor, 100 Military Plaza, San Antonio, TX 78205.

Do not include these forms with your sealed bid. The Purchasing Division will not deliver the forms to the City Clerk for you.

004 - SPECIFICATIONS / SCOPE OF SERVICES

4.1 BACKGROUND:

The City of San Antonio is soliciting an offer with Siddons Martin Emergency Group to furnish two (2) Velocity Aerial Platform Trucks 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.

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.

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

VEHICLE INSPECTION: The vendor shall have each vehicle (except cab and chassis units delivered without bodies) properly inspected in compliance with Texas motor vehicle laws. Texas Inspection Sticker shall be attached prior to delivery to the receiving entity (2 year Inspection Sticker for vehicles through ¾ ton pickups and 1 year Inspection Sticker for 1 ton trucks and up, excluding cab and chassis units delivered without bodies).

a. CHECK-IN INSPECTION: The City shall check the vehicle upon delivery to ensure compliance with this specification and any other specific requirements. The vendor shall deliver with the vehicle a manufacturer's invoice, and MSO or any official documentation to verify the fact that ordered options, GVWR rating, and other requirements have been met.

b. Failure to provide required documentation as listed may cause the delay of payment. Payment will be made within 30 days after vehicle's acceptance or receipt of correct invoice, whichever is later. Acceptance will not be made, nor payment initiated on vehicles failing to meet specifications (unless they are brought into full compliance), and all necessary documents (i.e. MSO, odometer statement, etc.) are received by the City.

c. The City shall have a maximum of 5 working days to complete this inspection.

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

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.

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	2 Each	2015 Velocity Aerial Platform Truck

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.

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 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 San Antonio 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, pump panel layout, dash layout and 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 264.00".

GVW RATING

The gross vehicle weight rating will be 80,800 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.

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 0.25". 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 in-lb.

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
KONI heavy-duty telescoping shock absorbers 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 65 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 RT58-185, tandem axle assembly with a capacity of 58,000 lb.
An inter-axle differential, which divides torque evenly between axles, will be provided, with an indicator light mounted on the cab instrument panel.

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

SUSPENSION, REAR
Rear suspension will be Raydan combination air ride and walking beam with a ground rating of 60,000 pounds.

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

REAR TIRES
Rear tires will be eight (8) Michelin 315/80R22.50 radials, 20 ply "all position" XZY 3 tread, rated for 66,160 lb maximum axle load and 65 mph maximum speed.

The tires will be mounted on 22.50" x 9.00" 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 12 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. Please see warranty document for details.

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

HUB COVERS (REAR)
Stainless steel, high hat, hub covers will be provided on the rear axle hubs.

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

MUD FLAPS
Mud flaps with a Pierce logo will be installed behind the front and rear wheels.

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 315/80R22.50, spare tire to match the vehicle's rear tires will be provided, 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, Model SAC-44-E, aluminum alloy, Quick-Choc wheel blocks, with easy-grip handle provided.

WHEEL CHOCK BRACKETS
There will be one (1) pair of Zico, Model SQCH-44-H, horizontal mounting wheel chock brackets provided for the Ziamatic, Model SAC-44-E, folding wheel chocks. The brackets 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 below the left side rear compartment.

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 6S6M, anti-lock braking system. The ABS will provide a six (6) 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®, Model 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 8,108 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
- A pressure protection valve will be provided to prevent all air operated accessories from drawing air from the air system when the system pressure drops below 80 psi (550 kPa).

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.

BRAKE SYSTEM AIR DRYER

The air dryer will be WABCO System Saver 1200 with spin-on coalescing filter cartridge and 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 on the driver side pump panel. 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.

ALL WHEEL LOCK-UP

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

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 aftertreatment. 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 low 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.

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. Tailpipe will be angled 35 degrees to the rear. 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 chassis manufacturer.

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 12 gallon diesel exhaust fluid (DEF) tank will be provided and mounted in the driver's side body forward compartment.

A 0.50" 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 in the same compartment 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.

The tank will be compartment mounted on the drivers side of the body, ahead of the rear axle.

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.

FUEL CAP RETAINING CHAIN

The fuel filler cap will have a retaining chain. A flat, stainless steel trim plate will be installed below the fuel fill opening to protect the painted surface from the fuel fill cap.

TRANSMISSION

An Allison Gen IV, model EVS 4000PR, electronic, torque converting, automatic transmission with retarder will be provided.

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 audible alarm, will be installed on the cab instrument panel.

The transmission retarder control will be (RET3) activated 50 percent by letting off the accelerator pedal or 100 percent by applying the brake pedal. A second on/off switch is provided to activate and deactivate the auto apply portion.

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

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

The retarder will be wired to the brake lights so they are energized when the retarder is slowing the vehicle down. The ABS system will automatically disengage the auxiliary braking device when required.

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.

DOWNSHIFT MODE (W/ENGINE BRAKE)

The transmission will be provided with an aggressive downshift mode.

This will provide earlier transmission downshifts to 2nd gear from 6th gear, resulting in improved engine braking performance.

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. The slip joint will be coated with Glidecoat® or equivalent.

PAINT PUMP TRANSMISSION AND DRIVE TRANSMISSION OUTPUT YOKES

The pump transmission and drive transmission output yokes will be brush painted the same color as the driveshafts. The yokes will be brush painted, not spray painted.

GREASE SHIELD

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

STEERING

Dual Sheppard, Model 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 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 Dept.
The third row of text will be: N/A

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

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

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

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.

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 stainless steel 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 HOOKS
No tow hooks are to be provided. This truck will be equipped with a lift and tow package with integral tow eyes.

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

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 52.95" 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.

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

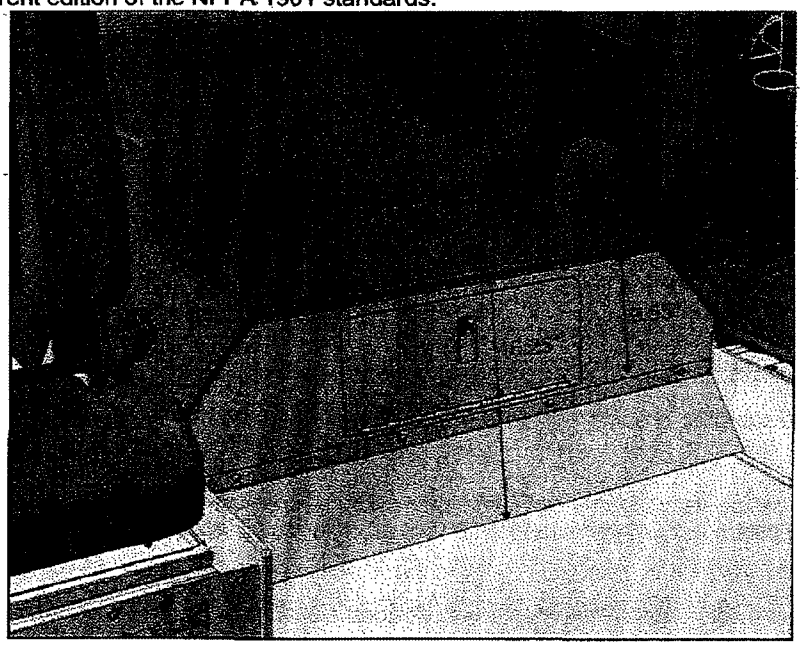
A full-width access hood will be provided for convenient access to engine coolant, steering fluid, wiper fluid, cab lift controls, headlight power modules, and ember separator. The hood will also provide complete access to the windshield wiper motor and components. The hood will be contoured to provide 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 2.25" 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.

Cab Lift Interlock

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.

DOOR JAMB SCUFFPLATES

All cab door jambs will be furnished with a polished stainless steel scuffplate, mounted on the striker side of the jamb.

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

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

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 5.63" wide x 2.00" high x 4.00" 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. 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. This control panel will be located within easy reach to the driver in the center instrument console. The officer and crew cab 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".

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

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. The lights will be located in the driver side front doorstep, driver side crew cab doorstep, passenger side front doorstep and passenger side crew cab doorstep.

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

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

FENDER CROWNS

Rubber fender crowns will be provided around the cab wheel openings. Crowns will be black.

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 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 LED strip lights, one (1) each left side of lower and upper exterior compartment door opening.

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.

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.

MOUNTING PLATE ON ENGINE TUNNEL
Equipment installation provisions will be installed on the engine tunnel.

A .188" smooth aluminum plate will be bolted to the top surface of the engine tunnel. The plate will extend from behind the instrument panel console, down the taper in the tunnel and terminate at the rear of the storage compartment mounted to the rear of the engine tunnel. The horizontal surface of the tunnel will not be covered. The plate will be spaced off the engine tunnel .75" to allow for wire routing below the plate.

The mounting 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 headliner panel will be a composition of an aluminum panel covered with a sound barrier and upholstery.

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 dark silver gray. 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 fire smoke gray, 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 54,961 BTU 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 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 requirements.

The heater-defroster will be controlled by an integral electronic control panel. The defroster control panel will allow the driver to control heat flow to the windshield. 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 19.10 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. Mounting the condenser below the cab or body would reduce the performance of the system and will not be acceptable.

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 drivers 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 0.20" high density polyethylene corrugated material. Each headliner will be wrapped with a 0.25" thick foil faced poly damp low emissivity foam insulation barrier for acoustic and thermal control.

Designed for maximum sound absorption and thermal insulation, the rear cab wall 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.

SUN VISORS

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

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

GRAB HANDLE

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

A long rubber grab handle will be mounted on the dash board in front of the officer.

ENGINE COMPARTMENT LIGHTS

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

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

ACCESS TO ENGINE DIPSTICKS

For access to the engine oil and transmission fluid dipsticks, there will be a door on the engine tunnel, inside the crew cab. The door will be on the rear wall of the engine tunnel, on the vertical surface. The door will be 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 door will have a rubber seal for thermal and acoustic insulation. One (1) flush latch will be provided on the access door.

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 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 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 retract the seat to its lowest travel position.

The seat will be furnished with a 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 7.5 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 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 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.

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 28.00" 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 one (1) white LED strip light installed on the left 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 on the rear of the engine tunnel. The compartment will mount flush with the rear edge of the tunnel.

The compartment will be approximately 47.00" wide x 20.50" high. The compartment will be approximately 17.00" deep at the bottom and 20.00" deep at the top. 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 permanent vertical partition will be provided on the left side of the compartment. The partition will be mounted to provide an 18.00" wide clear opening on the left side of the compartment. An adjustable shelf will be provided on the right side of the partition. Each shelf will be constructed of 0.090" aluminum with a 1.25" up-turned lip. Shelving will be infinitely adjustable by means of a threaded tightener sliding in a track.

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

Compartment Light

There will be two (2) white 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 30.00" 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. The seat back will be a high back style with 7.5 degree fixed recline angle, and will include minimum 7.50" deep side bolster pads for maximum support. 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 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. The seat back will be a high back style with 7:50 degree fixed recline angle, and will include minimum 7.50" deep side bolster pads for maximum support. 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 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.

SHELVING

There will be one (1) shelf provided. Each shelf will be constructed of 0.090" 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 Driver side EMS cabient (see photo).

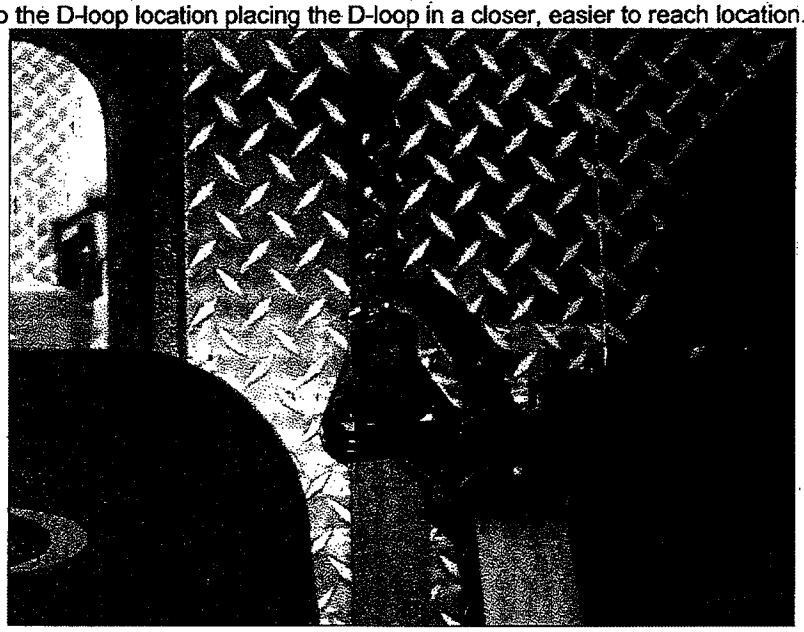
SEAT UPHOLSTERY
All seat upholstery will be gray Turnout Tuff material.

AIR BOTTLE HOLDERS
All SCBA type seats in the cab will have a "Hands-Free" auto clamp style bracket in its backrest. For efficiency and convenience, the bracket will 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 will constrain the SCBA bottle in the seat and will 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, will not be acceptable.

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

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

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



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 six (6) seating positions will have the adjustable shoulder harness.

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:

- 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 60C*EGCS, 6.00" 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 the lens switch.

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

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

- The white light will be controlled by the door switch and a switch on the light.
- The red light will be controlled by the switch on the light.

OVERHEAD MAP LIGHTS
There will be two (2) white halogen, 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 SPOTLIGHT
There will be four (4) Streamlight, Model Survivor 90503, LED flashlights with chargers and AC/DC chords provided and installed Two next tothe driver as located on the attached photo, One each side of the rear facing compartments - see photo.

HAND HELD SPOTLIGHT
There will be one (1) spotlight provided, Novatech Lighting Systems, Model 2000-101, 100,000 candlepower, 50-watt, hand held and installed TBD. The light(s) will be furnished with coil cord.

The light(s) will be powered by being connected to a power point plug, 12 VDC.

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

The location will be One on the drivers side EMS top of box and one on the passenger side radio equipment boxas summitted on the drawing..

The system will include the hand light, a 12 VDC charger and the vehicle mount system.

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 eight (8) membrane-type switches each rated for one million (1,000,000) cycles. Panels containing less than eight (8) switch assignments will include non-functioning black appliqués. Documentation will be provided by the manufacturer indicating the rated cycle life of the switches. 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 membrane-type and also act as an integral indicator light. For quick, visual indication the entire surface of the switch will be illuminated white whenever back lighting is activated and illuminated red whenever the switch is active. For ease of use, a two (2)-ply, scratch resistant laser engraved Gravoply label indicating the use of each switch will be placed in the center of the switch. The label will allow light to pass through the letters for ease of use in low light conditions.

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.

HOURMETER - AERIAL DEVICE

An hourmeter for the aerial device will be provided and located within the cab display or instrument panel.

AERIAL MASTER

There will be a master switch for the aerial operating electrical system provided.

AERIAL PTO SWITCH

A PTO switch for the aerial with indicator light will be provided.

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 mountedat the top, and three mounted in the storage box. Allmust be wired to the IN/OUT of service box located behind the drivers seat and swithc- 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.

SPARE CIRCUIT
There will be a heavy duty disconnect switch installed in the spare wire circuit(s) to connect or disconnect the power to the spare wire(s) located on the exterior wall of the eletcronics compartment, upper left side when facing the box from the crew cab so it is accessible by the officer.. The label and switch will be installed below the switch.

SPARE CIRCUIT
There will be two (2) 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 15 amps at 12 volts DC
- Power and ground will terminate [Location, Spare Wiring]
- Termination will be with heat shrinkable butt splicing
- Wires will be sized to 125 percent of the protection

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

RADIO WITH CD PLAYER
There will be a Panasonic™, AM/FM/Weather Band stereo radio with compact disc player and auxiliary input 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 in the cab and one (1) pair of 5.25" speakers 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.

SWITCH, MASTER, AM/FM RADIO
A remote switch will be provided inside the cab to control turning off the AM/FM radio. The switch will be installed drivers side switch panel. The radio will automatically turn on with truck.

PUSH BUTTON MOUNTING BRACKET
A mounting bracket will be provided CHROME BUTTONS WILL BE IN A WEDGE BRACKET NEAR THE OFFICER. THE ACTUAL NEEDS TO BE PLACED AT FINAL INSPECTION DUE TO INTERFERENCE WITH THE MDT MONITOR.

THEY WILL LOCATE NEAR WITH WIRING COMING FORRM BELOW THE ENGINE TUNNEL MOUNTING PLATE. 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
- Exterior Ambient Temperature
- Time (12 or 24 hour mode)
- 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.
- 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 Screen
    - The lower the priority number the earlier the device will be shed should a low voltage condition occur
- Load Status Screen
    - 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 Screen
  - The 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 Screen
  - 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:

- System 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
- Display Brightness
    - Brightness
        - Increase and decrease
        - Default setting button
- Configure Video Mode
    - Set Video Contrast
    - Set Video Color
    - Set Video Tint
- Startup Screen
    - Choose the screen that will be active at vehicle power-up
- Date & Time
    - 12 or 24 hour format
        - Set time and 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:

- Motorola High Power, Model number harris.

WIRELESS UNDER HELMET HEADSET ONLY, RADIO TRANSMIT

There will be four (4) 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 All 4 positions.

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 Transmit button
- Rechargeable battery operates for 24 hours on a full charge
- IP-65 when worn

HEADSET HANGERS

There will be four (4) headset hanger(s) installed Match past locations. 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 Firecom intercom aux inlet to the AM/FM radio. 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.

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 radio in panel 6 upper to the right front of the officer per the shipping document.

No antenna mount or whip will be included in this option.

Specific radio 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 this will be on the officers side of the engine tunnel plate.The mounting needs to be done at final inspection. Please run wiring under the plate so the mountcan be near the officers side forward.. Specific shipping requirements will be followed.

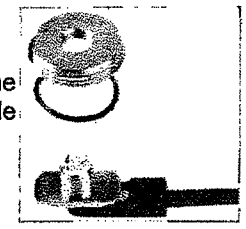
PORTABLE RADIO CHARGER INSTALLATION

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 near the driver as located on attached drawing, one on the center crew box and one on the PS crew box as indicated in the supplied photo. Specific shipping requirements 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 LIGHT BAR. Cable routed to the electronics cabient behind the officer position. This needs to have at least 2' of cable to extended outside the box. and a connector provided, if necessary. Specific shipping requirements will be followed.

RADIO ANTENNA MOUNT



There will be three (3) standard 1.125", 18 thread antenna-mounting base(s) installed One to the rearof driver side A/C routed to the radio box behind the officer. Make sure at least 2' of cable is able

to get outside the box. on the cab roof with high efficiency, low loss, coaxial cable(s) routed to the radio box. A weatherproof cap will be installed on the mount.

VEHICLE CAMERA SYSTEM

There will be two (2) color video cameras provided in the following locations:

- One (1) camera located at the front of the cab to view the traffic signals, activated with the brake signal
- One (1) camera located at the rear of the truck, pointed rearward and activated when the apparatus is put into reverse

Images will be displayed in the cab on a 7" color LCD flat panel display with integral camera switcher and integrated speaker permitting audio from the front or rear camera, located in view of the driver on the dash .

Zone Defense components will include:

- One (1) ZD.323.1.4.22 Display, rear camera, and cable
- One (1) CAM-313C color camera (front)
- 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.

SOLID-STATE CONTROL SYSTEM

A solid-state 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 re-programmable to accommodate changes to the vehicle's operating parameters
- Complete operating and troubleshooting manuals
- USB connection to the main control module for advanced troubleshooting

To assure long life and operation in a broad range of environmental conditions, the solid-state control system modules will meet the following specifications:

- Module circuit board will meet SAE J771 specifications
- Operating temperature from -40 degrees Celsius to +70 degrees Celsius
- Storage temperature from -40 degrees Celsius to +70 degrees Celsius
- Vibration to 50g
- IP67 rated enclosure (Totally protected against dust and also protected against the effect of temporary immersion between 15 centimeters and 1 meter)
- Operating voltage from 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 (1) 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 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 2-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 solid-state 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 10 seconds for improved visibility after the doors close. The dome lights will dim after 10 seconds or immediately if the vehicle is put into gear.

Cab and crew cab perimeter lights will remain on for 10 seconds for improved visibility after the doors close. The dome lights will dim after 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:

1. 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.

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

3. 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.

4. 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.

5. 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.

6. Any lights containing non-waterproof sockets in a weather-exposed area will have corrosion preventative compound added to the socket terminal area.

7. All electrical terminals in exposed areas will have DOW 1890 protective Coating applied completely over the metal portion of the terminal.

8. Rubber coated metal clamps will be used to support wire harnessing and battery cables routed along the chassis frame rails.

9. 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.

10. 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.

11. All braided wire harnesses will have a permanent label attached for easy identification of the harness part number and fabrication date.

12. 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:

13. All battery cables and battery harnesses will have a permanent label attached for easy identification of the harness part number and fabrication date.

14. Splices will not be allowed on battery cables or battery cable harnesses.

15. 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.

16. For ease of identification, all positive battery cable isolated studs throughout the cab and chassis will be red in color.

17. 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

There will be 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
- -140 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
There will be a Cole Hersee Model 75908 master battery switch to activate the battery system, 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
There will be 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 driver side ems box . Charger and pump will be mounted low in the forward face of the box down low with the pump discharge mounted down as indicated on the installation instructions. The charger needs to have the 120 volt receptacle, not hard wired..
The battery charger indicator will be located behind the driver's door on the outside of the cab.

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

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

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

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

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

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

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

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

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

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.

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

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.

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.

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.

ADDITIONAL CIRCUIT BREAKERS
A box containing twenty (20), 10 amp circuit breakers will be supplied and located in this will be mounted inside the rear of the electrical equipment box behind the officer's position. It needs to be in the upper right corner when facing the box from the crew cab.

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.

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.

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.

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, where applicable, includes a "Load Manager" screen indicating the following:

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

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.

The color of the lenses will be clear.

CAB CLEARANCE/MARKER/ID LIGHTS

There will be seven (7) Truck-Lite, Model 35200Y, 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 lights will be mounted with no guard.

PLATFORM CLEARANCE/MARKER/ID LIGHTS

There will be five (5) Truck-Lite, Model 35075Y, 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 on the front of the aerial basket, centered.
- Two (2) amber LED clearance/marker lights will be installed, one (1) on each corner of the aerial basket visible from the side and the front of the vehicle.

The lights will be mounted with an aluminum guard.

REAR CLEARANCE/MARKER/ID LIGHTING

There will be three (3) Truck-Lite®, Model 35200R, LED lights used as identification lights located at the rear of the apparatus per the following:

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

- Red in color
- All at the same height

There will be two (2) Truck-Lite, Model 35200R, LED lights installed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following:

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

There will be two (2) Truck-Lite, Model 35200R, LED lights installed on the side of the apparatus as marker lights as close to the rear as practical per the following:

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

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

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

Per FMVSS 108 and CMVSS 108 requirements.

MARKER LIGHTS

There will be one (1) pair of amber and red LED marker lights with rubber arm, located AT THE REAR OF THE APPARATUS. The amber lens will face the front and the red lens will face the rear of the truck.
These lights will be activated with the running lights of the vehicle.

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

The lights shall be provided with clear lenses.
The lights will be mounted in a polished combination housing.
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.

ADDITIONAL BRAKE/TAIL LIGHT
There will be one (1) Whelen, Model M6BUW, white LED back-up light with Whelen, Model M6FC, chrome flange and clear lens provided at the rear of the body, Under the rear of the truck light for backing up.

The light will be activated when the transmission is placed in reverse and when the parking brake is applied.

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.

DEUTSCH CONNECTIONS
All external 12V electrical light connections will be installed with Deutsch connectors.

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.

INTERMEDIATE LIGHT
There will be one (1) pair, of Truck-Lite, Model 60115Y, amber, LED, turn signal, marker lights furnished, one (1) each side, horizontally in the rear fender panel.

A stainless steel trim will be included with this installation.

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 three (3) Amdor Model AY-9500-012, 12.00" white 12 volt DC LED strip lights provided.

The lights will be mounted in the following locations:

- One (1) light will be provided under the driver's side turntable access steps.
- One (1) light will be provided under the passenger's side turntable access steps.
- One (1) light will be provided under the passenger's side pump panel.

The perimeter scene lights will be activated when the parking brake is applied and the reverse signal activated, activating all the side facing perimeter lights.

ADDITIONAL PERIMETER LIGHTS
There will be two (2) lights Amdor, Model AY-9500-012 12.00" white LED perimeter light(s) provided Under front outboard match 28165 of the frame rai one each side.

These lights will be activated the same as the body perimeter lights.

STEP LIGHTS
Two (2) white LED step lights will be provided, one (1) on each side of the front body.

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

The lights will be actuated with the pump panel light switch.
All other steps on the apparatus will be illuminated per the current edition of NFPA 1901.

STEP LIGHT, ADDITIONAL
There will be three (3) lights Truck-Lite, Model 44042C 4.00" clear LED lights provided and installed two on the PS front body bulkhead above each folding step, and one on the DS body bulkhead above the first folding step.

The additional step lights will be activated by the pump panel light switch.

Each light will be flush mounted with a rubber grommet within a vertical surface.

SCENE LIGHTS
There will be one (1) Fire Research, Model SPA900-Q70 scene light(s) with chrome flange(s) installed on the side of the apparatus, passenger side of cab upper 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
a switch at the passenger's side switch panel
no additional switch location
These lights may be load managed when the parking brake is set.

SCENE LIGHTS
There will be one (1) Fire Research, Model SPA900-Q70 scene light(s) with chrome flange(s) installed on the side of the apparatus, driver side upper cab between 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
a switch at the passenger's side switch panel
no additional switch location
These lights may be load managed when the parking brake is set.

12 VOLT LIGHTING
There will be one (1) Fire Research Spectra, Model SPA570-Q20, 12 volt LED floodlight(s) with a fixed top mount pedestal provided and located drivers side cat walk above D-2.
The light(s) will be controlled in the following way:
a switch at the driver's side switch panel
a switch at the passenger's side switch panel
a switch at the pump operator's panel
no additional switch location
These lights may be load managed when the parking brake is applied.

12 VOLT LIGHTING
There will be one (1) Fire Research Spectra, Model SPA570-Q20, 12 volt LED floodlight(s) with a fixed top mount pedestal provided and located Passenger side cat walk above P-2.
The light(s) will be controlled in the following way:
a switch at the driver's side switch panel
a switch at the passenger's side switch panel
a switch at the pump operator's panel
no additional switch location
These lights may be load managed when the parking brake is applied.

12 VOLT LIGHTING

There will be one (1) Fire Research Spectra, Model SPA510-Q20 white 12 volt DC LED scene light(s) provided on side mount, pull up pole(s), located Passenger side cargo area above the pump .
The light(s) will be controlled in the following way:
a switch at the driver's side switch panel
a switch at the passenger's side switch panel
a switch at the pump operator's panel
no additional switch location
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.

12 VOLT LIGHTING

There will be one (1) Fire Research Spectra, Model SPA542-Q20 white 12 volt DC LED scene light(s) provided on side mount, pull up pole(s), located drivers side cargo area above the pump .
The light(s) will be controlled in the following way:
a switch at the driver's side switch panel
a switch at the passenger's side switch panel
a switch at the pump operator's panel
no additional switch location
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.

12 VOLT LIGHTING

There will be one (1) Fire Research, Model SPA260-Q15, 12 volt LED surface mounted scene light(s) with chrome trim bezel provided rear of the truckon the drivers side . replaces 110v.
The light(s) will be controlled in the following way:
a switch at the driver's side switch panel
a switch at the rear of apparatus on the driver's side
a switch at the passenger's side switch panel
a switch at the pump operator's panel
The light(s) may be load managed when the parking brake is applied.

REAR SCENE LIGHTS

There will be two (2) Whelen, Model 70K000CD, 35 watt 12 volt halogen scene lights with 15 degree angled brackets installed at the rear of the vehicle, under the tailboard, facing the rear.
The lights will be controlled by a switch at the driver's side switch panel.

CARGO AREA

The cargo area will be fabricated of .125" 5052 aluminum with a 38,000 psi tensile strength.
The sides will not form any portion of the fender compartments.
The cargo area will be located ahead of the ladder turntable.
Flooring of the cargo area will be aluminum treadplate.

RUNNING BOARDS

The running boards will be fabricated of .125" bright aluminum treadplate and supported by structural steel angle assemblies bolted to the chassis frame rails.

Running boards will be11.75" deep and are spaced away from the body .50".
A splash guard will be provided to keep road dirt or water from splashing up onto the pump panels.
The running boards will have a riser on the body to protect the painted surface from damage by stepping on the running boards.

The entire surface of the running boards will be covered with bright aluminum treadplate.

TURNTABLE STEPS

Steps to access the turntable from the driver side will be provided just behind the compartmentation. The steps will be a swing-down design, with the stepping area made of Morton Tread-Grip® channel. The step height for the bottom step (the distance from the top surface of the step to the ground) will not exceed 24.00" with the step in its extended position. No step height (the distance between the top surfaces of any two (2) adjacent steps) will be greater than 14.00". The stepwell will be lined with bright aluminum treadplate to act as scuffplates. The steps will be connected to the "Do Not Move Truck" indicator. The sides of each step package will be modified to allow the rear handrail to be recessed. The rear handrail will not protrude past the body side sheets or above the rear deck.

STEP LIGHTS
There will be three (3) white LED step lights provided for each set of aerial turntable access steps.

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 step lights will be actuated by the aerial master switch in the cab.

REAR WALL, SMOOTH ALUMINUM
The rear wall will be smooth aluminum.

TOW EYES
Two (2) rear painted tow eyes will be located at the rear of the apparatus and will be mounted directly to the torque box. The inner and outer edges of the tow eyes will be radiused.

REAR SUBSTRUCTURE RAISED
The rear substructure will be raised 5". This will allow for a greater angle of departure.

COMPARTMENTATION
Compartmentation will be fabricated of .125" 5052 aluminum. The side compartments are an integral assembly with the rear fenders. Fully enclosed rear wheel housings will be provided to prevent rust pockets and for ease of maintenance. Due to the severe loading requirements of this aerial, a method of compartment body support suitable for the intended load will be provided.

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

A support system will be used which will incorporate a floating substructure by using Neoprene Elastomer isolators to allow the body to remain rigid while the chassis goes through its natural flex. The isolators will have a broad range of proven viability in vehicular applications, be of a fail safe design, and allow for all necessary movement in three (3) transitional and rotational modes. This will result in a 500 lb equipment rating for each lower compartment of the body. The compartmentation in front of the rear axle will include a 3.00" steel support assemblies which are bolted to the chassis frame rails. A steel framework will be mounted to the body above these support assemblies connected to the support assemblies with isolators. There will be one support assembly mounted to each chassis frame rail.

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

Compartment flooring will be of the sweep out design with the floor higher than the compartment door lip. The compartment door openings are framed by flanging the edges in 1.75" and bending out again .75" to form an angle. Drip protection is provided over all door openings by means of bright aluminum extrusion or formed bright aluminum treadplate. Side compartment tops will be covered with bright aluminum treadplate with a 1.00" rolled over edge on the front, rear and outward side. The covers are fabricated in one (1) piece and have the corners welded. A bright aluminum treadplate cover will be provided on the front wall of each side compartment. All screws and bolts, which protrude into a compartment, will have acorn nuts at the ends to prevent injury.

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

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

COMPARTMENTATION, DRIVER SIDE

A full height roll-up door compartment, ahead of the rear wheels, will be provided. The compartment will be 41.75" wide x 64.00" high x 24.25" deep with a clear door opening of 38.75" wide x 56.38" high.

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

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

A compartment with a single pan stainless steel lift up door will be located above the front stabilizer. The compartment will be 24.25" wide x 15.50" high x 24.25" deep with a door opening of 18.50" wide x 12.75" high. The compartment will have an aluminum 4-way cover with access to the top of the cord reel and will be extended above the catwalk to accommodate the reel. A top-hinged horizontal lift up stainless steel door will be provided with pneumatic cylinders for payout of the cord. The three (3) sides of the door opening will have stainless steel scuffplates.

A full height, roll-up door compartment, behind the rear wheels, will be 43.75" wide x 57.25" high x 21.25" deep. The clear door opening will be 40.75" wide x 49.62" high.

There will be one (1) compartment located below the turntable with a roll-up door. The compartment will be 39.38" wide x 26.38" high x 21.25" deep with a door opening of 33.75" wide x 18.75" high.

COMPARTMENTATION, PASSENGER SIDE

A full height roll-up door compartment, ahead of the rear wheels, will be provided. The compartment will be 41.75" wide x 64.00" high x 24.25" deep with a clear door opening of 38.75" wide x 56.38" high.

One (1) roll-up door compartment will be located above the fender compartments and over the rear axles. The compartment will be 72.13" wide x 33.25" high x 24.25" deep with a clear door opening of 63.75" wide x 25.50" high.
The retracted roll-up door will consume approximately 8.00" in height and 12.00" in depth of the upper outboard portion of each compartment.

A compartment with a single pan stainless steel lift up door will be located above the front stabilizer. The compartment will be 24.25" wide x 15.50" high x 24.25" deep with a door opening of 18.50" wide x 12.75" high. The compartment will have an aluminum 4-way cover with access to the top of the cord reel and will be extended above the catwalk to accommodate the reel. A top-hinged horizontal lift up stainless steel door will be provided with pneumatic cylinders for payout of the cord. The three (3) sides of the door opening will have stainless steel scuffplates.

A full height roll-up door compartment, behind the rear wheels, will be 43.75" wide x 57.25" high x 21.25" deep. The clear door opening will be 40.75" wide x 49.62" high.

There will be one (1) compartment located below the turntable, with a roll-up door. The compartment will be 39.38" wide x 26.38" high x 21.25" deep with a door opening of 33.75" wide x 18.75" high.

COMPARTMENT IN PLACE OF TURNTABLE STEPS, PASSENGER SIDE

A roll-up door compartment will be provided in place of the turntable steps. The compartment will be 20.88" wide x 55.25" high x 12.00" deep inside with a door opening of 15.25" wide x 47.62" high.

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

ROLL-UP DOOR, SIDE COMPARTMENTS

There will be eight (8) 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 roll-up 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 roll-up 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 roll-up door wear components will be constructed of Type 6 nylon.

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

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.

REAR BUMPER

An 8.00" rear bumper will be furnished. The bumper will be constructed of steel framework and will be covered with polished aluminum treadplate. The bumper will be 7.00" deep x 5.00" high and will be spaced away from the body approximately 1.00". The corners of the bumper will be angled at 30 degrees. It will extend the full width of the body.

The driver's side 12.00" portion will be notched to allow clearance for the elbow on the aerial inlet.

DOOR GUARD

There will be nine (9) 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 High as posible all comartments.

COMPARTMENT LIGHTING

There will be 11 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.

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 D-1, D-3, D-4, P-1, P-3, P-4. 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 14 shelves with a capacity of 500 lb 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 (2) in D-1, (2) D-3, (2) in D-4, (2) in D-4, (3) in P-1, (3 in) P-3, (2) in P-4 .

SLIDE-OUT FLOOR MOUNTED TRAY
There will be two (2) floor mounted slide-out tray(s) with 2.00" sides provided P4 and D4. Each tray will be rated for up to 500lb in the extended position. The tray(s) will be constructed of a minimum .13" aluminum with welded corners. The finish will be painted to match compartment interior.

There will be two undermount-roller bearing type slides rated at 250lb each provided. The pair of slides will have a safety factor rating 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 50lb 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 the locks will be located at the front of the tray for ease of use with a gloved hand.

BRACKET REAR OF BODY
An 8.00" deep, full width bright aluminum treadplate bracket will be provided at the rear of the body, above the torque box roll door. The bracket will be provided to mount lights, cameras, or other accessories.

MATTING, COMPARTMENT SHELVING
Turtle Tile compartment matting will be provided in 16 shelves. The locations are, all compartment shelves and trays. The color of the Turtle Tile will be red.

COMPARTMENT FLOOR MATTING
Turtle Tile compartment matting will be provided in six (6) compartment(s). The locations are D-1, D-2, D-3, P-1, P-2, P-3. The color of Turtle Tile will be red.

REAR WALL
The entire rear surface of the apparatus and all the doors will be covered with smooth aluminum.

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.

RUB RAIL
Bottom edge of the side 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
Black rubber fender crowns will be provided around the rear wheel openings.

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.

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

EQUIPMENT STORAGE

A total of one (1) compartment(s) will be provided and located on the driver's side centered between the tandem rear wheels. The compartment(s) will be approximately 16.00" wide at the top x 8.00" wide at the bottom with tapered sides.

The compartment(s) will be approximately 12.00" high x 26.00".

Flooring will be rubber lined and have a drain hole. A drop down door with rubber bumpers and two (2) flush mounted lift and turn latches will be provided for each compartment. The door will be polished stainless steel. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

FOUR AIR BOTTLE STORAGE COMPARTMENT

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

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

Flooring will be rubber lined and have a drain hole. A drop down door with rubber bumpers with pair of Southco locking C2 chrome lever latches will be provided for each compartment. The door will be polished stainless steel. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

AIR BOTTLE COMPARTMENT STRAP

Straps will be provided in the air bottle compartment(s) to help contain the air bottles. The straps will wrap around the neck of each bottle and attach to the wall of the compartment.

A stainless steel scuffplate will be provided around each air bottle compartment opening. The scuffplates will not be visible when the air bottle compartment door is closed.

AIR BOTTLE STORAGE BIN

A storage bin will be provided for storage of three (3) air bottles. This storage bin will be installed in front and bhind rear wheels (2) on the passenger side, and 0ne next to the fuel door driver side. Each separate air bottle storage compartment will be 7.50" square x 23.00" deep. The storage bin will be formed out of aluminum and the flooring lined with Dura-surf.

EXTENSION LADDER

There will be one (1) 35', two (2) section, aluminum, Duo-Safety, Series 1200-A extension ladder(s) provided.

EXTENSION LADDERS, AERIAL

There will be one (1) 24', two (2) section, aluminum, Series 900-A extension ladder(s) provided.

ROOF LADDER

There will be two (2), 16' aluminum, Duo-Safety, Series 875-A roof ladders provided.

ADDED ROOF LADDER

There will be one (1) 14' roof, aluminum, Series 875-A provided.

ATTIC EXTENSION LADDER, AERIAL

There will be one (1) 14' Fresno, aluminum, Duo-Safety, Series 701 extension ladder(s) provided.

FOLDING LADDER, AERIAL

There will be one (1) 10' aluminum, Duo-Safety, Series 585-A folding ladder(s) provided.

GROUND LADDER STORAGE

The ground ladders are stored within the torque box and are removable from the rear.
Ladders will be enclosed to prevent road dirt and debris from fouling or damaging the ladders.
The ladders rest in full length stainless steel slides and are arranged in such a manner that any one ladder can be removed without having to move or remove any other ladder.

The rear most vertical support will be moved forward to allow hand clearance to access ladders.

An AMDOR roll-up door will be provided at the rear, double faced, aluminum construction, painted one (1) color to match the lower portion of the body and manufactured AMDOR manufacturing. The latching mechanism will consist of a full length lift bar lock with latches on the outer extrusion of the door frame.

A stainless plate with a two bend flange and a stainless steel hinge will be provided to secure the aerial ladder complement. The plate assembly will be mounted to the bottom of the entrance of the torque box ladder storage area along with a polyethylene wear plate to prevent ladders from being scuffed by contacting metal parts.

When the plate is vertical, it will secure the ladders and prevent them from migrating to the rear of the apparatus. When the plate is down, the roll-up door cannot close, which will activate the "Open Door Indicator Light" within the cab. The roll-up door, together with hinge friction, will secure the plate in place during driving operations.

A door guard will be provided to prevent tools inside the torque box from damaging the roll-up door.

DURA-SURF LADDER SLIDES

Black Dura-Surf friction reducing material will be added to the stainless steel slides, on the bottom horizontal surfaces, of the ladder storage rack.

PIKE POLES

There will be two (2) 12 foot pike pole(s) with fiberglass I-beam handles provided. The pike pole(s) will be stored in tubular holders located in the ground ladder storage compartment.

PIKE POLE 8 FT

There will be two (2) 8 foot pike pole(s) with fiberglass I beam handles provided. The pike pole(s) will be stored in tubular holders located in the ground ladder storage compartment.

PIKE POLE 6 FT

There will be two (2) 6 foot pike pole(s) with fiberglass I beam handles provided. The pike pole(s) will be stored in tubular holders located in the ground ladder storage compartment.

PIKE POLE 3 FT

There will be two (2) 3 foot pike pole(s) with fiberglass shaft and "D" handles shipped loose.

WARNING LABEL(S)

There will be one (1) label(s), indicating "NO STEP", provided cover by drivers side batteriesinside frame rail.

LABELS AND TAGS

one (1) ID label/tag will be provided. The label/tag will be black colored with contrasting lettering. The label/tag will be located AT THE REAR ABOVE AERIAL INLET LABEL and sized appropriately for the specified location(s). The label/tag will state the following "" TEST ONLY "".

LABEL

There will be two (2) label(s) provided basket and turntable with the following information " (4) PEOPLE MAX DRY AERIAL, (2) MAX WET AERIAL".

FEDERAL I.D. LABEL IN CAB

There will be an additional federal I.D. label installed IN THE CAB ON THE DRIVER SIDE ENGINE TUNNELLOWER SCUFFPLATE in the cab.

STEPS

A folding step will be provided on the front of each fender compartment for access to the hose bed. 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. The step can be used as a hand hold with two openings wide enough for a gloved hand.

Two (2) additional folding steps will be located One each side front body bulkhead.. The step(s) will be bright finished, non-skid luminescent folding type. The luminescent coating is rechargeable from any light source and can hold a charge for up to 24 hours. The step(s) can be used as a hand hold with two openings wide enough for a gloved hand.

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.

STIRRUP STEPS WITH TREAD GRIP

There will be one (1) stirrup style steps with cable hanger and tread grip rung provided. The step will be installed under the PS pump panel in place of the strirup step that is used as standard..

PUMP

Pump will be a Waterous CSU, 2000 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 a 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 each side of the pump panel, upper area of dunage area match 27153 see photos.
These lights will be activated with the main thermal valve indicator light on the pump panel.

PUMP WITNESS
A witness of the functionality of the pump will be provided at final inspection. This will be a detailed test where the pump is run at full capacity. This will also include a trip to the quarry to flow water through the aerial waterway at full capacity.

Assistance will be provided by plumbing personnel at the time of inspection.

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 outlet plumbing, 4.00" and smaller, will be plumbed with either stainless steel pipe or synthetic rubber hose reinforced with hi-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 PUMP INLET CAP, 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 caps are not on the apparatus as manufactured. The fire department will provide both caps for the main pump inlets.

VALVES
All ball valves will be Akron® Brass. 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.
Valves will have a **ten (10) year** warranty.

LEFT SIDE INLET
On the left side pump panel will be one (1) - 2.50" auxiliary inlet, terminating in 2.50" National Standard Hose Thread.
The auxiliary inlet will be provided with a strainer, chrome swivel and plug.
The location of the valve for the one (1) inlet will be recessed behind the pump panel.

INLET CONTROL
Control for the side auxiliary inlet(s) will be located at the inlet valve.

INLET BLEEDER VALVE
A 0.75" 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.

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

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

LARGE DIAMETER DISCHARGE OUTLET
There will be a 5.00" discharge outlet with a 4.00" Akron valve installed on the right side of the apparatus, terminating with a 5.00" (M) 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 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 an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

OUTLET BLEEDERS
A 0.75" 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.

LEFT SIDE OUTLET ELBOWS
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 Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

RIGHT SIDE OUTLET ELBOWS
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 Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

LARGE DIAMETER OUTLET ELBOWS
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.

AERIAL OUTLET
The aerial waterway will be plumbed from the pump to the water tower line with 5.00" pipe and a 3.50" Waterous valve.

The control for the waterway valve will be located at the pump operator's panel.

A pin indicator will be provided to show when the valve is in the "open" or "closed" position.

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

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 supports both the fire pump and the side running boards.

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

Pump compartment, pump, plumbing and gauge panels will be removable from the chassis in 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.

LEFT SIDE PUMP CONTROL PANELS
All pump controls and gauges will be located at the left (driver's) side of the apparatus and properly identified. Layout of the pump control panel will be ergonomically efficient and systematically organized.

The pump operator's control panel will be removable in two (2) main sections for ease of maintenance:

The upper section will contain sub panels for the mounting of the pump pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable). Sub panels will be removable from the face of the pump panel for ease of maintenance. Below the sub panels will be located all valve controls and line pressure gauges.

The lower section of the panel will contain all inlets, outlets, and drains.

All push/pull valve controls will have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods will be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls will be capable of locking in any position. The control rods will pull straight out of the panel and will be equipped with universal joints to eliminate binding.

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

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

All line pressure gauges will be mounted directly above the corresponding discharge control tee handles and recessed within the same chrome plated casting as the rod guide for quick identification. The gauge and rod guide casting will be removable from the face of the pump panel for ease of maintenance. The casting will be color coded to correspond with the discharge identification tag.

All remaining identification tags will be mounted on the pump panel in chrome plated bezels.

The pump panel on the right (passenger's) side will be removable with lift and turn type fasteners.

Trim rings will be installed around all inlets and outlets.

The trim rings for the side discharge outlets will be color coded and labeled to correspond with the discharge identification tag.

PUMP PANEL CONFIGURATION
The pump panel configuration will be arranged and installed in an organized manner that will provide user-friendly operation.

PUMP OPERATOR'S PLATFORM
A pull out, flip down platform will be provided at the pump operator's control panel.

The front edge and the top surface of the platform will be made of DA finished aluminum with a Morton Cass insert:

The platform will be approximately 13.75" deep when in the stowed position and approximately 22.00" deep when extended. The platform will be 35.00" wide. The platform will lock in the retracted and the extended position.

The platform will be wired to the "step not stowed" indicator in the cab.

PUMP OPERATOR'S PLATFORM PERIMETER LIGHT

There will be an Amdor LumaBar H2O, Model AY-9500-020, 20.00" white 12 volt DC LED strip light provided to illuminate the ground area.

PUMP AND GAUGE PANEL

The pump and gauge panels will be constructed of aluminum with a black vinyl finish. A polished aluminum trim molding will be provided around each panel.

The passenger's side pump panel 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.

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

Also provided at the pump panel will be the following:
- Master Pump Drain Control

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.

VACUUM AND PRESSURE GAUGES

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.

LIGHT SHIELD

There will be a polished, 16 gauge stainless steel light shield installed over the pump operators panel.

- There will be 12 volt DC white LED lights installed under the stainless steel light shield to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights will be activated by the pump panel light switch. Additional lights will be included every 18.00" depending on the size of the pump house.

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

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

There will be a green pump engaged indicator light activated on at the operator's panel when the pump is shifted into gear from inside the cab.

ADDITIONAL STEP/LIGHT SHIELD

There will be an additional aluminum treadplate stepping surface no less than 8.00" deep and properly reinforced to support a man's weight, installed over the driver's side pump panel.

- There will be 12 volt DC white LED lights installed under the step to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights will be activated by the pump panel light switch. Additional lights will be included every 18.00" depending on the size of the pump house.

There will be one (1) white LED, step light provided above the step. In order to ensure exceptional illumination, each step 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 step light will be activated by the pump panel light switch.

ADDITIONAL STEP/LIGHT SHIELD

There will be an additional aluminum treadplate stepping surface no less than 8.00" deep and properly reinforced to support a man's weight, installed over the passenger's side pump panel.

- There will be 12 volt DC white LED lights installed under the step to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights will be activated by the pump panel light switch. Additional lights will be included every 18.00" depending on the size of the pump house.

There will be one (1) white LED, step light provided above the step. In order to ensure exceptional illumination, each step light will provide a minimum of 25 foot-candles (fc) covering an entire 15.00" x 15.00" square placed 10.00" below the light and a minimum of 1.5 fc covering an entire 30.00" x 30.00" square at the same 10.00" distance below the light. The step light will be activated by the pump panel light switch.

AIR HORN SYSTEM

Two (2) Buell air horns will be provided and located in the front bumper, recessed outside the frame rail drivers 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.

AIR HORN VALVE

The air horn valve will be mounted 2.00" higher than standard on the front engine cross member.

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.

The speaker(s) will be recessed in the front bumper on the passenger's side.

AUXILIARY MECHANICAL SIREN
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 WIII be actuated by a push button located on the officer's side instrument panel and by a foot switch on the driver's side.

CAB ROOF LIGHTBAR
There will be two (2) 24.00" Whelen LED lightbars mounted on the cab roof, one (1) on each side, above the driver's and passenger's door.
The driver's side lightbar will include the following:

- One (1) red flashing LED module in the outside end position.
- One (1) red flashing semi circle LED module in the outside front corner position.
- One (1) red flashing LED module in the front position.
- One (1) red flashing semi circle LED module in the inside front corner position.

The passenger's side lightbar will include the following:

- One (1) red flashing semi circle LED module in the inside front corner position.
- One (1) red flashing LED module in the front position.
- One (1) red flashing semi circle LED module in the outside front corner position.
- One (1) red flashing LED module in the outside end position.

The color of the lenses will be clear.
The lightbars will be controlled by one (1) switch located in the cab on the switch panel.
The red flashing LED module in the outside end positions and front positions may be load managed when the parking brake is applied.

FRONT ZONE UPPER LIGHTING, PLATFORM
Two (2) Whelen model M6R, red flashing LED lights will be located at the front of the platform basket facing forward. The color of the lenses will be clear.
These lights are required to meet or exceed the NFPA Front upper zone optical warning light requirements.
These lights will be deactivated when the ladder is lifted from the stowed position.
The lights will be controlled by the same switch as the lightbars. The rocker switch will be provided on the cab instrument panel.
The lights will be located mounted on frontof the basket and be provided with with a flange.

ADDITIONAL WARNING LIGHTS
There will be two (2) Whelen, Model M6* LED flashing warning light(s) that include a chrome flange, located on the basket, Side of the basket.
The color of these lights will be blue and include a lens that is clear.
The light(s) will be activated with the roof light switch and be deactivated when the boom is lifted out of the cradle.
The additional warning light(s) may be load managed if colored or will be deactivated if white, when the parking brake is set.

ADDITIONAL WARNING LIGHTS

There will be two (2) Whelen, Model M7* LED flashing warning light(s) that include a chrome flange, located on the basket, Front cornersof the basketside.
The color of these lights will be red and include a lens that is clear.
The light(s) will be activated with the roof light switch and be deactivated when the boom is lifted out of the cradle.
The additional warning light(s) may be load managed if colored or will be deactivated if white, when the parking brake is set.

COVER, TRAFFIC LIGHT CONTROLLER

There will be an aluminum treadplate cover provided over the Opticom traffic light controller for protection.

TRAFFIC LIGHT CONTROLLER

There will be a GTT, Model 792* strobe Opticom traffic light controller with national standard high priority remote mounted on the front edge of the platform basket, front of the platform tread plate cover.
The Opticom traffic light controller will be activated by a cab switch with emergency master control.
The Opticom traffic light controller will have no momentary activation switch.
The Opticom traffic light controller will be disabled when the parking brake is applied.

CAB FACE WARNING LIGHTS

There will be two (2) Whelen, Model M6*C, LED flashing warning lights with chrome flange provided on the front of the cab above the headlights.

- The driver's side front warning light to be blue.
- The passenger's side front warning light to be blue.

Both lights will include a clear lens.
There will be a switch located in the cab on the switch panel to control the lights.

FRONT WARNING LIGHT

There will be two (2) Whelen, Model M6*, LED flashing light(s) with chrome trim provided below the the headlightsas shown on the drawing.
The color of the light(s) will be red.
The color of the lens will be clear.
The light(s) will be activated with the front warning switch.
These light may be load managed if colored or disabled if white when the parking brake is applied.
Any white light will be disabled and any amber light activated when the parking brake is applied.

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, one each side between crew cab door and rear of cab.
    - The side middle lights to be blue.
- Two (2) lights, one each side on the rear fender pannels.
    - 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.

SIDE WARNING LIGHTS

There will be four (4) Whelen, Model 3S*00F*R LED flashing lights provided.
The lights will be located cab and crew doors lower edge on each door.
The color of the lights will be red.
The color of the lenses shall be clear.
The lights will be with a Whelen, Model 3FLANGEC surface mount chrome flange.
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 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 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 red.
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.

REAR WARNING LIGHT BRACKETS
There will be one (1) pair of fabricated brackets provided. The brackets will be formed to support a pair of upper zone lights see photo lights.The brackets will be installed at the rear of the body.
The brackets will be fabricated out of aluminum treadplate.

REAR WARNING LIGHTS
There will be two (2) Whelen®, Model M6*C, LED flashing warning light(s) with bezel(s) provided One each side upper bodybulkhead.
The color of these light(s) will be blue.
These light(s) will be controlled with the rear upper warning switch.
These light(s) will include a lens that is clear.

REAR/SIDE ZONE UPPER WARNING LIGHTS
There will be two (2) Whelen®, Model L31H*FN, LED warning beacons provided at the rear of the truck, located one (1) each side. There will be a switch located in the cab on the switch panel to control the beacons.
The color of the lights will be red LEDs with both domes red.

TRAFFIC DIRECTING LIGHT
There will be one (1) Whelen model TAM85, 46.00" 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 mounted on top of the body below the turntable with a treadplate box at the rear of the apparatus.
The traffic directing light controller will be located within the overhead recessed console above the engine tunnel on the driver's side.

ELECTRICAL SYSTEM GENERAL DESIGN FOR ALTERNATING CURRENT
The following guidelines will apply to the 120/240 VAC system installation:

General
Any fixed line voltage power source producing alternating current (ac) line voltage will produce electric power at 60 cycles plus or minus 5 cycles.

Except where superseded by the requirements of NFPA 1901, all components, equipment and installation procedures will conform to NFPA 70, National Electrical Code (herein referred to as the NEC).

Line voltage electrical system equipment and materials included on the apparatus will be listed and installed in accordance with the manufacturer's instructions. All products will be used only in the manner for which they have been listed.

Grounding
Grounding will be in accordance with Section 250-6 "Portable and Vehicle Mounted Generators" of the NEC. Ungrounded systems will not be used. Only stranded or braided copper conductors will be used for grounding and bonding.

An equipment grounding means will be provided in accordance with Section 250-91 (Grounding Conductor Material) of the NEC.

The grounded current carrying conductor (neutral) will be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor will be colored white or gray in accordance with Section 200-6 (Means of Identifying Grounding Conductors) of the NEC.

In addition to the bonding required for the low voltage return current, each body and driving or crew compartment enclosure will be bonded to the vehicle frame by a copper conductor. This conductor will have a minimum amperage rating of 115 percent of the nameplate current rating of the power source specification label as defined in Section 310-15 (amp capacities) of the NEC. A single conductor properly sized to meet the low voltage and line voltage requirements will be permitted to be used.

All power source system mechanical and electrical components will be sized to support the continuous duty nameplate rating of the power source.

Operation

Instructions that provide the operator with the essential power source operating instructions, including the power-up and power-down sequence, will be permanently attached to the apparatus at any point where such operations can take place. Provisions will be made for quickly and easily placing the power source into operation. The control will be marked to indicate when it is correctly positioned for power source operation. Any control device used in the drive train will be equipped with a means to prevent the unintentional movement of the control device from its set position.

A power source specification label will be permanently attached to the apparatus near the operator's control station. The label will provide the operator with the information detailed in Figure 19-4.10.

Direct drive (PTO) and portable generator installations will comply with Article 445 (Generators) of the NEC.

Overcurrent protection

The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device will not exceed 144.00" (3658 mm) in length.

For fixed power supplies, all conductors in the power supply assembly will be type THHW, THW, or use stranded conductors enclosed in nonmetallic liquid tight flexible conduit rated for a minimum of 194 degree Fahrenheit (90 degrees Celsius).

For portable power supplies, conductors located between the power source and the line side of the main overcurrent protection device will be type SO or type SEO with suffix WA flexible cord rated for 600-volts at 194 degrees Fahrenheit (90 degrees Celsius).

Wiring Methods

Fixed wiring systems will be limited to the following:

- Metallic or nonmetallic liquid tight flexible conduit rated at not less than 194 degrees Fahrenheit (90 degrees Celsius)
- or
- Type SO or Type SEO cord with a WA suffix, rated at 600 volts at not less than 194 degrees Fahrenheit (90 degrees Celsius)

Electrical cord or conduit will not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring. In addition the wiring will be run as follows.

- Separated by a minimum of 12.00" (305 mm), or properly shielded, from exhaust piping
- Separated from fuel lines by a minimum of 6.00" (152 mm) distance

Electrical cord or conduit will be supported within 6.00" (152 mm) of any junction box and at a minimum of every 24.00" (610 mm) of continuous run. Supports will be made of nonmetallic materials or corrosion protected metal. All supports will be of a design that does not cut or abrade the conduit or cable and will be mechanically fastened to the vehicle.

Wiring Identification
All line voltage conductors located in the main panel board will be individually and permanently identified. The identification will reference the wiring schematic or indicate the final termination point. When prewiring for future power sources or devices, the unterminated ends will be labeled showing function and wire size.

Wet Locations
All wet location receptacle outlets and inlet devices, including those on hardwired remote power distribution boxes, will be of the grounding type provided with a wet location cover and installed in accordance with Section 210-7 "Receptacles and Cord Connections" of the NEC.

All receptacles located in a wet location will be not less than 24.00" (610 mm) from the ground. Receptacles on off-road vehicles will be a minimum of 30.00" (762 mm) from the ground.

The face of any wet location receptacle will be installed in a plane from vertical to not more than 45 degrees off vertical. No receptacle will be installed in a face up position.

Dry Locations
All receptacles located in a dry location will be of the grounding type. Receptacles will be not less than 30.00" (762 mm) above the interior floor height.

All receptacles will be marked with the type of line voltage (120-volts or 240-volts) and the current rating in amps. If the receptacles are direct current, or other than single phase, they will be so marked.

Listing
All receptacles and electrical inlet devices will be listed to UL 498, Standard for Safety Attachment Plugs and Receptacles, or other appropriate performance standards. Receptacles used for direct current voltages will be rated for the appropriate service.

Electrical System Testing
The wiring and associated equipment will be tested by the apparatus manufacturer or the installer of the line voltage system.

The wiring and permanently connected devices and equipment will be subjected to a dielectric voltage withstand test of 900-volts for one (1) minute. The test will be conducted between live parts and the neutral conductor, and between live parts and the vehicle frame with any switches in the circuit(s) closed. This test will be conducted after all body work has been completed.

Electrical polarity verification will be made of all permanently wired equipment and receptacles to determine that connections have been properly made.

Operational Test per Current NFPA 1901 Standard
The apparatus manufacturer will perform the following operation test and ensure that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order. The test will be witnessed and the results certified by an independent third-party certification organization.

The prime mover will be started from a cold start condition and the line voltage electrical system loaded to 100 percent of the nameplate rating.

The power source will be operated at 100 percent of its nameplate voltage for a minimum of two (2) hours unless the system meets category certification as defined in the current NFPA 1901 standard.

Where the line voltage power is derived from the vehicle's low voltage system, the minimum continuous electrical load as defined in the current NFPA 1901 standard will be applied to the low voltage electrical system during the operational test.

GENERATOR
The apparatus will be equipped with a complete electrical power system. The generator will be a Harrison Model MCR Stealth 10.0 kW Hydraulic unit. The wiring and generator installation will conform to the present National Electrical Codes Standards of the National Fire Protection Association. The installation will be designed for continuous operation without overheating and undue stress on components.

Generator Performance
- Continuous Duty Rating: 10,000 watts

- Nominal Volts: 120/240
- Amperage: 80 @ 120 volts, 40 @ 240 volts
- Phase: Single
- Cycles: 60 hertz
- Engine Speed at Engagement: Idle
- RPM range: 900 to 3,000 (hydraulic pump)

The output of the generator will be controlled by an internal hydraulic system. An electrical instrument gauge panel will be provided for the operator to monitor and control all electrical operations and output.
The generator will be driven by a transmission power take off unit, through a hydraulic pump and motor.
The generator will include an electrical control inside the cab. The hydraulic engagement supply will be operational at any time (no interlocks).
An electric/hydraulic valve will supply hydraulic fluid to the clutch engagement unit provided on the chassis PTO drive.

Generator Instruments and Controls
To properly monitor the generator performance a digital meter panel will be furnished and mounted next to the circuit breaker panel. The meter will indicate the following items:
- Voltage
- Amperage for both lines
- Frequency
- Generator run hours
- Over current indication
- Over temperature indication
- "Power On" indication
- Two (2) fuse holders with two (2) amp fuses (for indicator light protection)

The meter and indicators will be installed near eye level in the compartment. Instruments will be flush mounted in an appropriate sized weatherproof electrical enclosure. All instruments used will be accurate within +/- two (2) percent.

Generator Wiring:
The system will be installed by highly qualified electrical technicians to assure the required level of safety and protection to the fire apparatus operators. The wiring, electrical fixtures and components will be to the highest industry quality standards available on the domestic market. The equipment will be the type as designed for mobile type installations subject to vibration, moisture and severe continuous usage. The following electrical components will be the minimum acceptable quality standards for this apparatus:

Wiring:
All electrical wiring will be fine stranded copper type. The wire will be sized to the load and circuit breaker rating; ten (10) gauge on 30 amp circuits, 12 gauge on 20 amp circuits and 14 gauge on 15 amp circuits. The cable will be run in corner areas and extruded aluminum pathways built into the body for easy access.

Load Center:
The main load center will be a Cutler Hammer with circuit breakers rated to load demand.

Circuit Breakers:
Individual breakers will be provided for all on-line equipment to isolate a tripped breaker from affecting any other on-line equipment.

GENERATOR LOCATION
The generator will be mounted in the Drivers side cargo area. The flooring in this area will be either reinforced or constructed in such a manner that it will handle the additional weight of the generator.

GENERATOR START
There will be a switch provided on the cab instrument panel to engage the generator.

CIRCUIT BREAKER PANEL
The circuit breaker panel will be located D-4 up high as possible.

SPARE CIRCUIT BREAKER
The circuit breaker panel will be furnished with two (2) circuit breakers, 120 volt 20 amp, provided as spares.

DIGITAL METER PANEL
The generator meter panel will be installed driver side cargo side sheet- see photo in place of the standard location. The digital meter panel will be on anytime the generator is running (no green indicator light is required).

ELECTRIC CORD REEL

Furnished with the 120-volt AC electrical system will be an Akron cord reel. The reel will be provided with a 12-volt electric rewind switch that is guarded to prevent accidental operation and labeled for its intended use. The switch will be protected with a fuse and installed at a height not to exceed 72.00" above the operators standing position.
The reel will be capable holding 12/3, 600-volt cable or 10/3, 600-volt cable.
The exterior finish of the reel(s) will be powder coated silver from the reel manufacturer.
A Nylatron guide to be provided to aid in the payout and loading of the reel. A ball stop will be provided to prevent the cord from being wound on the reel.
A label will be provided in a readily visible location adjacent to the reel. The label will indicate current rating, current type, phase, voltage and total cable length.
A total of two (2) cord reels will be provided D-5 and P-5- junction must fit in the compartment swith cord reels.
The cord reel should be configured with three (3) conductors.

Reel Warranty

The electric reel will come with a **five (5)-year** warranty provided by the reel manufacturer.

CORD

There will be 200 feet of Carol Super Vu-Tron II yellow 12/3 electrical cord provided for electrical distribution.
The cord will be provided with a Fire Power connector.
A total of two (2) will be provided.

PORTABLE JUNCTION BOX

There will be four (4)-120 vac 20-amp, Fire Power receptacles, and a locator/indicator light provided in an outlet box. The junction box construction will be weatherproof and have flip-up covers lined with soft neoprene rubber at each outlet opening. The junction box will be a Circle-D, model PF-51G-FP.
A total of two (2) will be provided.

20 AMP RECEPTACLE

Wired to the power supply will be two (2) receptacles that are a Fire Power, Model FP-11, 120-volt 20 amp three (3) prong type with weather resisting cover located (1) on the passenger side rear and 9 1) on the the driver side front bumper extension.

THREE SECTION 100 FOOT AERIAL PLATFORM

GENERAL INFORMATION

It is the intent of these specifications to describe a telescoping, elevating platform. The unit will consist of a three (3) section, aluminum ladder with a self-leveling basket attached, to the ladder fly section.

OPERATION ON GRADES

The aerial unit will be capable of operating safely, on any slope up to 10 degrees at full capacities. (Operation beyond this limit will be at the operator's discretion.)

CONSTRUCTION STANDARDS

The ladder will be constructed to meet all of the requirements as described in the current edition of NFPA 1901 standards. Some portions of this specification exceed minimum NFPA recommendations. They will be considered a minimum requirement to be met.

A safety factor of 2:1 is required for environmental loading (wind plus .25" of ice build-up). This structural safety factor will apply to all structural aerial components including turntable and torque box stabilizer components. Definition of the structural safety factor will be as outlined in NFPA standards:
DL = Dead load stress. Stress produced by the weight of the aerial device and all permanently attached components.
RL = Rated capacity stress. Stress produced by the rated capacity load of the ladder.
WL = Water load stress. Stress produced by nozzle reaction force and the weight of water in the water delivery system.
FY = Material yield strength. The stress at which material exhibits permanent deformation.
2.25 x DL + 2.25 x RL + 2.25 x WL equal to/less than FY. The minimum NFPA specification is exceeded here by providing a safety factor above 2:1 while flowing water.

2.0 x DL + 2.0 x RL + 2.0 x WL + 2.0 x wind loading equal to/less than FY.
The RL is reduced with a .25" ice build up to maintain a minimum 2:1 structural safety factor.

An independent engineering firm will verify the aerial safety factor. Design verification will include computer modeling and analysis, and extensive strain gauge testing witnessed by an independent registered professional engineer. Verification will include written certification from the independent engineering firm made available by the manufacturer upon request from the purchaser.

All welding of aerial components, including the aerial ladder sections, turntable, pedestal, and outriggers will be performed by welders who are certified to American Welding Society (AWS) standards. The weldment assemblies of each production unit will be tested visually and mechanically by an ASNT certified level II non-destructive test technician to comply with NFPA standards. Testing procedures will conform to the AWS standards guide for non-destructive testing. Test methods may include dye penetrant, ultrasound, and magnetic particle where applicable.

LADDER CONSTRUCTION

The ladder will be comprised of three (3) sections and will extend to a nominal height, of 100 feet above the ground, as measured by 1901 recommendations.
The ladder will be designed to provide continuous egress for firefighters and civilians from an elevated position to the ground. To insure a high strength to weight ratio and an inherent corrosion resistance, the aerial ladder will be completely constructed of high-strength aluminum. All side rails, rungs, handrails, uprights, and K braces will be made of structural 6061T6 alloy aluminum extrusions.
All material will be tested and certified by the material supplier. All ladder sections will be semi-automatically welded by shielded arc welding methods using 5356 aluminum alloy welding wire. Structural rivets or bolts will not be utilized in the ladder weldment sections.
The aerial ladder will consist of three (3) welded, extruded aluminum telescopic ladder sections. Each ladder section will consist of two (2) extruded aluminum side rails and a combination of aluminum rungs, tubular diagonals, verticals and two (2) full-length handrails. The rungs on all sections will be K braced for maximum lateral stability. This K bracing will extend to the center of each rung to minimize ladder side deflection.
The ladder rungs will be designed to eliminate the need to replace rubber-rung covers. The rungs will be spaced on 14.00" centers and have an integral skid-resistant surface as outlined in NFPA standards. An oval shaped rung will be utilized to provide a larger step surface at low angles and more comfortable grip at elevated positions. The minimum design load will be 500 lbs. distributed over a 3.50" wide area as outlined in NFPA standards.
Each aerial ladder section will have heat sensor labels that are preset to 300 degrees Fahrenheit with expiration year. The heat labels will meet NFPA standards.
The aerial ladder will exceed NFPA standards governing the minimum ladder section width and handrail height:
- Base section: 42.38" wide x 36.00" high
- Mid-section: 32.63" wide x 31.25" high
- Fly section: 24.00" wide x 27.38" high

VERTICAL HEIGHT

The ladder will extend to a minimum height of 100' above the ground at full extension and elevation. The measurement of height will be consistent with NFPA standards.

HORIZONTAL REACH

The rated horizontal reach will be 91'9". The measurement of horizontal reach will be consistent with NFPA standards.

OPERATION RANGE

The operating range of the ladder will be 11.5 degrees below horizontal (10 degrees with deep notch cab) to 76 degrees above horizontal with the truck in a level position.

The aerial will be capable of rotating from side-to-side around the back of the truck, encompassing up to 235 degrees of continuous rotation (depending on equipment and where it is located), while the aerial device remains at 11.5 degrees below horizontal (10 degrees with a deep notch cab). This will ensure that the platform stepping surface does not exceed the NFPA recommended maximum step height during a continuous rotation of up to 235 degrees.

MOUNTING OF ELEVATING PLATFORM

The aerial device will be rear mounted, to a torque box, on the truck chassis. Midship mounted aerial devices will not be acceptable.

TORQUE BOX

A "torsion box" subframe will be installed between the two sets of stabilizers. The torque box will be constructed of a minimum .312" steel plate (50,000 pounds per square inch yield) with steel tubing reinforcement, on each side of the box, in the turntable area. The dimensions of the torque box will be 41.00" wide x 29.00" high x 247.63" long. There will be a 1/2" gap between the torque box and the frame rails to promote drying of the surfaces and reduce the effect of corrosion.

The torque box subframe assembly will be capable of withstanding all torsional and horizontal loads when the unit is on the stabilizers. The torque box will be bolted to the chassis frame rails using thirty-six .750" SAE grade 8 bolts with nuts.

TURNTABLE

The turntable will be a 1.00" thick aluminum deck, covered with a non-skid, chemical resistant material in the walking areas. The stepping surfaces will meet the skid-resistance requirements of the current NFPA 1901 standard.
The turntable will be lighted by a minimum of two (2) LED strip lights activated by the aerial master switch.
The turntable will measure 88.50" long x 87.88" wide. The turntable will include an enclosure for the hydraulic valves and rotation motor, which will also serve as a step, for access to the ladder.
The turntable handrails will be a minimum 42.00" high and will not increase the overall travel height of the vehicle. The handrails will be constructed out of aluminum and have a slip resistant knurled surface.
The upper turntable assembly will connect the aerial ladder to the turntable bearing. The steel structure will have a mounting position for the aerial elevation cylinders, ladder connecting pins, and upper turntable operator's position.
A 54.24" diameter turntable bearing with a 3.25" drive gear face will be bolted to the top of the bearing mounting plate with .88" diameter Grade 8 plated bolts. The gear teeth will be stub tooth form. The rated overturning moment of the turntable bearing will be a minimum of 441,400 ft. lbs.

ELEVATION SYSTEM

Dual 7.00" diameter elevating cylinders will be mounted on the underside of the base section of the ladder. Two (2) 2.50" diameter stainless steel pins will fasten the cylinder to the turntable and fasten to the ladder. The pins will have 125,000 psi minimum yield strength and will be secured with .50" Grade 8 bolts with lock nuts. The bolts are to ensure that the pins do not walk out of the mounting brackets on the turntable and base section.
The elevating cylinders will be mounted utilizing maintenance-free spherical bearings on both ends of the cylinders. The aerial base pivot bearings will be maintenance-free type bearings with no external lubrication required. The cylinders will function only to elevate the ladder and not as a structural member to stabilize the ladder side movement. The elevating cylinders will be provided with pilot-operated check valves on the barrel and rod side of the piston to prevent movement of the ladder in case of a loss of hydraulic pressure.
The operation envelope will be 11.5 degrees below horizontal (10 degrees with a deep notch cab) to 76 degrees above horizontal.
The elevation system will be designed following NFPA standards. The elevation hydraulic cylinders will incorporate cushions on the upper limit of travel.
The lift cylinders will be equipped with integral holding valves located in the cylinder to prevent the unit from descending should the charged lines be severed, at any point within the hydraulic system and to maintain the ladder in the bedded position during road travel. The integral holding valves will NOT be located in the transfer tubes.
The elevation system will be controlled by the microprocessor. The microprocessor will provide the following features:
- Collision avoidance of the elevation system to prevent accidental body damage
- Automatic deceleration when the aerial device is lowered into the cradle
- Automatic deceleration at the end of stroke, in maximum raise and lower positions
- Deceleration of the aerial device at the limits of travel

EXTENSION/RETRACTION SYSTEM

A hydraulically powered, extension and retraction system will be provided through dual hydraulic cylinders and wire ropes. Each set will be capable of operating the ladder in the event of a failure, of the other. For safety, systems that use only a single extension/retraction system will not be acceptable. The extension cylinder rod will be chrome plated to provide smooth operation of the aerial device and reduce seal wear. The extension/retraction cylinders will be equipped, with integral holding valves, to prevent the unit from retracting should the charged line be severed, at any point within the hydraulic system. The integral holding valves will NOT be located in the transfer tubes.
Wire ropes and attaching systems used to extend and retract the fly sections will have a 5:1 safety factor based on the ultimate strength under all operating conditions. The factor of safety for the wire rope will remain above 2:1 during any extension or retraction stall. The minimum ratio of the diameter of wire rope used to the diameter of the sheave used will be 1:12. Wire ropes will be constructed of seven (7) strands over an inner wire for increased flexibility. The wire rope will be galvanized to reduce corrosion.
The ladder assembly will consist of three (3) separate weldments that will extend and retract within each other. Nylatron PAG + OIL slide pads will be utilized between each section to minimize friction. Four (4) T type interlocking load transfer stations will enclose the slide pads. The transfer stations will be located at the upper portion of the base and second ladder sections. Additional guide pads will be located along the aerial section to guide the ladder during retraction and extension.
The extension/retraction system will be controlled by the microprocessor. The microprocessor will provide the following features:
- Automatic deceleration at the end of stroke, in maximum extend and retract positions
- Controls the rate of retraction while flowing water
All sheaves will be greaseless and all sheave pins and pivot pins will be polished stainless steel.

ROTATION SYSTEM

The aerial will be supplied with a powered rotation system as outlined in NFPA standards. The hydraulic rotation motor will provide continuous rotation under all rated conditions and be supplied with a brake to prevent unintentional rotation. Two (2) hydraulically driven, planetary gear boxes with drive speed reducers will be used to provide infinite and minute rotation control throughout the entire rotational travel. Two (2) spring applied, hydraulically released disc type swing brakes will be furnished to provide positive braking of the turntable assembly. Provisions will be made for emergency operation of the rotation system should complete loss of normal hydraulic power occur. The hydraulic system will be equipped with pressure relief valves which will limit the rotational torque to a nondestructive power. The gearbox will have a minimum continuous torque rating of 60,000 in. lbs. and a minimum intermittent rating of 130,000 in. lbs. The turntable bearing, ring gear teeth, pinion gear, planetary gearbox, and output shaft will be certified by the manufacturer of the components for the application.

The rotation system will be controlled by the microprocessor. The microprocessor will provide the following features:

- Envelope control of rotation system to prevent accidental body damage
- Prevent the aerial from being rotated into an unstable condition

MANUAL OVERRIDE CONTROLS

Manual override controls will be provided for all aerial and stabilizer functions.

LADDER SLIDE MECHANISM

Wear pads will be used between the telescoping ladder sections, to reduce friction for smoother operation. Slide pads will also be used to control side play between the ladder sections.

BASKET LEVELING SYSTEM

A basket leveling system will be provided and so designed, that the basket with its rated load, can be supported and maintained level, relative to the horizontal, regardless of the elevation or flexion of the ladder.

Basket leveling will be accomplished by hydraulic circuitry that is independent from the main hydraulic system. The leveling of the basket features a dual master/slave hydraulic cylinder system, with each side capable of supporting the load, while maintaining the basket level. Two (2) master cylinders are mounted between the turntable and the base ladder section, with two (2) slave cylinders mounted between the ladder fly section and the basket. The slave and master cylinders are synchronized, so as the ladder is raised or lowered, exact amounts of hydraulic fluid are transferred between the master and slave cylinders thus maintaining the basket level.

The hydraulic circuitry includes pressure operated counter balance valves, on the load side of the slave cylinders, to prevent the basket from tipping should the hydraulic lines be severed.

A momentary switch is provided, on the cab instrument panel, to level the basket should this become necessary due to ambient temperature changes. It is not necessary to start the engine and activate the main hydraulic system to level the basket.

The basket leveling system will be manually adjustable from 10 degrees below horizontal to 10 degrees above horizontal. Manual basket leveling switches will be provided at the turntable and basket.

ROTATION INTERLOCK

The microprocessor will be used to prevent the rotation of the aerial device to the side in which the stabilizers have not been fully deployed (short-jacked). The microprocessor will allow full and unrestricted use of the aerial, in the 180 degree area, on the side(s) where the stabilizers have been fully deployed. The system will also have a manual override, to comply with NFPA 1901.SYSTEMS THAT PERMIT THE AERIAL TO ROTATE TO THE "SHORT JACK" SIDE, WITHOUT AUTOMATICALLY STOPPING THE ROTATION AND/OR WITHOUT ACTUATION OF THE "MANUAL OVERRIDE", will NOT BE ACCEPTED. SYSTEMS THAT ONLY INCLUDE AN ALARM ARE NOT CONSIDERED AN INTERLOCK AND will NOT BE ACCEPTED.

LOAD CAPACITIES

The following load capacities will be established with the stabilizers at full horizontal extension and placed in the down position to level the truck and to relieve the weight from the tires and axles. Capacities will be based upon full extension and 360 degree rotation.

A load chart will be visible at the operator's station. The load chart will show the recommended safe load at any condition of the aerial device's elevation and extension. The ratings in the unsupported, fully extended configuration (in addition to 100 lbs. of equipment mounted at the tip) will maintain a 2:1 safety factor with a 35 mph wind.

The aerial device will have a rated capacity of 1000 lbs. consistent with standards. The rated capacity will include 1000 lbs. in personnel allowance and 100 lbs. for equipment mounted at the tip of the ladder. The aerial device will be rated in multiple configurations as outlined in NFPA standards.

35 MPH

Degrees of Elevation	-11.5 to 29*	30 to 39	40 to 49	50 to 76
Basket	1000	1000	1000	1000
Fly Tip	-	250	500	750
Mid Tip	-	250	500	750
Base	250	500	1000	1000

WIND CONDITIONS/WATERWAY DRY

* -10 degrees with deep notch cab

35 MPH CHARGED

Degrees of Elevation	-11.5 to 29*	30 to 39	40 to 49	50 to 76
Basket	500	500	500	500
Fly Tip	-	250	500	750
Mid Tip	-	250	500	750
Base	-	500	750	750

WIND CONDITIONS/WATERWAY

* -10 degrees with deep notch cab

Reduced loads at the fly can be redistributed to the mid or base sections as needed.

The aerial device will be able to maintain the above load capacities while flowing up to 1500 GPM and a nozzle position of 0 to 90 degrees to either side of the ladder centerline, as far above and below horizontal to the platform as nozzle design allows.

While flowing 1500 to 2000 GPM, the nozzle position will be limited to 45 degrees either side of the ladder centerline horizontal to the platform, 30 degrees above horizontal, and as far below horizontal to the platform as nozzle design allows.

Reduced loads in the basket can be redistributed in 250 lb. increments to the fly, mid, or base as needed.

LADDER CRADLE INTERLOCK SYSTEM

A ladder cradle interlock system will be provided through the microprocessor to prevent the lifting of the aerial device from the nested position until the operator places all the stabilizers in a load supporting configuration. A switch will be installed at the boom support to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

BOOM SUPPORT

A heavy-duty boom support, constructed of steel, is to be provided for support of the ladder in the travel position. The boom support will be bolted to the chassis frame as close to the front axle as design allows. On the base section of the ladder, a stainless steel scuffplate will be provided where the ladder comes into contact with the boom support.

MODIFICATION, TORQUE BOX

The torque box will be modified to accommodate the raised rear substructure.
The boom support will be located just to the rear of the chassis cab.

AERIAL BOOM PANEL

There will be one boom panel provided on each side of the aerial ladder base section. The boom panel will be painted # 10 White.

The boom panels will be designed so no mounting bolts are in the face of the panel. This will keep the lettering surface free of holes.

PIKE POLE MOUNTING BRACKETS

Mounting will be provided near the end of the fly section of the aerial ladder for one (1) pike pole(s).
The bracket will be sized to hold a Akron 6' pike pole.

LADDER STORAGE MOUNTING BRACKETS

There will be D/A finished brackets provided near the end of the fly section of the aerial for mounting a roof ladder.

The mounting brackets will accommodate a 14' Duo-Safety 875-A roof ladder as determined by the type of aerial device and the available space.

STOKES STORAGE BRACKETS

There will be one (1) aluminum bracket(s) provided at the base section of the aerial ladder on the left side of the aerial device while viewed from the turntable. The brackets will be located inboard of the aerial boom panel. The brackets will be D/A finished and include locking pins to secure the basket.

AXE MOUNTING BRACKETS

Brackets will be provided near the end of the fly section of the aerial ladder for mounting a fire axe. The mounting plates will be D/A finished aluminum.

BASKET STRUCTURE

The basket structure will be constructed of structural T6061 aluminum and integrated with the construction of the waterway to ensure a high strength-to-weight ratio. The aerial basket will be fully tested and independent third party certified.

The flooring and front decking of the basket will be multi-piece non-slip material, preventing the accumulation of water on the standing surface. The floor will measure approximately 37.19" long x 78.13" wide. The stepping surfaces will meet the skid-resistance requirements of current NFPA 1901 standard.

The outside basket steps will be at the same level as the basket floor. The steps on the front and sides are approximately 8.00" deep. The doors and front corners of the basket will be at 45 degrees to allow the basket to be maneuvered closer to buildings when approaching at an angle.

Four (4) stainless steel pompier belt safety loops will be attached to the inside of the basket. Two (2) lifting eyes will be provided on the bottom side of the basket support structure.

Two (2) rubber bumpers are provided on the bottom side of the basket structure for damage protection when setting it down on a surface.

The basket interior will be illuminated as required per the current edition of NFPA 1901. All hoses and wiring at the basket will be fully enclosed. Electrical sub-components will be mounted under the basket in a separate enclosure for easy servicing while maintaining an unobstructed basket interior.

BASKET SIDES

The sides of the basket will be of tubular aluminum construction and aluminum sheet skin with engine turned finish and, along with the basket doors, will form a continuous 42.00" high wall around the basket.

PLATFORM ENTRANCES/EXITS

Two (2) swing-in, spring-loaded, self-closing double pan doors will be of single pan aluminum construction with engine turned finish and will be provided on the 45 degree angles at the front of the platform. A paddle style door latch will allow the basket doors to be opened from the outside by applying pressure to the paddle with the hand. The rear of the basket will be equipped with a stainless steel vertical self-closing gate for transfer to and from the basket's ladder device.

Telescoping-type handrails will be provided as a banister to bridge the gap between the basket and the fly section at all elevations.

ACCESSORY MOUNTING RECEPTACLES

Two (2) universal accessory mounting receptacles will be permanently affixed on the front of the basket to receive the ***Lyfe*Line™** family of options such as the ***Lyfe*Support™** rescue basket holders, ***Lyfe*Eye™** rappelling arms, ***Lyfe*Ladder™** roof ladder brackets, ***Lyfe*Hoist™** winch, etc. Complete interchangeability will be required without modification to the basket.

HOSE BOX AT PLATFORM

There will be one (1) hose storage box(es) with a cover and rubber hood latch provided at the platform. The box(es) will be located at the right side of the basket when viewed from the turntable and will match the finish of the aerial device. The box(es) will be sized to fit 100' of 1.75" diameter hose.

BASKET HEAT SHIELDS

A heat reflective shield will be provided on the front, sides and bottom of the basket.
The double pan basket access doors will form the heat shield at the front of the basket. The side heat shields will be formed by a single sheet of .063 aluminum.

Full under the basket heat shield protection, with a non-glare finish, will be provided with a swing-down door for ease of servicing.

INFORMATION CENTER

There will be an information center provided. The information center will operate in temperatures from -40 to 185 degrees Fahrenheit. The information center will employ a Linux operating system and a 7.00" (diagonal measurement) LCD display. The LCD will have a minimum 400nits rated, color display. The LCD will be sunlight readable, true digital operation, and will have improved resolution. The LCD display will be encased in an ABS, black plastic housing with a gray decal. There will be five (5), weather-resistant user interface switches provided. The LCD display can be changed to an available foreign language.

OPERATION

The information center will be designed for easy operation in everyday use. There will be a page button to cycle from one screen to the next screen in a rotating fashion. A video button will allow an NTSC signal into the information center to be displayed on the LCD. If any button is pressed while viewing a video feed, the information center will return to the vehicle information screens. There will be a menu button to 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 vehicle information *At A Glance*. If the information provided on a screen is within acceptable limits, a green background color will be used. If the information provided on a screen is not within acceptable limits, an amber background color will indicate a caution condition and a red background color will indicate a warning condition.

Every screen in the information center will include the aerial tip temperature, the time (12- or 24-hour mode) and a text Alert Center. The time will be synchronized between all Command Zone color displays located on the vehicle. The Alert Center will display text messages for audible alarms. The text messages will identify any items causing the audible alarm to sound. If more than one (1) audible alarm is activated, the text message for each alarm will cycle every second until the problems have been resolved. The background for the Alert Center will change to indicate the severity of the warning message. Amber will indicate a caution condition and red will indicate a warning condition. If a warning and a caution condition occur simultaneously, the red background color will be shown for all Alert Center messages.

A label will be provided for each button. The label will indicate the function for each active button for each screen. If the button is not utilized on specific screens, it will have a button label with no text.

Symbols will accurately depict the aerial device type the information pertains to such as rear mount ladder, rear mount platform, mid-mount ladder or mid-mount platform.

PAGE SCREENS

The Information center will include the following pages:
The Aerial Main and Load Chart page will indicate the following information:
- Rungs Aligned and Rungs Not Aligned will be indicated with text and respective green or red colored ladder symbols.
- Ladder Elevation will be indicated via a fire apparatus vehicle with ladder symbol with the degree of elevation indicated between the vehicle and ladder.
- Water Flow (if applicable) will be indicated via a water nozzle symbol and text indicating flow / time.
- Breathing Air Levels will be indicated via an air bottle symbol and text indicating the percent (%) of air remaining. A green bar graph shown inside the bottle will indicate oxygen levels above 20%. A red bar graph will indicate oxygen levels at or below 20%. When oxygen levels are at or below 10%, the red bar graph will flash.
- *At A Glance* color features will be utilized on this screen. Caution type conditions will be indicated via a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.
The Aerial Reach and Hydraulic Systems page will indicate the following information:
- Aerial Hydraulic Oil Temperature will be indicated with symbol and text. *At A Glance* features will be utilized.
- Aerial Hydraulic Oil Pressure will be indicated with a symbol and text. *At A Glance* features will be utilized.
- The following calculations will be indicated on a representative vehicle symbol:
- Aerial Device Extension length
- Aerial Device Height indicating the height of the aerial device tip from the ground
- Aerial Device Reach indicating the horizontal distance the aerial reaches from the turntable.
- Aerial Device Angle indicating the angle from the vehicle which the device is at.
- *At A Glance* color features will be utilized on this screen. Caution type conditions will be indicated via a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

The Level Vehicle page will indicate the following information:
- The grade of the vehicle will be indicated via a fire apparatus vehicle symbol with the degree of grade shown in text format. The symbol will tilt dependent on the vehicle grade.
- The slope of the vehicle will be indicated via a fire apparatus vehicle symbol with the degree of slope shown in text format. The symbol will tilt dependent on the vehicle slope.
- Outriggers status will be indicated via a colored symbol for each outrigger present. Each outrigger status will be defined as one of the following:
- Outrigger stowed indicated with a silver pan located close to the vehicle
- Outrigger fully extended indicated with a fully deployed green outrigger
- Outrigger short-jacked indicated by a yellow outrigger partially deployed
- Outrigger not set indicated by a red outrigger that is not set on the ground
- A text box located on the vehicle symbol will be utilized to identify the overall status of the outrigger leveling system. The following status will be indicated in the text box:
- Deployed status will indicate all outriggers are properly set on the ground at full extension
- Shortjacked status will indicate one or more outriggers are set on the ground but not fully extended.
- Not Set status will indicate one or more outriggers is not properly set on the ground.
- Stowed status will indicate all outriggers are stowed for vehicle travel.
- A bedding assist alert will indicate that the aerial device is being aligned by the Command Zone system as the operator lowers the aerial device into the cradle with the joystick.
- *At A Glance* color features will be utilized on this screen. Caution type conditions will be indicated via a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

MENU SCREENS

The following screens will be available through the Menu button:
The View System Information screen will display aerial device hours, aerial PTO hours, ladder aligned for stowing, aerial rotation angle, total water flow (if applicable), and aerial waterway valve status (if applicable).
The Set Display Brightness screen will allow brightness increase and decrease and include a default setting button.
The Configure Video Mode screen will allow setting of video contrast, video color and video tint.
The Set Startup screen allows setting of the screen that will be active at vehicle power-up.
The Set Date and Time screen has a 12- or 24-hour format, and allows setting of the time and date.
The View Active Alarms screen shows a list of all active alarms including the date and time of each alarm occurrence, and shows all alarms that are silenced.

The System Diagnostics screen allows the user to view system status for each module and its respective inputs and outputs. Viewable data will include the module type and ID number; the module version; and module diagnostics information including input or output number, the circuit number connected to that input or output, the circuit name (item connected to the circuit), status of the input or output, and other module diagnostic information.

Aerial Calibrations screen indicates items that may be calibrated by the user and instructions to follow for proper calibration of the aerial device.

Button functions and button labels may change with each screen.

LOWER CONTROL STATION

A lower control station will be located, at the rear of the apparatus, in an easily accessible area. The controls and indication labels will be illuminated, for nighttime operation. The following items will be furnished at the lower control station and will be clearly identified and conveniently located for ease of operation and viewing:
- Level assist switch
- Override switch to override interlocks
- Emergency power unit switch

AERIAL DEVICE CONTROL STATIONS

There will be two (2) device control stations. One (1) will be referred to as the basket control station and the other as the turntable control station. All elevation, extension and rotation controls will operate from both of these locations. The controls will permit the operator to regulate the speed of the aerial functions, within the safe limits, as determined by the manufacturer and NFPA standards. The controls will be grouped and operate in an identical manner at both stations for similarity of operation. The controls will be clearly marked and lighted for nighttime operation.

Each control will be equipped, with a positive lock to hold the control in a neutral position, preventing accidental activation. In addition to the neutral lock, a console cover will be provided at the turntable control station. The controls will be so

designed to allow the turntable control station to immediately override the basket controls, even if the ladder is being operated by the basket controls.

TURNTABLE CONTROL STATION

The turntable control station will be located, on the left side of the turntable, so the operator may easily observe the basket while operating the controls.
The following items will be installed at the turntable control station, clearly identified, lighted for nighttime operation and conveniently located for ease of operation and viewing:
- Electric controls for elevation, rotation, extension/retraction
- Manual electric controls for basket leveling
- Intercom controls
- Tip tracking light switch
- Emergency power unit switch
- Operator's load chart
- Three (3) position switch for selecting aerial operational speed

TURNTABLE WORK LIGHTS

There will be a minimum of two (2) 12-volt work lights installed on the turntable, to illuminate the surrounding area for nighttime operation. The work lights will be activated by the aerial master switch.

BASKET CONTROL CONSOLE

The basket instrument panel will be located at the front center, of the aerial platform. The following controls will be installed at the console and be clearly identified, illuminated for nighttime operation and conveniently located for ease of operation and viewing:
- Intercom controls
- Operator's load chart

AERIAL FUNCTION CONTROLS

The aerial function controls, elevation, rotation, extension/retraction will be mounted in a separate backlit control box, which will be attached to the front of the platform control console, by means of an easily removable slide mechanism. The aerial function control box will have three (3) fixed attachment points in the basket. The electrical connection will be by a strain relieved, coiled cord that is permanently attached to the control box. To reduce the excess cord in the basket, the coiled cord will use a deutsch style bayonet connector style plug and there will be there (3) locations in the basket. The legend for the control lever functions will be illuminated.

HIGH IDLE

The high idle will be controlled by the microprocessor. The microprocessor will automatically adjust the engine rpm, to compensate for the amount of load placed upon the system. The system will include a safety device that allows activation of the high idle, only when the parking brake is set and the transmission is placed in neutral.

STABILIZERS

Two (2) sets of extendible, out and down, "H" type stabilizers will be provided for stability. The stabilizers will have a spread of 16' 6".

The stabilizers will be the double box design, with jack cylinders, that have a 4.25" internal diameter (bore), 3.00" diameter cylinder rod and a 34.88" stroke. The jack cylinders will be equipped with integral holding valves, which will hold the cylinder in either the stowed position or the working position, should a charged line be severed at any point within the hydraulic system. For safety, the integral holding valves will be located in the cylinder base end, NOT in the transfer tube. Vertical jack cylinder rods will be fully enclosed by a telescoping inner box to protect the cylinder rods against damage that may occur.

The extension cylinders will be totally enclosed within the extension beams. The horizontal extension cylinders will be of the trombone type to eliminate wear and potential failure of hydraulic hoses. (no exception)

The stabilizers will have the capability of 18.00" of ground penetration, for set-up on uneven terrain. Extension of the horizontal beams will be activated by an extension cylinder, which has a 2.25" internal diameter (bore), 1.38" diameter cylinder rod and a 48.25" stroke. The extension cylinders will be totally enclosed within the extension beams. The cylinders will be equipped with internal decelerators. The cross section dimensions will be 13.00" high x 6.81" wide.

Each stabilizer leg will have attached to the end of the leg a 16 gauge polished stainless steel shield. The stainless steel shield will be of the split-pan design and will be a maximum 13.50" wide to allow the extension of the stabilizer between

parked cars. This plate will serve as a protective guard and a mounting surface for warning lights. The top, forward, and rear edges will be flanged back for added strength.

STABILIZER CONTROLS

A portable stabilizer control box will be provided. The control box will be weatherproof and oil resistant. Each function and indicator light will be labeled on a metal photo panel. The control box can be taken as far away as 15 feet from the vehicle with an extension cable.

The stabilizer control box will include the following:

- One (1) green power indicator light for stabilizer control that will be illuminated when the aerial master and "PTO" switches in the cab are activated.
- Four (4) electric joysticks for stabilizers: each toggle switch will control the extend/retract and raise/lower of its respective stabilizer to allow vehicle set up in restricted areas and/or on uneven surfaces.
- Leveling assist push button: The outrigger control system will incorporate a computerized self-leveling system in addition to the standard outrigger controls. The operator will have the option to manually or automatically level the truck. The computerized system will ensure full outrigger extension, proper jack penetration, and will level the vehicle within 1/2 a degree of level for safe operation of the aerial device.
- One (1) electric push button for the engaging the emergency power unit
- One (1) red "stabilizer not stowed" indicator light: this light will illuminate when the stabilizers are not in the fully stowed position.
- Four (4) fully extended beams green indicator lights: these lights will be illuminated when each of the respective stabilizer beams are fully extended.
- Four (4) firm on ground green indicator lights: each light will be illuminated when its respective stabilizer shoe is in the load supporting condition.

Each joystick will activate the engine fast idle automatically.

Manual override will be supplied for each stabilizer control valve.

A "Stabilizers Not Stowed" indicator will be provided in the driver's compartment. It will illuminate automatically whenever the stabilizers are not fully stowed to prevent damage to the apparatus if moved. The stabilizer system will also be wired to the "Do Not Move Indicator Light", which will flash whenever the apparatus parking brake is not fully engaged and the stabilizers are not fully stowed.

STABILIZER PADS

A one (1) position, floating stabilizer pad will be provided on each stabilizer. The pads will require no operator adjustment during set up. The stabilizer pad will have the ability to pivot, in a 360-degree plane, for set up on uneven terrain.

AUXILIARY STABILIZER PADS

A set of four auxiliary pads with handles will be provided for additional load distribution on soft surfaces. Their size will be 31.00" x 26.00" and they shall be constructed of a lightweight composite material. The ground contact area for each stabilizer will be such that a unit pressure not greater than 75 psi (500 kPa) will be exerted over the ground contact area when the apparatus is loaded to its maximum in-service weight and the aerial device is carrying its rated capacity in every position permitted by the manufacturer. The pads will be stored in a double stacked configuration, two (2) behind each rear tandem axle in a single bracket.

CRADLE INTERLOCK SYSTEM

A cradle interlock system will be provided, to prevent the lifting of the aerial from the nested position, until the operator has positioned all the stabilizers in a load-supporting configuration. A switch will be installed at the cradle, to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

STABILIZER SCENE LIGHTS

A 4.00" diameter, clear floodlight will be mounted at each stabilizer, to illuminate the surrounding area. The light will activate with the aerial master switch.

STABILIZER PINS

The stabilizer jacks will not have holes for the stabilizer pins.

ALUMINUM DOOR, STABILIZER CONTROL BOX

A vertical hinged smooth aluminum door will be provided over each stabilizer control box. The door will be hinged outboard.

AUXILIARY STABILIZER PADS STORAGE TOGETHER

Two (2) auxiliary stabilizer pads will be stored together in one (1) bracket. There will be one (1) bracket on the driver side of the vehicle, behind the rear tandem. The bracket will be mounted as high as possible, not to effect angle of departure.

The one (1) bracket on the driver side of the apparatus stored together will be in place of a stacked configuration of two (2) separate brackets behind the rear tandem.

HYDRAULIC SYSTEM

All high-pressure hoses will have an abrasion resistant cover, and have a rating greater than or equal to the working pressure of the circuit in which they are installed. All hydraulic fittings will be plated to minimize corrosion. The fitting will use an O-ring face seal, where possible, to minimize hydraulic leaks. All pressure carrying hydraulic hoses will have a 4:1 safety rating based on burst pressure

An interlock will be provided that prevents activation of the hydraulic pump until the transmission is placed in neutral and the parking brake is set as outlined in NFPA standards.
The hydraulic system will be of the load sense design to minimize heat build up and provide smooth control of the aerial ladder. The system will meet the performance requirement in NFPA standards, which requires adequate cooling after less than 2 1/2 hours of operations.

All hydraulic components that are non-sealing, where failure could result in the aerial movement, will comply with NFPA standards and have burst strength of 4:1. Dynamic sealing components, where failure could cause aerial movement, will have a margin of 2:1 on maximum operating pressure per NFPA standards. All hydraulic hoses, tubes, and connections will have minimum burst strength of 3:1 per NFPA standards.

A hydraulic oil pressure gauge will be supplied at the base control location per NFPA standards.

The aerial hydraulic system will be designed in such a manner that a hydraulic pump failure or line rupture will not allow the aerial or outriggers to lose position. Hydraulic holding valves will be mounted directly into cylinders. To insure reliable performance of holding valves, no hoses or tubing will be permitted between a holding valve and cylinder. The aerial will incorporate the use of trombone steel tubes inside the stabilizer beams to eliminate hydraulic hose wear and leaks. Hydraulic power to the ladder will be transferred from the pedestal by a hydraulic swivel.

HYDRAULIC RESERVOIR

The hydraulic system will consist of an oil reservoir mounted to the torque box and plumbed to the hydraulic pump. There will be plumbing for a supply and return line and a tank drain on the reservoir.
The hydraulic pump suction line will have a shut-off ball valve for pump servicing.
The hydraulic oil reservoir fill will be labeled per NFPA standards. The hydraulic system will use multi-weight, SAE grade oil. ISO grade will be based on geographical location. The manufacturer will certify that the oil meets or exceeds the hydraulic cleanliness rating of 18/15/13 per ISO 4406:1999 before delivery.

HYDRAULIC FILTERS

The system will incorporate the following filters to provide dependable service:
- Separate magnet (not on strainer)
- Reservoir suction strainer: 125 mesh
- Pressure filter with dirt alarm: Nominal 5 micron filter with a rating of 6.5 micron @ Beta 200 (99.5% efficiency); 7.5 micron @ Beta 1000 (99.9% efficiency)
- Return filter with dirt alarm: Nominal 5 micron filter with a rating of 6.5 micron @ Beta 200 (99.5% efficiency); 7.5 micron @ Beta 1000 (99.9% efficiency)
- Desiccant breather filter: Water capacity 4 fluid oz, 5 micron rating

HYDRAULIC CYLINDERS

All hydraulic cylinders used on the aerial device will be produced by a manufacturer that specializes in the production of hydraulic cylinders.

POWER TAKEOFF / HYDRAULIC PUMP

The apparatus will be equipped with a power takeoff driven by the chassis transmission and actuated by an electric shift located inside the cab. The power takeoff, which drives the hydraulic pump, will meet all the requirements for the aerial unit operations. The hydraulic pump will be a variable displacement piston pump, for consistent and rapid response, and be capable of supplying hydraulic oil at a nominal 50gpm flow at pressures up to 3000 psi. The system will operate up to 3000 psi with flow controls to protect hydraulic components and incorporate a relief valve set at 3150 psi to prevent over pressurization. The hydraulic pump will be solely dedicated to aerial operations. (no exception) An amber indicator light will be installed on the cab instrument panel to notify the operator that the power takeoff is engaged.

An interlock will be provided that allows operation of the aerial power takeoff shift only after the chassis spring brake has been set and the chassis transmission has either been placed in the neutral position or drive position after the driveline has been disengaged from the rear axle.

EMERGENCY PUMP

The hydraulic system will be designed with an auxiliary power unit meeting the guidelines of NFPA standards. The auxiliary power unit will be a 12-volt pump connected to the chassis electrical system. The pump will provide operation at reduced speeds to store the aerial device and outriggers for road transportation.

Self-centering switches will be provided at the turntable and stabilizer control station to activate the system. The system will be designed to provide a minimum of 30 minutes of hydraulic power to operate functions. (no exception)

HYDRAULIC SWIVEL

The aerial ladder will be equipped with a three (3) port, high-pressure hydraulic swivel that will connect the hydraulic lines from the hydraulic pump and reservoir through the rotation point to the aerial control bank. The hydraulic swivel will allow for 360 degree continuous rotation of the aerial.

ELECTRIC SWIVEL

The ladder will be equipped with an electric swivel to allow 360 degrees rotation of the aerial while connecting all electrical circuits through the rotation point. A minimum of 36 collector rings will be provided that are capable of supplying 20 amp continuous service. All collector rings will be enclosed and protected with desiccant plugs against condensation and corrosion. No oil or silicone will be used.

WATER SWIVEL

Water will be transferred to the aerial waterway by means of a 5.00" internal diameter waterway, through the swivel, permitting 360 degree continuous rotation.

13-BIT ABSOLUTE ENCODER

The aerial ladder will be equipped with a 13-Bit Absolute Encoder, CAN-based, which provides 8192 counts per shaft turn for position and direction reference.

The 13-Bit Absolute Encoder will provide a unique binary word to reference each position and direction for all 360 degrees of rotation.

If the power is interrupted for any reason, the 13-Bit Absolute Encoder will allow power to be returned to the system without having to re-zero the settings.
The 13-Bit Absolute Encoder will be an integral part of a microprocessor based control system.

ELECTRICAL SYSTEM

The 100' platform will utilize the Pierce Command ZoneTM System. The system will consist of the following components:
A tethered, CAN-based, stabilizer control will be provided. The tethered control will be weatherproof and oil resistant.
The stabilizer control will be illuminated with a LED strip light in the face of the unit. The electrical connection at the tethered control will be permanently attached by a strained relieved coil cord that will allow the operator to move at least 14 feet away from the electrical connection for operation.
Remote Stabilizer Controls
Brightness control
Weatherproof and oil resistant
One (1) green "power" indicator light
One (1) red "stabilizer not stowed" indicator light
One (1) electric push button for level assist
One (1) electric push button for the emergency power unit
One (1) electric joystick for each stabilizer control:
Extend/retract function
Raise/lower function
One (1) green "stabilizer fully extended" indicator light for each stabilizer
One (1) green "firm on ground" indicator light for each stabilizer
Control System Modules
Each of the control system modules will be configured as follows:
Sealed to a NEMA 4X rating
Operating range from -40 degrees F to 156 degrees F (-40 degrees C to 70 degrees C)
Communicate using J1939 data link
Two (2) diagnostic LED lights
One (1) green light that illuminates when module has power (B+) andground
One (1) red light that flashes to indicate the module is capable ofcommunicating via the data link
Up to 16 diagnostic LEDs on each module
Ground matrix identification system

The following control system modules will be used:
Control Module
Main controller for the system
USB connection allows for computer diagnostics
Power Module
Built-in fault sensing
Eight (8) digital outputs
Pulse width modulating (PWM) capable
10A continuous per output
Circuit protection based on actual current draw (not affected by heat)
Current Control Module
Built-in fault sensing
Three (3) analog inputs
Eight (8) digital outputs
Pulse width modulating (PWM) capable
3A continuous per output
Closed Loop System
Circuit protection based on actual current draw (not affected by heat)
Input Module
16 software selectable (digital or analog) inputs
Output Module
16 digital outputs
Input/Output Module
Eight (8) software selectable (digital or analog) inputs
Eight (8) digital outputs

TRACKING LIGHTS

There will be two (2) Unity, Model AG-S-P46SLC 12-volt LED spot lights furnished. Power to the lights will be controlled by a master on/off switch at the turntable control operator's position. Individual switches will also be provided on each light for on/off.

The two (2) "tracking lights" will be mounted on the base section of the ladder, one (1) on each side.

AERIAL LOCATOR LIGHTS, STROBE

Two (2) lights will be installed, one (1) each side at the aerial tip for the purpose of locating the aerial device while in operation. The lights will be Whelen, Model 800D, strobe beacons. The lights will be activated whenever the aerial device is raised from the cradle. The color of the locator lights will be amber.

STABILIZER WARNING LIGHTS

There will be four (4) Whelen®, Model M9*C, LED flashing warning lights with Whelen, Model M9FC, chrome flanges installed, one (1) on each stabilizer cover panel.

- The front stabilizer pan lights will be red LED with a clear lens
- The rear stabilizer pan lights will be red LED with a clear lens

These warning lights will be activated by the same switch as the side warning lights.

STABILIZER BEAM WARNING LIGHTS

Two (2) 4.00" diameter red LED flashing lights will be mounted on each stabilizer, one (1) facing forward and one (1) facing rearward. The lights will be Grote Supernova 40 series LED lights. The lights will be recessed in the horizontal beam of the stabilizer. These warning lights will be activated with the aerial master switch.

PLATFORM 120-VOLT ELECTRIC SYSTEM

Two (2), 20 amp, NEMA L5-20, 120-volt, three (3)-prong twist lock receptacles with weatherproof covers will be provided in the aerial platform. The receptacles will be located at the rear corners of the basket, one (1) on each side. Each receptacle will be supplied from individual branch circuits protected by dedicated 20 amp/120-volt circuit breakers. All wiring will be sized to and conform to the latest edition of NEC standards.

FRONT OF PLATFORM 120 VOLT LIGHTING

There will be One (1) Fire Research Spectra, Model SPA100-K20 white LED 120 volt light(s) provided at the front of the platform basket, facing forward on the center, front of platform. The painted parts to be white.
Light will be switched at the platform/tip, turntable, and cab.

120 VOLT UNDER PLATFORM LIGHTING

There will be one (1) Fire Research, Model SPA260-K15, LED 120 volt AC floodlight(s) provided under the platform on the passenger side only, facing down. Due to the light optics the lights will be installed so the light is directed forward and downward.

The painted parts of this light assembly to be white with a white bezel.
These light(s) will be switched at the platform/tip and turntable.

COMMUNICATION SYSTEM

An Atkinson three (3)-way communications system will be provided. The communication system will be furnished between the platform, the pump operator's panel and the turntable operator's position. The master control located at the turntable control console will have the transmitting and receiving volume controls along with the push to talk button. A self-contained "hands-off" speaker microphone will be located in the platform which will require no operator attention to transmit or receive.

BREATHING AIR

Breathing air will be supplied to the aerial platform. The air system will incorporate one (1), 437 cubic foot, 4500-psi cylinder. To allow the turntable operator an unobstructed view of the platform the cylinder will be mounted on the right side of the ladder. The air cylinder will be interconnected through a pressure regulator located at the air cylinder. A shutoff valve with guard will be provided on the cylinder. At the platform, the breathing air will be accessible via two (2) quick couplings for air masks. These will have a Hansen brass 3000 series coupling. One (1) coupling will be located at the front of the basket on the right side and one (1) coupling will be located at the rear of the basket on the left hand side. There will be a weather resistant storage compartment for two (2) air masks provided in the basket. A 100' recharge hose will be provided for refilling the air cylinder without having to remove the tank from its mounting.

BREATHING AIR LEVEL AND WARNING SYSTEM

The level of breathing air remaining will be visible on the LCD display at all operating positions. The display will incorporate a low-pressure warning circuit that activates an audible alarm when 20% of maximum air cylinder capacity remains. A second, louder audible alarm will activate when the remaining air level drops to 10% of maximum air cylinder capacity.

RAISED AERIAL PEDESTAL

The aerial pedestal will be raised to accommodate the height of the cab.

*LYFE*COMBO™BRACKETS

One (1) set of brackets will be supplied and mounted to the front of the platform basket. The brackets have been designed to increase firefighter safety and add to the functionality of the aerial device. The brackets will have three (3) functions that include: securing the roof ladder to the basket to allow firefighter access below the basket, two (2) rappelling arms to serve as an anchor point which allow rappelling from the basket, and mounting bars to allow the secure mounting of a rescue basket for transporting patients using the aerial. Each bracket will be easily removable using two (2) positively latched, 1.00" diameter aluminum pins.

***Lyfe*Ladder™** support brackets will be incorporated into the design of the 3-in-1 option brackets. The brackets will be designed to mount an 875A Duo-Safety roof ladder up to 20 feet long securely in place. The ladder will be secured through its beams and one (1) rung, by a 1.00" diameter aluminum rod capable of being positively latched in place and able to withstand a minimum of a 500lb load while maintaining a minimum of a two to one (2:1) safety factor. There will also be a latch to keep the ladder in a vertical position at all times that will attach to a rung 28.00" below the primary attachment point. Strain gauging and testing will have been completed on the system (ladder and complete holding device) providing the above criteria has been met. A set of nylon guides will be provided to aid in positioning the roof ladder on the mounting brackets.
***Lyfe*Eye™** rappelling brackets will be provided. The ***Lyfe*Eye** brackets will be incorporated into the design of the 3-in-1 option brackets. Each bracket in the set will have a forged stainless steel eyebolt with a 1.38" inside diameter for use as a rappel line anchor. Each bracket will have a capacity of 300 lbs.

***Lyfe*Support™** rescue basket support bars will be provided. The bars will be incorporated into the design of the 3-in-1 option brackets. The bars will be easily removable from the 3-in-1 bracket to allow for individual storage of these bars when they are not needed. Two (2) quick clip basket straps will be used to secure the rescue basket to the brackets.

AERIAL LUBRICATION KIT

There will be a kit provided to lubricate the aerial device. The kit will include a 5 gallon pail of synthetic grease, plastic gloves, paint suits, varnish brushes, and safety glasses. A storage container with lid will be provided to store the gloves, paint suits, brushes and glasses.

SPLASH GUARD FOR REAR CONTROLS

A splash guard will be provided at the rear of the apparatus under the body to protect the stabilizer controls manifold from road splash and grime. The guard will go from rear access step to rear access step and will be maximum width to cover the entire manifold. The splash guard will be an "L" shape to protect the stabilizer controls manifold. Tubing will be provided to extend the aerial drain and aerial relief to the side and below the splash guard.

ADDITIONAL LEVELING INDICATORS

There will be two (2) additional bubble level indicator(s) provided inside driver side turntable step area passenger side of truck. with a white LED light mounted above.
Operating ranges will be marked with green for full rated operation, yellow for 1/2 rated operation, and red for danger, or unsafe operation.

STABILIZER SCENE LIGHTS

There will be one (1) Truck-Lite, Model 44308C 4.00" LED, scene light installed on each stabilizer to illuminate the surrounding area. These lights will be installed in place of the standard lights. A total of four (4) lights will be installed.

EXTERNAL POWER SUPPLY TO EPU

The EPU will be raised and located on the front of the stabilizer housing on the vertical partition with the pumphead down.
The EPU solenoid will be remote mounted.
The power supply for the EPU will remain in the standard location.

MANSAVER™ BARS, AERIAL TURNTABLE

ManSaver™ bars will be installed at the aerial turntable.

AERIAL WATERWAY

The aerial waterway will be capable of being supplied by either a midship mounted pump or an external water source through a 5.00" intake at the rear of the apparatus.
A 5.00" water swivel will be installed below the aerial turntable permitting the ladder to rotate 360 degrees continuously.
A 5.00" water swivel will be installed at the aerial heel pivot pin that will permit water tower operations of -11.5 degrees to 76 degrees. The heel pivot pin will not be integral with the waterway swivel at any point. The waterway design will allow complete servicing of the waterway swivel without disturbing the heel pivot pin.
A telescoping aluminum waterway will be installed on the side of the aerial ladder sections. The waterway will consist of a 5.00" diameter tube for the base section, 4.50" diameter tube for the mid-section and 4.00" diameter tube for the fly section.
A 1.50" drain will be provided for the waterway with the control at the rear of the unit.

WATERWAY SEALS

The waterway seals will be of type-B PolyPak design, composed of nitroxile seal and a nitrile wiper, which together offer maximum stability and extrusion resistance on the waterway. The seal will be capable of withstanding pressures up to 2000 psi, temperatures in excess of 250 degrees Fahrenheit and have resistance to all foam generating solutions. The seals will be internally lubricated.

The waterway seals will have automatic centering guides constructed of synthetic thermalpolymer. The guides will provide positive centering of the extendible sections within each other and the base section to insure longer service life and smoother operation.

PLATFORM WATER SYSTEM

A 4.00" (internal diameter) water swivel will connect the fly section waterway to the platform waterway. The water swivel will permit water tower operations from -11.5 degrees to 76 degrees. The water will be routed from the swivel to a 4.00" gear operated butterfly valve on the front of the platform using a 4.00" 6061 pipe. The deluge gun will be bolted onto the butterfly valve.
A 2.50" preset pressure relief valve will be provided in the waterway system. It will be designed to protect the aerial waterway from excess pressure. It will dump water to the ground when operating.
A shower nozzle rated at 75 gpm will be provided beneath the platform for heat protection for the platform personnel. A direct linkage control for the shower nozzle will be provided.
One (1) - 2.50" preconnect will be provided at the front of the platform. The preconnect will be gated at the platform. The preconnect will be furnished with 2.50" NST threads and chrome plated cap.

AERIAL MONITOR

There will be two (2) Task Force Tips monitors provided at the platform.
One (1) will be a Y4-M21A-P double hand wheel controlled monitor with a TFT 2000 gpm Model M-R2000 manual nozzle.
The other will be Y4-E21A-P electric monitor with a TFT 2000 gpm Model M-ERP2000 electric nozzle.

The controls for the electronic monitor will be located at the platform and the turntable control console.
Waterway flow, including total water flowed, will be monitored by the microprocessor. An LCD display will be located at the upper and lower control stations.

REAR INLET

A 5.00" NST inlet to the aerial waterway will be provided at the rear of the apparatus, on the driver's side. It will be furnished with a 5.00" chrome plated adapter and a 5.00" rocker lug chrome plated cap.

TOOLS

The following tools will be provided for retorquing of all specified bolts as recommended by the manufacturer:
- Torque Wrench
- All Required Extensions, Sockets and Adapters
- 4-to-1 Multiplier

MANUALS

The aerial manufacturer will provide two (2) operator maintenance manuals and two (2) wiring diagrams pertaining to the aerial device.

INITIAL INSTRUCTION

On initial delivery of the fire apparatus, the contractor will supply a qualified representative to demonstrate the apparatus and provide initial instruction to the fire department regarding the operation, care, and maintenance of the apparatus for a period of three (3) days.

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 8.8.2 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.

- Two (2) 3 ft - 4 ft plaster hooks with D handles mounted in brackets fastened to the apparatus.
- Two (2) crowbars mounted in brackets fastened to the apparatus.
- Two (2) claw tools mounted in brackets fastened to the apparatus.
- Two (2) 12 lb (5 kg) sledgehammers mounted in brackets fastened to the apparatus.
- 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.
- Six (6) salvage covers, each a minimum size of 12 ft × 18 ft (3.6 m × 5.5 m).
- Four (4) combination spanner wrenches mounted in brackets fastened to the apparatus.
- Two (2) scoop shovels mounted in brackets fastened to the apparatus.
- One (1) pair of bolt cutters, 24" (0.6 m) minimum, mounted in a bracket fastened to the apparatus.
- Four (4) ladder belts meeting the requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components*.

- One (1) 150 ft (45 m) light-use life safety rope meeting the requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components.*

- One (1) 150 ft (45 m) general-use life safety rope meeting the requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components.*

- Two (2) 150 ft (45 m) utility ropes having a breaking strength of at least 5000 lb (2300 kg).

- One (1) box of tools to include the following:

- one (1) hacksaw with three (3) blades
- one (1) keyhole saw
- one (1) 12" (.3 m) pipe wrench
- one (1) 24" (.6 m) pipe wrench
- one (1) ballpeen hammer
- one (1) pair of tin snips
- one (1) pair of pliers
- one (1) pair of lineman's pliers
- assorted types and sizes of screwdrivers
- assorted adjustable wrenches
- assorted combination wrenches

- 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).

- One (1) double female 2.50" adapter with National Hose Threads, mounted in a bracket fastened to the apparatus (if equipped with a fire pump).

- One (1) double male 2.50" adapter with National Hose Threads, mounted in a bracket fastened to the apparatus (if equipped with a fire pump).

- One (1) rubber mallet, for use on suction hose connections, mounted in a bracket fastened to the apparatus (if equipped with a fire pump).

- Two (2) hydrant wrenches mounted in brackets fastened to the apparatus (if equipped with a fire pump).

- 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 equipped with a fire pump).

- 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 equipped with a fire pump).

- 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 equipped with a fire pump).

- 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 (if equipped with a fire pump).

SOFT SUCTION HOSE

There will be no soft suction hose provided.

DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2009 edition, section 8.8.2 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 8.8.2 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 8.8.2 requires two (2) flathead axes mounted in brackets fastened to the apparatus.
The axes are not on the apparatus as manufactured. The fire department will provide and mount the axes.

AXE, PICKHEAD, PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2009 edition, Section 8.8.2 requires three (3) pickhead axes mounted in brackets fastened to the apparatus.
The axes are not on the apparatus as manufactured. The fire department will provide and mount the axes.

PAINT

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 cab and 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 metal surfaces will be properly cleaned using a high pressure and high temperature cleaning 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 will be applied to all metal surfaces at the conclusion of the metal treatment process.
3. Primer/Surfacer Coats - A two (2) 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.
4. Hand Sanding - The primer/surfacer coat will be lightly sanded to an ultra smooth finish.
5. Sealer Primer Coat - A two (2) component sealer primer coat will be applied over the sanded primer.
6. Topcoat Paint - Urethane base coat will be applied to opacity for correct color matching.
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.

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 cannot be finish painted after assembly will be finish painted before assembly.
The cab will be two-tone, with the upper section painted #10 white along with a shield design on the cab face and lower section of the cab and body painted #90 red.

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 will 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 will 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 cleanup 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

FILM TECHNICAL PROPERTIES

PROPERTY	TEST METHOD	PERFORMANCE
Color	-	Black
Film Thickness	-	0.5 - 1.5 Mils
Gloss - 60 Degree	ASTM D523	65 - 85
Pencil Hardness	ASTM D3363	2H Minimum
Direct Impact	ASTM D2794	100 in. - lbs. Minimum
Reverse Impact	ASTM D2794	60 in. - lbs. Minimum
Crosshatch Adhesion	ASTM D3359	4B - 5B
Humidity	ASTM D1735	1000 Hours Minimum
Water Immersion	ASTM D870	250 Hours Minimum
Crevelocoatte	GM9505P	6 Minimum
Throwpower	GM9505P	12 - 15 in

Cold rolled steel lab panels, Zinc Phosphate pretreatment, 0.6 mils average film thickness, cured 20 minutes @ 350°F.

PROPERTY	SUBSTRATE PRETREATMENT	SALT SPRAY* 1000 HOURS
Corrosion Resistance	CRS / Zinc Iron / NoaChrome	1 - 2 mm

*Salt Spray - ASTM B117, cold rolled steel lab panels cured 20 minutes @ 350°F. (Average total Scribe Creep)

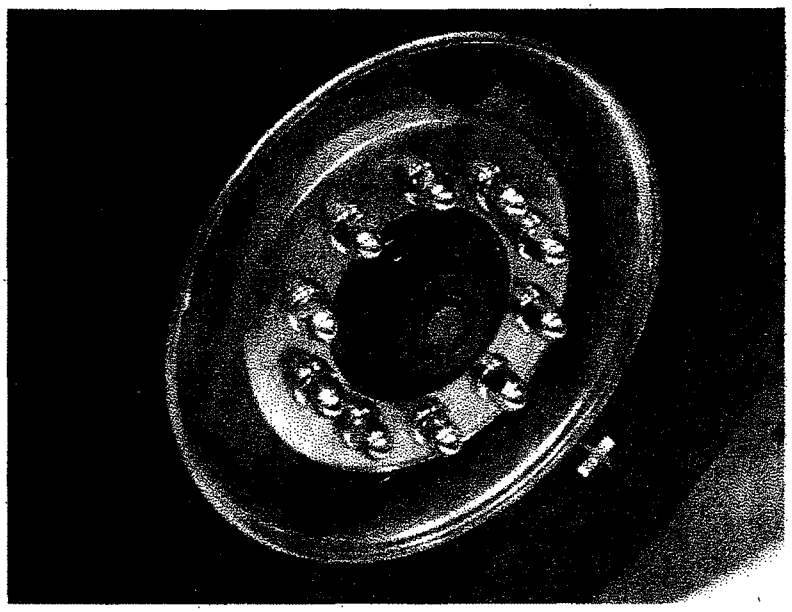
Components treated with epoxy E-coat protection prior to paint:

- Two (2) C-channel frame rails
- Two (2) frame liners

The E-coat process will meet the technical properties shown.

PAINT, FRONT WHEELS

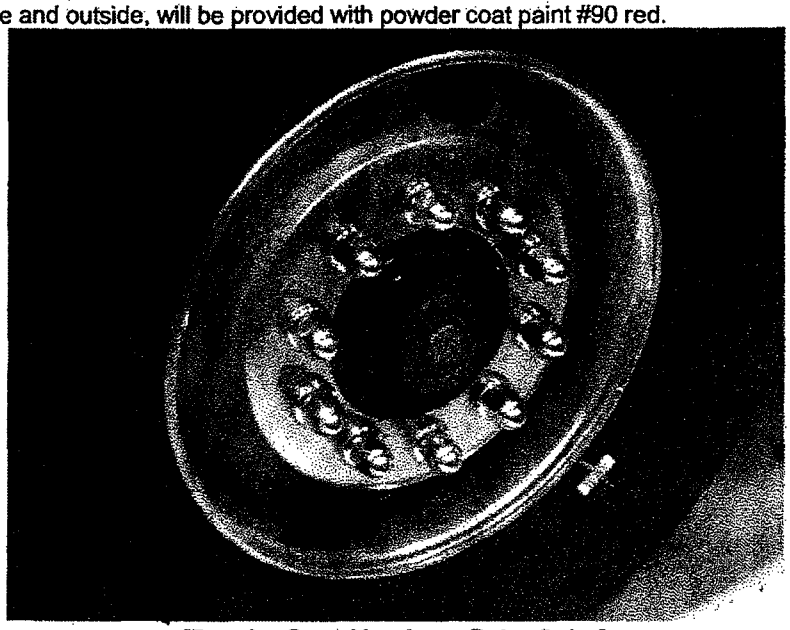
All wheel surfaces, inside and outside, will be provided with powder coat paint #90 red.



[Powder Coat Aluminum Paint Color]

PAINT, REAR WHEELS

All wheel surfaces, inside and outside, will be provided with powder coat paint #90 red.



[Powder Coat Aluminum Paint Color]

WHEELS, ACCENT STRIPE

The exposed outer edge circumference of the wheel will be painted with a silver accent stripe.

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.

AERIAL TURNTABLE PAINT COLOR

All aerial device structural components above the rotation point that are not chrome plated, stainless steel, or painted will have a natural swirl finish.

The sides and rear of the basket will have an engine turned finish.

All buy out components, such as monitor, nozzle, gauges, etc. will be supplied as received from the vendor.
Turntable, console, lift cylinders, and extension cylinders will be sanded to remove any metal flakes and smooth any rough surfaces. These components will be prime painted with an epoxy primer and finished with a durable, high quality white 10 paint (manufacturer's standard brand).
The support structure, rotation motor, components below the rotation point, and the stabilizers will be painted high gloss black.
All the hydraulic hoses, wiring and non-ferrous metals will be masked off before painting.

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. Covered surfaces will include the rear wall, aluminum doors, and rear bumper. Rear compartment doors and stainless steel access doors will not 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 ON STABILIZERS

There will be a 4.00" wide fluorescent yellow green diamond grade reflective stripe provided on the forward and rear facing side of all aerial stabilizers.

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 ten (10) rubrails striped.

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".

CAB STRIPE

There will be a reflective stripe provided on both sides of the cab in place of the chrome molding.

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, 24.00" high, with no outline or shade provided. There will be three (3) letters provided.

LETTERING

There will be reflective lettering, 18.00" high, with outline and shade provided. There will be three (3) 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 gold reflective lettering, with outline provided. The waving American flag will be provided as a background for the reflective lettering.

LETTERING
There will be reflective lettering, 5.00" high, with outline provided. There will be four (4) letters provided.

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, 6.00" high, with outline provided. There will be three (3) letters provided.

LETTERING
There will be reflective lettering, 2.00" high, with outline provided. There will be 18 letters provided.

EMBLEMS
There will be a pair of American flag emblem/s, installed Upper section of crew cab doors. The flag will be waving design and made out of Gerber Vision material.

EMBLEM
There will be one (1) reflective emblem(s), approximately 16.00" - 18.00" in size, installed R-1 door. the emblem will be modeled after the department submitted information (art, patch, etc).

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 are also available on the factory website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly.

CHASSIS SERVICE 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.

MANUALS, CHASSIS OPERATION
One (1) chassis operation manual will be provided.
One (1) compact disk (CD) will also be provided that will include all of the information from the above manual.

ONE (1) YEAR MATERIAL AND WORKMANSHIP
A basic apparatus limited warranty certificate shall be provided.

THREE (3) YEAR MATERIAL AND WORKMANSHIP
The custom chassis limited warranty certificate shall be provided.

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 custom chassis frame and crossmembers limited warranty shall be provided.

FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY
The Pierce TAK-4 suspension limited warranty certificateshall be included.

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 certificate shall be provided.

TEN (10) YEAR STRUCTURAL INTEGRITY
The custom cab limited warranty certificate shall be provided.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION
A cab limited pro-rated paint warranty certificate shall be provided.

FIVE (5) YEAR MATERIAL AND WORKMANSHIP
The Pierce Command Zone electronics limited warranty certificate shall be provided.

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.

TEN (10) YEAR STRUCTURAL INTEGRITY
The apparatus body limited warranty certificate shall be provided.

PUMP WARRANTY
A Waterous pump limited warranty certificate shall be provided.

TEN (10) YEAR PUMP PLUMBING WARRANTY
The apparatus plumbing limited warranty certificate shall be provided.

TWENTY (20) YEAR AERIAL DEVICE STRUCTURAL INTEGRITY WARRANTY
An aerial device 20 year limited warranty shall be provided.

AERIAL SWIVEL WARRANTY
An Amity five (5) year limited swivel warranty will be provided. A copy of the warranty certificate will be submitted with the bid package.

HYDRAULIC SYSTEM COMPONENTS WARRANTY
Aerial hydraulic system components will be provided with a five (5) year material and workmanship limited warranty.

HYDRAULIC SEAL WARRANTY
Aerial hydraulic seals will be provided with a three (3) year material and workmanship limited warranty.
A copy of the warranty certificates will be submitted with the bid package.

AERIAL WATERWAY WARRANTY
An Amity ten (10) year limited waterway warranty will be provided. A copy of the warranty certificate will be submitted with the bid package.

FOUR (4) YEAR PRO-RATED PAINT AND CORROSION
An aerial device limited pro-rated paint warranty shall be provided.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION
A body limited pro-rated paint warranty certificate shall be provided.

ONE (1) YEAR MATERIAL AND WORKMANSHIP
The graphics fading and deterioration limited warranty limited warranty certificate shall be provided.

TEN (10) YEAR MATERIAL AND WORKMANSHIP ROLL-UP DOORS
An AMDOR 10 year limited warranty limited warranty certificate shall be provided.

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.

Non-Discrimination. As a party to this contract, Vendor understands and agrees to comply with the Non-Discrimination Policy of the City of San Antonio contained in Chapter 2, Article X of the City Code and further, shall not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, veteran status, age or disability, unless exempted by state or federal law, or as otherwise established herein.

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.	
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.	800-784-6806
Fax No.	281-442-0850
City's Solicitation No.	6100006588

Jeffrey A. Doran Jeffrey A. Doran Digitally signed by Jeffrey A. Doran DN: cn=Jeffrey A. Doran, o, ou, email=jdoran@siddons-martin.com, c=US Date: 2015.09.11 11:02:48 -05'00'

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	2 each	2015 Velocity Aerial Platform Trucks

PRICE EACH: $ 1,166,553.00 per unit

TOTAL: $ 2,335,106.00 including HGAC Fee

CAB & CHASSIS YEAR, MAKE & MODEL:
2016 Pierce Velocity 100' Aerial Platform

SPECIFIC MAKE & MODEL OF TRANSMISSION OFFERED:
Allison EVS 4000 PR

SPECIFIC MAKE & MODEL OF ENGINE OFFERED (INCLUDE SAE NET HP):
Detroit Diesel DD13 500 hp

CAB & CHASSIS WARRANTY: 10 year Structural 3 year chassis

BODY WARRANTY: 1 year basic, 10 year structural

DELIVERY: Delivery will be made within 300-360 calendar days after receipt of purchase order.

MANUFACTURER CUT-OFF DATE: November 30, 2015

INDICATE THE LAST DAY THAT THE CITY CAN PLACE ORDERS UNDER THIS CONTRACT WITHOUT MISSING THE PRODUCTION CUT OFF DATE: November 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.

ITEM	QUANTITY	DESCRIPTION
2	1 each	BUYBOARD FEE HGAC Contract fee

BUYBOARD FEE: $ _____ EACH $ $2,000.00 TOTAL

Authorized Warranty Provider:
Siddons-Martin Emergency Group

Warranty Provider Address:

5511 Benz-Englemann Road, Kirby, Texas

Prompt Payment Discount: _____% _____days. (If no discount is offered, Net 30 will apply.

City of San Antonio

Veteran-Owned Small Business Program Tracking Form

Authority. San Antonio City Code Chapter 2, Article XI describes the City's veteran-owned small business preference program.

Tracking. **This solicitation is not eligible for a preference** based on status as a veteran-owned small business (VOSB). Nevertheless, in order to determine whether the program can be expanded at a later date, the City tracks VOSB participation at both prime contract and subcontract levels.

Certification. The City relies on inclusion in the database of veteran-owned small businesses (VOSB) maintained by the U.S. Small Business Administration to verify VOSB status; however, veteran status may also be confirmed by certification by another public or private entity that uses similar certification procedures.

Definitions.

The program uses the federal definitions of veteran and veteran-owned small business found in 38 CFR Part 74.

- The term "veteran" means a person who served on active duty with the U.S. Army, Air Force, Navy, Marine Corps, Coast Guard, for any length of time and at any place and who was discharged or released under conditions other than dishonorable. Reservists or members of the National Guard called to federal active duty or disabled from a disease or injury incurred or aggravated in line of duty or while in training status.

- A veteran-owned small business is a business that is not less than 51 percent owned by one or more veterans, or in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; the management and daily business operations of which are controlled by one or more veterans and qualifies as "small" for Federal business size stand purposes.

The program uses the below definition of joint venture.

- Joint Venture means a collaboration of for-profit business entities, in response to a solicitation, which is manifested by a written agreement, between two or more independently owned and controlled business firms to form a third business entity solely for purposes of undertaking distinct roles and responsibilities in the completion of a given contract. Under this business arrangement, each joint venture partner shares in the management of the joint venture and also shares in the profits or losses of the joint venture enterprise commensurately with its contribution to the venture.

The program does not distinguish between a veteran and a service-disabled veteran-owned business and is not limited geographically.

COMPLETE THE FOLLOWING FORM AND SUBMIT WITH YOUR BID/PROPOSAL.

INSTRUCTIONS

- IF SUBMITTING AS A PRIME CONTRACTOR ONLY, COMPLETE **SECTION 1** OF THIS FORM.
- IF SUBMITTING AS A PRIME CONTRACTOR UTILIZING A SUBCONTRACTOR, COMPLETE **SECTIONS 1 AND 2** OF THIS FORM.

City of San Antonio

Veteran-Owned Small Business Program Tracking Form

SOLICITATION NAME/NUMBER: 6100006588

Name of Respondent:	Siddons-Martin Emergency Group	
Physical Address:	14233 Interdrive West	
City, State, Zip Code:	Houston, Texas 77032	
Phone Number:	1-800-784-6806	
Email Address:	jdoran@siddons-martin.com	
Is Respondent certified as a VOSB with the U.S. Small Business Administration? (circle one)	Yes	No
If yes, provide the SBA Certification #		
If not certified by the SBA, is Respondent certified as a VOSB by another public or private entity that uses similar certification procedures? (circle one)	Yes	No
If yes, provide the name of the entity who has certified Respondent as a VOSB. Include any identifying certification numbers.		
Participation Percentage:		
Participation Dollar Amount:		

Is Respondent subcontracting with a business that is certified as a VOSB? (circle one)	Yes	No
Name of **SUBCONTRACTOR** Veteran-Owned Small Business:		
Physical Address:		
City, State, Zip Code:		
Phone Number:		
Email Address:		
Is **SUBCONTRACTOR** certified as a VOSB with the U.S. Small Business Administration? (circle one)	Yes	No
If yes, provide the SBA Certification #		
If not certified by the SBA, is **SUBCONTRACTOR** certified as a VOSB by another public or private entity that uses similar certification procedures? (circle one)	Yes	No
If yes, provide the name of the entity who has certified **SUBCONTRACTOR** as a VOSB. Include any identifying certification numbers.		
Participation Percentage:		
Participation Dollar Amount		

City of San Antonio

Veteran-Owned Small Business Program Tracking Form

ACKNOWLEDGEMENT

THE STATE OF TEXAS

I certify that my responses and the information provided on this Veteran-Owned Small Business Preference Program Identification Form are true and correct to the best of my personal knowledge and belief and that I have made no willful misrepresentations on this form, nor have I withheld any relevant information in my statements and answers to questions. I am aware that any information given by me on this Veteran-Owned Small Business Preference Program Identification Form may be investigated and I hereby give my full permission for any such investigation, including the inspection of business records and site visits by City or its authorized representative. I fully acknowledge that any misrepresentations or omissions in my responses and information may cause my offer to be rejected or contract to be terminated. I further acknowledge that providing false information is grounds for debarment.

BIDDER/RESPONDENT'S FULL NAME:

Jeffrey A. Doran

(Print Name) Authorized Representative of Bidder/Respondent

Jeffrey A. Doran Digitally signed by Jeffrey A. Doran
DN: cn=Jeffrey A. Doran, o, ou, email=jdoran@siddons-martin.com, c=US
Date: 2015.09.16 10:19:36 -05'00'

(Signature) Authorized Representative of Bidder/Respondent

G. M. - Sales Operations

Title

September 16, 2015

Date

This Veteran-Owned Small Business Program Tracking Form must be submitted with the Bidder/Respondent's bid/proposal.

CONFLICT OF INTEREST QUESTIONNAIRE

FORM CIQ

For vendor or other person doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 1491, 80th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. *See* Section 176.006, Local Government Code.

A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

OFFICE USE ONLY

Date Received

1 **Name of person who has a business relationship with local governmental entity.**

Siddons-Martin Emergency Group, LLC

2 ☐ **Check this box if you are filing an update to a previously filed questionnaire.**

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 **Name of local government officer with whom filer has employment or business relationship.**

N/A

Name of Officer

This section (item 3 including subparts A, B, C & D) must be completed for each officer with whom the filer has an employment or other business relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the filer of the questionnaire?

☐ Yes ☑ No

B. Is the filer of the questionnaire receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?

☐ Yes ☑ No

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?

☐ Yes ☑ No

D. Describe each employment or business relationship with the local government officer named in this section.

4

EXEC V.P.

Signature of person doing business with the governmental entity

8-1-15

Date

Adopted 06/29/2007