CITY OF SANTA ROSA
GENERAL SERVICES AGREEMENT
WITH HI-TECH EMERGENCY VEHICLE SERVICE, INC.
AGREEMENT NUMBER _____

This "Agreement" is made as of this ____day of_____, 2017 by and between the City of Santa Rosa, a municipal corporation ("City"), and Hi-Tech Emergency Vehicle Service, Inc., a California Corporation, ("Contractor").

RECITALS

A. City desires to purchase two (2) each of Type I Fire Emergency Service vehicles.

B. City desires to retain a qualified contractor to conduct the services described above in accordance with the terms of this Agreement.

C. Contractor represents to City that it is fully qualified to conduct the services described above.

D. The parties have negotiated upon the terms pursuant to which Contractor will provide such services and have reduced such terms to writing.

AGREEMENT

NOW, THEREFORE, City and Contractor agree as follows:

1. SCOPE OF SERVICES

Contractor shall provide to City the services described in Exhibit A ("Specifications"). Contractor shall provide these services at the time, place, and in the manner specified in Exhibit A. Exhibit A is attached hereto solely for the purpose of defining the manner and scope of services to be provided by Contractor and is not intended to, and shall not be construed so as to, modify or expand the terms, conditions or provisions contained in this Agreement. The parties agree that any term contained in Exhibit A that adds to, varies or conflicts with the terms of this Agreement is null and void.

2. TIME FOR PERFORMANCE

The services described herein shall be provided and completed no later than 365 working days from date entered into agreement referenced above, and same performance time for any optional years' purchased. Contractor shall devote such time and effort to the performance of services as is necessary for the satisfactory and timely performance of Contractor's obligations under this Agreement. Neither party shall be

considered in default of this Agreement, to the extent that party's performance is prevented or delayed by any cause, present or future, that is beyond the reasonable control of that party.

3. STANDARD OF PERFORMANCE

Contractor shall perform all services required under this Agreement in the manner and according to the standards currently observed by a competent practitioner of Contractor's occupation in California. All products and services of whatsoever nature that Contractor provides to City pursuant to this Agreement shall conform to the standards of quality normally observed by persons currently practicing in Contractor's occupation, and shall be provided in accordance with any schedule of performance specified in Exhibit A. Contractor shall assign only competent personnel to perform services pursuant to this Agreement. In the event that City, at any time during the term of this Agreement, desires the removal of any person assigned by Contractor to perform services pursuant to this Agreement, because City, in its sole discretion, determines that such person is not performing in accordance with the standards required herein, Contractor shall remove such person immediately upon receiving notice from City of the desire of City for the removal of such person.

4. COMPENSATION

The total of all fees paid to Contractor for the satisfactory performance and completion of all services set forth in Exhibit A shall not exceed the total sum of $1,247,512.50. The Chief Financial Officer is authorized to pay all proper claims from Fire Apparatus Replacement Project Charge Number 05046.

5. BILLABLE RATES, PAYMENTS TO CONTRACTOR

a. Billable Rates. Contractor shall be paid for the performance of services at price identified as set forth in Exhibit B.

b. Payments. Payments will be delayed where Contractor fails to provide the information required under subsection c.1 below or fails to comply with the insurance requirements in Attachment One to this Agreement. In no event shall the City be obligated to pay late fees or interest, whether or not such requirements are contained in Contractor's invoice.

c. Invoices. Payment will be made on a calendar-month basis in arrears. Invoices shall be submitted to the person and address specified in the Agreement, bid, or purchase order. In the event this Agreement becomes effective or terminates during the course of a month, the amount paid to the Contractor for the partial month shall be determined by prorating the amount on the basis of the number of calendar days involved. Processing of payment will be delayed for Contractor's failure to include reference to Agreement (including number) on the invoice **and for failure to maintain current insurance information with the City in accordance with insurance requirements hereunder.** In no event shall City be obligated to pay late

fees or interest, whether or not such requirements are contained in the Contractor's invoice. Invoices for services provided in June or for any services not previously invoiced shall be submitted within 10 working days after June 30 to facilitate City fiscal year end closing. Failure to comply with this invoice submission requirement may delay payment.

In connection with any cash discount specified in the bid response, if applicable, or Contractor's Proposal, time will be computed from the date correct invoices are received by the person and address specified in the Agreement, bid, or purchase order. For the purpose of earning the discount, payment is deemed to be made on the date of mailing of the City warrant or check. All invoices shall contain the following information:

1. Contractor name and remittance address
2. Date of invoice issuance
3. Amount of invoice
4. City purchase order or Agreement number
5. Identification of Agreement or purchase order line item(s) (if multiple lines) and description of services provided
6. Date of completion of services
7. Detail of costs, including labor, materials, tax, etc.

d. Business Taxes. Contractor shall pay to the City when due all business taxes payable by Contractor under the provisions of Chapter 6-04 of the Santa Rosa City Code. The City may deduct any delinquent business taxes, and any penalties and interest added to the delinquent taxes, from its payments to Contractor.

6. TERM, SUSPENSION, TERMINATION

a. The term of this Agreement shall be for 365 working days, commencing on the date it is made above. City and Contractor may, upon mutual written agreement of both parties, extend this Agreement for up to ten (10) additional one year terms to purchase additional vehicles as listed in Exhibit B.

b. City shall have the right at any time to temporarily suspend Contractor's performance hereunder, in whole or in part, by giving a written notice of suspension to Contractor. If City gives such notice of suspension, Contractor shall immediately suspend its activities under this Agreement, as specified in such notice.

c. City shall have the right to terminate this Agreement for convenience at any time by giving a written notice of termination to Contractor. If City gives such notice of termination, Contractor shall immediately cease rendering services pursuant to this Agreement. If City terminates this Agreement, City shall pay Contractor the reasonable value of services rendered by Contractor prior to termination. In this regard, Contractor shall furnish to City such information as in the judgment of the City is necessary for City to determine the reasonable value of the services rendered by Contractor. City shall not in any manner be liable for lost profits that might have been made by Contractor had the Agreement not been terminated or had Contractor completed the services required by this Agreement.

7. TERMINATION OF AGREEMENT FOR DEFAULT

If at any time 1) Contractor fails to conform to the requirements of this Agreement; 2) Contractor seeks relief under any law for the benefit of insolvents or is adjudicated bankrupt; 3) any legal proceeding is commenced against Contractor which may interfere with the performance of this Agreement; or 4) Contractor has failed to supply an adequate working force, or materials of proper quality, or has failed in any other respect to prosecute the work with the diligence and force specified and intended in and by the terms of this Agreement, which default is not fully corrected or remedied to the reasonable satisfaction of City within ten (10) days following the date a written notice thereof by City, then City shall have the right and power, at its option and without prejudice to any other rights or remedies it may have, to immediately terminate this Agreement. Any cost or expense incurred by City arising out of Contractor's breach or default hereunder, and for City's enforcement of these rights, shall be the obligation of Contractor and may, at City's discretion, be deducted from any amounts that may then be owing to Contractor under this Agreement, without any release or waiver of any other rights or remedies in law or equity to which City may be entitled.

8. INDEMNIFY AND HOLD HARMLESS AGREEMENT

Contractor shall indemnify, defend and hold harmless City and its employees, officials, and agents, from and against any liability, (including liability for claims, suits, actions, arbitration proceedings, administrative proceedings, regulatory proceedings, losses, expenses or costs of any kind, whether actual, alleged or threatened, interest, defense costs, and expert witness fees), where the same results from or arises out of the performance of this Agreement by Contractor, its officers, employees, agents, or sub-contractors, excepting only that resulting from the sole, active negligence or intentional misconduct of City, its employees, officials, or agents. This indemnification obligation is not limited in any way by any limitation on the amount or type of damages or compensation payable to or for Contractor or its agents under workers' compensation acts, disability benefits acts, or other employees' benefits acts. The provisions of this Section 8 shall survive any expiration or termination of this Agreement.

9. INSURANCE REQUIREMENTS

Contractor shall maintain in full force and effect all of the insurance coverage described in, and in accordance with, Attachment One, "Insurance Requirements", which is attached hereto and hereby incorporated herein by this reference. Maintenance of the insurance coverages as set forth in Attachment One is a material element of this Agreement and a material part of the consideration provided by Contractor in exchange for the City's agreement to make the payments prescribed hereunder. Failure by Contractor to (i) maintain or renew coverage, (ii) provide the City notice of any changes, modifications, or reductions in coverage, or (iii) provide evidence of renewal, may be treated by the City as a material breach of this Agreement by Contractor, whereupon the City shall be entitled to all rights and remedies at law and in equity, including but not limited to the immediate termination of this Agreement. Notwithstanding the foregoing, any failure by Contractor to maintain required insurance

coverage shall not excuse or alleviate Contractor from any of its other duties or obligations under this Agreement. In the event Contractor, with approval of the City pursuant to Section 11 below, retains or utilizes any subcontractors in the provision of any services to City under this Agreement, Contractor shall assure that any such subcontractor has first obtained, and shall maintain, all of the insurance coverage requirements set forth in Attachment One.

10. LEGAL REQUIREMENTS AND PERMITS; NONDISCRIMINATION

a. Legal Requirements and Permits. Contractor represents and warrants that Contractor has all licenses, permits, City Business Tax Certificate, qualifications, and approvals of whatsoever nature that are legally required for Contractor to practice its occupation and provide services under this Agreement. Contractor shall perform all services described herein in compliance with all applicable federal, state and local laws, rules, regulations, and ordinances, including but not limited to, (i) the Americans With Disabilities Act (ADA) of 1990, (42 U.S.C. 12101, et seq.), and any regulations and guidelines issued pursuant to the ADA, which prohibits discrimination against individuals with disabilities and may require reasonable accommodations; (ii) and Labor Code Sections 1700-1775, which require prevailing wages (in accordance with DIR schedule at www.dir.ca.gov) be paid to any employee performing work covered by Labor Code Section 1720 et seq.; (iii) OSHA; and (iv) the Immigration Reform and Control Act of 1986. Contractor shall, if requested by City, provide certification and evidence of such compliance. If Contractor is an out-of-state corporation, Contractor warrants and represents that it possesses a valid certificate of qualification to transact business in the State of California issued by the California Secretary of State pursuant to Section 2105 of the California Corporations Code.

b. Non-Discrimination. With respect to the provision of goods or services under this Agreement, Contractor agrees not to discriminate against any person because of the race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, age, sexual orientation, or military and veteran status of that person.

11. ASSIGNMENT AND SUBCONTRACTING

Contractor shall not subcontract or assign any right or obligation under this Agreement without the written consent of the City. Any attempted or purported subcontract or assignment without City's written consent shall be void and of no effect. No right under this Agreement, or claim for money due or to become due hereunder, shall be asserted against the City, or persons acting for the City, by reason of any so-called assignment of this Agreement or any part thereof and Contractor hereby agrees to indemnify and hold City harmless against any and all such claims. In the event Contractor obtains the prior written consent of City to assign monies due or to become due under this Agreement, Contractor shall provide City a copy of the instrument of assignment duly executed by Contractor, which shall contain a clause subordinating the claim of the assignee to all prior liens for services rendered or materials supplied for the

performance of work. Upon notice and request by the City, Contractor shall promptly remedy, to include termination of any subcontract as appropriate and necessary, any default or failure to perform in a satisfactory manner the work undertaken by any subcontractor. Contractor shall be fully responsible and accountable to the City for the acts and omissions of its subcontractors, and of persons directly or indirectly employed by them, to the same extent that Contractor is for the acts and omissions of persons directly employed by Contractor. Nothing contained in this Agreement shall create any contractual relation between any subcontractor and the City.

12. BINDING EFFECT

This Agreement shall be binding on the heirs, executors, administrators, successors, and assigns of the parties, subject to the provisions of Section 11, above.

13. RETENTION OF RECORDS

Contractor shall be required to retain any records necessary to document the charges for the services to be performed under this Agreement and make such records available to the City for inspection at the City's request for a period of not less than four (4) years.

14. ENTIRE AGREEMENT

This document, including all Exhibits and Attachment One, contains the entire agreement between the parties and supersedes whatever oral or written understanding the parties may have had prior to the execution of this Agreement. No alteration to the terms of this Agreement shall be valid unless approved in writing by Contractor, and by City, in accordance with applicable provisions of the Santa Rosa City Code.

15. SEVERABILITY

If any portion of this Agreement or the application thereof to any person or circumstance shall be held invalid or unenforceable, the remainder of this Agreement shall not be affected thereby and shall be enforced to the greatest extent permitted by law.

16. WAIVER

Neither City acceptance of, or payment for, any service performed by Contractor, nor any waiver by either party of any default, breach or condition precedent, shall be construed as a waiver of any provision of this Agreement, nor as a waiver of any other default, breach or condition precedent or any other right hereunder.

17. ENFORCEMENT OF AGREEMENT

This Agreement shall be governed, construed and enforced in accordance with the laws of the State of California. Venue of any litigation arising out of or connected

with this Agreement shall lie exclusively in the state trial court located in Sonoma County in the State of California, and the parties consent to jurisdiction over their persons and over the subject matter of any such litigation in such court, and consent to service of process issued by such court.

18. CONTRACTOR NOT AGENT

Except as City may specify in writing, Contractor and Contractor's personnel shall have no authority, express or implied, to act on behalf of City in any capacity whatsoever as an agent. Contractor and Contractor's personnel shall have no authority, express or implied, to bind City to any obligations whatsoever.

19. INDEPENDENT CONTRACTOR

a. It is understood and agreed that Contractor (including Contractor's employees) is an independent contractor and that no relationship of employer-employee exists between the parties hereto for any purpose whatsoever. Neither Contractor nor Contractor's assigned personnel shall be entitled to any benefits payable to employees of City. City is not required to make any deductions or withholdings from the compensation payable to Contractor under the provisions of this Agreement, and Contractor shall be issued a Form 1099 for its services hereunder. As an independent contractor, Contractor hereby agrees to indemnify and hold City harmless from any and all claims that may be made against City based upon any contention by any of Contractor's employees or by any third party, including but not limited to any state or federal agency, that an employer-employee relationship or a substitute therefor exists for any purpose whatsoever by reason of this Agreement or by reason of the nature and/or performance of any services under this Agreement.

b. It is further understood and agreed by the parties hereto that Contractor, in the performance of Contractor's obligations hereunder, is subject to the control and direction of City as to the designation of tasks to be performed and the results to be accomplished under this Agreement, but not as to the means, methods, or sequence used by Contractor for accomplishing such results. To the extent that Contractor obtains permission to, and does, use City facilities, space, equipment or support services in the performance of this Agreement, this use shall be at the Contractor's sole discretion based on the Contractor's determination that such use will promote Contractor's efficiency and effectiveness. Except as may be specifically provided elsewhere in this Agreement, the City does not require that Contractor use City facilities, equipment or support services or work in City locations in the performance of this Agreement.

c. If, in the performance of this Agreement, any third persons are employed by Contractor, such persons shall be entirely and exclusively under the direction, supervision, and control of Contractor. Except as may be specifically provided elsewhere in this Agreement, all terms of employment, including hours, wages, working conditions, discipline, hiring, and discharging, or any other terms of employment or

requirements of law, shall be determined by Contractor. It is further understood and agreed that Contractor shall issue W-2 or 1099 Forms for income and employment tax purposes, for all of Contractor's assigned personnel and subcontractors.

d. The provisions of this Section 19 shall survive any expiration or termination of this Agreement. Nothing in this Agreement shall be construed to create an exclusive relationship between City and Contractor. Contractor may represent, perform services for, or be employed by such additional persons or companies as Contractor sees fit.

20. NOTICES

Except as otherwise specifically provided in this Agreement, any notice, submittal or communication required or permitted to be served on a party hereto, may be served by personal delivery to the person or the office of the person identified below. Service may also be made by mail, by placing first-class postage affixed thereto, and addressed as indicated below, and depositing said envelope in the United States mail to:

City

Brandalyn Tramel
Purchasing Agent
631 First Street, 2nd Floor
Santa Rosa, California 95404
Phone: (707) 543-3706
Fax: (707) 543-3723

Contractor

Noel Carraway
444 Greger Street
Oakdale, CA 95361
Phone: (209) 847-3042
Fax (209) 847-2110

21. AUTHORITY; SIGNATURES REQUIRED FOR CORPORATIONS

Contractor hereby represents and warrants to the City that it is (a) a duly organized and validly existing Corporation, formed and in good standing under the laws of the State of California, (b) has the power and authority and the legal right to conduct the business in which it is currently engaged, and (c) has all requisite power and authority and the legal right to consummate the transactions contemplated in this Agreement. Contractor hereby further represents and warrants that this Agreement has been duly authorized, and when executed by the signatory or signatories listed below, shall constitute a valid agreement binding on Contractor in accordance with the terms hereof.

If this Agreement is entered into by a corporation, it shall be signed by two corporate officers, one from each of the following two groups: a) the chairman of the board, president or any vice-president; b) the secretary, any assistant secretary, chief financial officer, or any assistant treasurer. The title of the corporate officer shall be listed under the signature.

Executed as of the day and year first above stated.

CONTRACTOR:

Name of Firm: Hi-Tech Emergency Vehicle Services, Inc.

TYPE OF BUSINESS ENTITY:
_____ Individual/Sole Proprietor
_____ Partnership
__X__ Corporation
_____ Limited Liability Company
_____ Other (please specify: _____)

Signatures of Authorized Persons:

By: Vincent T Ruthman

Print Name: VINCENT T. RUTHMAN

Title: PRESIDENT

By: Susan Ruthman

Print Name: SUSAN RUTHMAN

Title: SECRETARY

City of Santa Rosa Business Tax Cert. No.

_____

CITY OF SANTA ROSA
a Municipal Corporation

By: _____

Print Name: Chris Coursey

Title: City Mayor

APPROVED AS TO FORM:

_____
Office of the City Attorney

ATTEST:

_____
City Clerk

Attachments:

Attachment One - Insurance Requirements
Exhibit A - Specifications
Exhibit B – Cost Proposal, including prep-payment discount
Exhibit C – Warranty and Service
Exhibit D – Special Provisions
Exhibit E – Additional Purchase Provisions, including 10 year purchase schedule

ATTACHMENT ONE
INSURANCE REQUIREMENTS FOR GENERAL SERVICES AGREEMENTS

A. Insurance Policies: Contractor shall, at all times during the term of this Agreement, maintain and keep in full force and effect, the following policies of insurance with minimum coverage as indicated below and issued by insurers with AM Best ratings of no less than A-:VI or otherwise acceptable to the City.

	Insurance	Minimum Coverage Limits	Additional Coverage Requirements
1.	Commercial general liability	$ 1 million per occurrence $ 2 million aggregate	Coverage must be at least as broad as ISO CG 00 01 and must include completed operations coverage. If insurance applies separately to a project/location, aggregate may be equal to per occurrence amount. **Coverage may be met by a combination of primary and umbrella or excess insurance but umbrella and excess shall provide coverage at least as broad as specified for underlying coverage. Coverage shall not exclude subsidence.**
2.	Business auto coverage	$ 1 million	ISO Form Number CA 00 01 covering any auto (Code 1), or if Contractor has no owned autos, then hired, (Code 8) and non-owned autos (Code 9), with limit no less than $ 1 million per accident for bodily injury and property damage.
3.	Workers' compensation and employer's liability	$ 1 million	As required by the State of California, with Statutory Limits and Employer's Liability Insurance with limit of no less than $ 1 million per accident for bodily injury or disease. The Workers' Compensation policy shall be endorsed with a waiver of subrogation in favor of the City for all work performed by the Contractor, its employees, agents and subcontractors.
4.	Pollution Liability	(N/A)	If the work involves lead-based paint or asbestos identification/remediation, the policy must not contain lead-based paint or asbestos exclusions. If the work involves mold identification, the policy must not contain mold exclusion and the definition of "Pollution" in the policy must include microbial matter, including mold.

B. Endorsements:

1. All policies shall provide or be endorsed to provide that coverage shall not be canceled by either party, except after prior written notice has been provided to the entity in accordance with the policy provisions.

2. Liability, umbrella and excess policies shall provide or be endorsed to provide the following:

   a. For any claims related to this project, Contractor's insurance coverage shall be primary and any insurance or self-insurance maintained by City shall be excess of the Contractor's insurance and shall not contribute with it; and,

   b. **The City of Santa Rosa, its officers, agents, employees and volunteers are to be covered as additional insureds on the CGL policy**. General liability coverage can be provided in the form of an endorsement to Contractor's insurance at least as broad as ISO Form CG 20 10 11 85 or if not available, through the addition of both CG 20 10 and CG 20 37 if a later edition is used.

C. Verification of Coverage and Certificates of Insurance: Contractor shall furnish City with original certificates and endorsements effecting coverage required above. Certificates and endorsements shall make reference to policy numbers. All certificates and endorsements are to be received and approved by the City before work commences and must be in effect for the duration of the Agreement. The City reserves the right to require complete copies of all required policies and endorsements.

D. Other Insurance Provisions:

1. No policy required by this Agreement shall prohibit Contractor from waiving any right of recovery prior to loss. Contractor hereby waives such right with regard to the indemnitees.

2. All insurance coverage amounts provided by Contractor and available or applicable to this Agreement are intended to apply to the full extent of the policies. Nothing contained in this Agreement limits the application of such insurance coverage. Defense costs must be paid in addition to coverage amounts.

3. Policies containing any self-insured retention (SIR) provision shall provide or be endorsed to provide that the SIR may be satisfied by either Contractor or City. Self-insured retentions above $10,000 must be approved by City. At City's option, Contractor may be required to provide financial guarantees.

4. Sole Proprietors must provide a representation of their Workers' Compensation Insurance exempt status.

5. City reserves the right to modify these insurance requirements while this Agreement is in effect, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.

HI-TECH EMERGENCY VEHICLE SERVICE, INC.

444 W. GREGER ST. • OAKDALE, CA 95361 • (209) 847-3042 • FAX (209) 847-2110

Exhibit A
Santa Rosa Fire Department Type I Fire Apparatus Specifications
RFP 17-14

MODEL

The cab and chassis shall be a Spartan Gladiator. The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time.

APPARATUS TYPE

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

VEHICLE TYPE

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

EQUIPMENT MOUNTING

All tools and equipment specified/supplied with apparatus, or provided by Fire Department shall be mounted by the bidder per the Santa Rosa Fire Department's instructions which will include pegboard type mounting surface, fabricated brackets, trays, dividers, covers and tool mounts at the discretion of Santa Rosa Fire Department.

OVERALL APPARATUS DIMENSIONS

The apparatus, when fully equipped, shall not exceed 29' 6" in overall length, 115" in overall height. Rear hose bed height shall not exceed 67" from the ground to the bottom of the bed. Transverse hose bed height shall not exceed 67" from the ground to the bottom of the bed. Tailboard depth shall be 16", shall not have an angle of departure or approach less than 14°. Wheelbase shall have a range of 170 to 174" Turning radius shall be no more than 28 feet curb to curb. If the successful bidder cannot meet the 170 wheelbase-minimal changes in compartment layout will be address at Pre-Construction meeting.

AXLE CONFIGURATION

The chassis shall feature a 4 x 2 axle configuration consisting of a single rear drive axle with a single front steer axle.

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be 20,000 pounds.
This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

GROSS AXLE WEIGHT RATINGS REAR

The rear gross axle weight rating (GAWR) of the chassis shall be 24,000 pounds.
This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

PUMP PROVISION

The chassis shall include provisions to mount a drive line pump in the middle of the chassis, behind the cab, more commonly known as the midship location.

WATER & FOAM TANK CAPACITY

The chassis shall include a carrying capacity of up to 500 gallons. The water and/or foam tank(s) shall be supplied and installed by the apparatus manufacturer.

CAB STYLE

The cab shall be a custom, fully enclosed, Medium Four Door model with a flat roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to eight (8) seating positions.

The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.
The cab shall be constructed using multiple aluminum extrusions in conjunction with aluminum plate, which shall provide proven strength and the truest, flattest body surfaces ensuring less expensive paint repairs if needed. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

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

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19-inch-thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and roof skin shall be 0.13-inch-thick; the rear wall skin shall be 0.09-inch-thick; the front cab structure shall be 0.19 inch thick.
The exterior width of the cab shall be 99.40 inches wide with a minimum interior width of 91.00 inches. The overall cab length shall be 131.10 inches with 54.00 inches from the centerline of the front of the axle to the back of the cab.

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

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner in the non-raised roof area and a rear floor to headliner height of 55.00 inches at a minimum. The cab shall offer an interior measurement, at the floor level, from the rear of the engine tunnel to the rear wall of the cab of 49.88 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface. Exceptions to these measurements must be approved by Santa Rosa Fire Department.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.25 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 32.25 inches wide X 51.00 inches high, from the cab floor to the top of the door opening.

The cab shall incorporate a progressive two (2) step configuration from the ground to the cab floor at each door opening. The progressive steps are vertically staggered and extend the full width of each step well allowing personnel in full firefighting gear to enter and exit the cab easily and safely.

CAB STYLE (Continued)

The first step for the driver and officer area shall measure approximately 11.50 inches deep X 31.13 inches wide. The intermediate step shall measure approximately 8.50 inches deep X 32.50 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.
The first step for the crew area shall measure approximately 11.50 inches deep X 20.44 inches wide. The intermediate step shall measure approximately 10.25 inches deep X 22.75 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.80 inches.

OCCUPANT PROTECTION

The vehicle shall include the Advanced Protection System™ (APS) (AS LIKE) which shall secure belted occupants and increase the survivable space within the cab. The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.
The system components shall include:

· Driver steering wheel airbag

· Driver dual knee air bags and officer knee airbag

· Large driver, officer, and crew area side curtain airbags

· APS advanced seat belt system - retractor pre-tensioners tighten the seat belts around the occupants, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries

· Heavy truck Restraints Control Module (RCM) - receives inputs from the outboard sensors, selectively deploys APS systems, and records sensory inputs immediately before and during a detected qualifying event

· Integrated outboard crash sensors mounted at the perimeter of the vehicle - detects a qualifying front or side impact event and monitors and communicates vehicle status and real time diagnostics of all critical subsystems to the RCM

· Fault-indicating Supplemental Restraint System (SRS) light on the driver's instrument panel

Frontal impact protection shall be provided by the outboard sensors and the RCM. In a qualifying front impact event the outboard sensors provide inputs to the RCM. The RCM activates the steering wheel airbag, driver side dual knee airbags (patent pending), officer side knee airbag, and advanced seat belts for each occupant in the cab.

Rollover, side impact, and ejection mitigation shall be provided by the outboard sensors and the RCM. In qualifying rollover or side impact events the outboard sensors provide inputs to the RCM. The RCM activates the side curtain airbags and advanced seat belts for each occupant in the cab. The RCM measures roll angle, lateral acceleration, and roll rate to determine if a rollover event or side impact event is imminent or occurring. In the event of a qualifying offset or other non-frontal impact, the RCM shall determine and intelligently deploy the front impact protection system, the side impact protection system, or both front and side impact protection systems based on the inputs received from the outboard crash sensors.

CAB FRONT FASCIA

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

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the "Classic" design.
The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. A chrome plated molded plastic bezel shall be provided on each side around each set of four lamps.

FRONT GRILLE

The front cab fascia shall include a classic box style, 304 stainless steel front grille. The grille shall measure 55.45 wide X 33.50 inches high X 1.50 inches deep. The upper portion of the grille shall be hinged to provide service access behind the grille. The grille shall include a minimum free air intake of 750.00 square inches.
The upper and lower portion of the grille shall include wire mesh stone shield to protect the cooling package from debris through the grille openings.

CAB UNDERCOAT

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

CAB SIDE DRIP RAIL

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

CAB PAINT EXTERIOR

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.
All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper followed by sealing the seams with SEM brand seam sealer.

CAB PAINT EXTERIOR (Continued)

The cab shall then be painted the specific color designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene. The paint shall have a minimum thickness of 2.00 mils, followed by a clear top coat not to exceed 2.00 mils. The entire cab shall then be baked at 180 degrees for one (1) hour to speed the curing process of the coatings.

CAB PAINT MANUFACTURER

The cab shall be painted with DuPont paint.

CAB PAINT PRIMARY/LOWER COLOR

The primary/lower paint color shall be DuPont Imron Elite N0302 EX Red to match SIKKENS #FLNA 3284

CAB PAINT SECONDARY/UPPER COLOR

The secondary/upper paint color shall be DuPont Elite 817 white to match SIkkens #FLNA 4002

CAB PAINT EXTERIOR BREAKLINE

The upper and lower paint shall meet at a breakline on the cab which shall be located approximately 1.00 inch below the door windows on each side of the cab. The breakline shall curve down at the front cab corners to approximately 5.00 inches below the windshields on the front of the cab.

CAB PAINT PINSTRIPE

Where the upper and lower paint colors meet a temporary 0.50 inch wide black pinstripe shall be applied over this break line to offer a more finished look prior to the final pinstripe being installed by the OEM.

CAB PAINT WARRANTY

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for seven (7) years from the first owner's date of purchase or in service or the first 70,000 actual miles, whichever occurs first.

CAB PAINT INTERIOR

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

CAB ENTRY DOORS

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors designed for ease of entering and egress when outfitted with an SCBA. The doors shall be constructed of extruded aluminum with a nominal thickness of 0.13 inch. The exterior skins shall be constructed of 0.13-inch aluminum plate.

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.
All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38-inch pin and shall be constructed of stainless steel.

CAB ENTRY DOOR TYPE

All cab entry doors shall be full length in design to fully enclose the lower cab steps. Entry doors shall include Pollak mechanical plunger style switches for electrical component activation.

CAB INSULATION

The cab ceiling and walls shall include 1.00-inch-thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

CAB STRUCTURAL WARRANTY

Summary of Warranty Terms:
The cab structure shall be warranted for a period of ten (10) years or one hundred thousand (100,000) miles which ever may occur first. The warranty period shall commence on the date the vehicle is delivered to the first end user.

CAB TEST INFORMATION

The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5.

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

ELECTRICAL SYSTEM

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

APPARATUS WIRING PROVISION

An apparatus wiring panel shall be installed in the center dash area behind the rocker switch panel which shall include eight (8) open circuits consisting of three (3) 20 amp, one (1) 30 amp, three (3) 10 amp, and one (1) 15 amp circuit, with relays and breakers with trigger wires which shall be routed to the rocker switch panel.

MULTIPLEX DISPLAY

The multiplex electrical system shall include a Weldon Vista IV display which shall be located on the left side of the dash in the switch panel. The Vista IV shall feature a full color LCD display screen which includes a message bar displaying the time of day and important messages requiring acknowledgement by the user which shall all be displayed on the top of the screen in the order they are received. There shall be eight (8) push button virtual controls, four (4) on each side of the display for the on-board diagnostics. The display screen shall be video ready for back-up cameras, thermal cameras, and DVD.

The Vista IV display shall offer varying fonts and background colors. The display shall be fully programmable to the needs of the customer and shall offer virtually infinite flexibility for screen configuration options.

LOAD MANAGEMENT SYSTEM

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

DATA RECORDING SYSTEM

The chassis shall have a Weldon Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901 and shall be integrated with the Weldon Multiplex electrical system. The following information shall be recorded:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position

DATA RECORDING SYSTEM (Continued)

· ABS Event
· Seat Belt Status
· Master Optical Warning Device Switch Position
· Time
· Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system.

ACCESSORY POWER

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40 amp battery direct load. One (1) power stud shall be capable of carrying up to a 15 amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud. A 225 amp battery direct power and ground stud shall be provided and installed on the chassis near the left-hand battery box for OEM body connections.

EXTERIOR ELECTRICAL TERMINAL COATING

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

ENGINE

The chassis engine shall be a Cummins L9 engine. The L9 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 450 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250 foot pounds of torque at 1400 RPM with 543 cubic inches (8.9 liters) of displacement.

The L9 engine shall feature a VGT™ Turbocharger, a high pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the 2017 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.
The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand Citgard 500, or equivalent SAE
15W40 CJ4 low ash engine oil which shall be utilized for proper engine lubrication.

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

CAB ENGINE TUNNEL

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade 0.19 of an inch thick aluminum alloy plate. The tunnel shall be a maximum of 46.50 inches wide X 29.00 inches high.

DIESEL PARTICULATE FILTER CONTROLS

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit.

ENGINE PROGRAMMING HIGH IDLE SPEED

The engine high idle control shall maintain the engine idle at approximately 1200 RPM when engaged.

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with a red high-idle speed control rocker switch, which shall be pre-set to maintain the engine idle at a pre-determined rate when activated manually. This device shall operate when the master switch is activated and safely interlocked only to function when the transmission is in neutral with the parking brake set. There shall be an indicator on the Vista display and control screen for the high idle speed control

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

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

AUXILIARY ENGINE BRAKE

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

ELECTRONIC ENGINE OIL LEVEL INDICATOR

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

FLUID FILLS

The front of the chassis shall accommodate fluid fill for the engine oil through the grille. This area shall also accommodate a check for the engine oil. The transmission, power steering, and coolant fluid fills and checks shall be under the cab. The windshield washer fill shall be accessible through the front left side mid step.

ENGINE DRAIN PLUG

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

ENGINE WARRANTY

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

REMOTE THROTTLE HARNESS

An apparatus interface wiring harness for the engine shall be supplied with the chassis. The harness shall include a connector for connection to the chassis harness which shall terminate in the left frame rail behind the cab for reconnection by the apparatus builder. The harness shall contain connectors for a Class 1 Total Pressure Governor Plus and a multiplexed gauge. Separate circuits shall be included for pump controls, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle switch and high idle indication light. The harness shall contain interlocks that will prevent shifting to road or pump mode unless the transmission output speed translates to less than 1 mph and the transmission is in neutral. The shift to pump mode shall also require the park brake be set. The harness shall be designed for a side mount pump panel.

An apparatus interface wiring harness shall also be included which shall be wired to the cab harness interface connectors and shall incorporate circuits with relays to control pump functions. This harness shall control the inputs for the transmission lock up circuits, governor/hand throttle controls and dash display which shall incorporate "Pump Engaged" and "OK to Pump" indicator lights. The harness shall contain circuits for the apparatus builder to wire in a pump switch.

ENGINE PROGRAMMING REMOTE THROTTLE

The engine ECM (Electronic Control Module) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

ENGINE PROGRAMMING IDLE SPEED

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

ENGINE FAN DRIVE

The engine cooling system fan shall incorporate a thermostatically controlled, Horton clutched type fan drive.

When the clutched fan is disengaged, it shall facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure.

ENGINE COOLING SYSTEM

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.
The cooling system shall utilize a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, an air to air charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.

The radiator shall be a down-flow design constructed with aluminum cores, plastic end tanks, and a steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.
The cooling system shall include a one-piece injection molded polymer eleven (11) blade fan with a fiberglass fan shroud.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements, and allows for expansion and recovery of coolant into a separate integral expansion chamber.

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

The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "constant torque" style clamps meeting the engine manufacturer's requirements.
The radiator and charge air cooler shall be removable through the bottom of the chassis.

ENGINE COOLING SYSTEM PROTECTION

The engine cooling system shall include a recirculation shield designed to act as a light duty skid plate below the radiator to provide additional protection for the engine cooling system from light impacts, stones, and road debris. The skid plate thickness shall be 0.25 inches. The skid plate shall be painted to match the frame color.

ENGINE COOLANT

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees Fahrenheit.

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

ENGINE COOLANT FILTER

An engine coolant filter with a shut-off valve for the inlet and outlet shall be installed on the chassis. The location of the filter shall allow for easy maintenance.

Proposals offering engines equipped with coolant filters shall be supplied with standard non-chemical type particulate filters.

ELECTRONIC COOLANT LEVEL INDICATOR

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

ENGINE PUMP HEAT EXCHANGER

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

COOLANT HOSES

The cooling system hoses shall be silicone heater hose with rubber hoses in the cab interior. The radiator hoses shall be formed silicone coolant hoses with formed aluminized steel tubing. All heater hose, silicone coolant hose, and tubing shall be secured with stainless steel constant torque band clamps.

ENGINE AIR INTAKE

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

ENGINE AIR INTAKE (Continued)

The engine air intake system shall also include a stainless-steel air cleaner mounted to the frame and located beneath the cab on the right side of the vehicle. The air cleaner shall utilize a replaceable filter element designed to prevent dust and debris from being ingested into the engine. The air cleaner housing and connections in the air intake system shall be designed to mitigate water intrusion into the system during severe weather conditions.

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

AIR INTAKE PROTECTION

A light duty skid plate shall be supplied for the engine air intake system below the right front side of the cab. The skid plate shall provide protection for the air intake system from light impacts, stones, and road debris. The skid plate shall be painted to match the frame color.

ENGINE EXHAUST SYSTEM

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

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

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

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

DIESEL EXHAUST FLUID TANK

The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of six (6) usable gallons and shall be mounted on the left-hand side of the chassis frame behind the batteries below the frame.

The DEF tank shall be designed with capacity for expansion in case of fluid freezing. Engine coolant, which shall be thermostatically controlled, shall be run through lines in the tank to help prevent the DEF from freezing and to provide a means of thawing the fluid if it should become frozen.

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

ENGINE EXHAUST ACCESSORIES

The exhaust system shall be modified to accept a Plymovent 5" exhaust extraction system collar. There shall be a polished stainless tip.

ENGINE EXHAUST WRAP

The exhaust tubing between the engine turbo and the diesel particulate filter (DPF) shall be wrapped with a thermal cover in order to retain the necessary heat for DPF regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust.

TRANSMISSION

The drive train shall include an Allison model EVS 3000 torque converting, automatic transmission with retarder shall be provided. Transmission shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters and Castrol TranSynd synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

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

The transmission gear ratios shall be:

- 1st 3.49:1
- 2nd 1.86:1
- 3rd 1.41:1
- 4th 1.00:1
- 5th 0.75:1
- 6th 0.65:1 (if applicable)
- Rev 5.03:1

TRANSMISSION RETARDER CAPACITY LEVEL

The transmission retarder shall be programmed so the maximum retardation shall be at the high capacity level.

TRANSMISSION RETARDER CONTROL

The transmission retarder control will be activated 33 percent by release of the accelerator pedal, or 66 percent by slight application of the brake pedal, or 100 percent by heavy application of the brake pedal. The transmission retarder will have a master on/off switch on the instrument panel. A second on/off switch is provided to activate and de-activate the auto apply portion.

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 MODE PROGRAMMING

The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth and sixth speeds shall be programmed as over drive speeds and shall be available with the activation of the mode button on the shifting pad.

TRANSMISSION FEATURE PROGRAMMING

The Allison Gen V-E transmission EVS group package number 127 shall contain the 198 vocational package in consideration of the duty of this apparatus as a pumper. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

This package shall be coupled with the use of a split shaft PTO and incorporate pumping circuits. These circuits shall be used allowing the vehicle to operate in the fourth range lockup while operating the pump mode due to the 1 to 1 ratio through the transmission, therefore the output speed of the engine is the input speed to the pump. The pump output can be easily calculated by using this input speed and the drive ratio of the pump itself to rate the gallons of water the pump can provide.

A transmission interface connector shall be provided in the cab. This package shall contain the following input/output circuits to the transmission control module. The Gen V-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

Function ID	Description	Wire Assignment
Input		
C	PTO Request	142
J	Fire Truck Pump Mode (4^{th} Lockup)	122/123
Output		
C	Range Indicator	145 (4^{th})
G	PTO Enable Output	130
	Signal Return	103

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

The transmission fluid shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

TRANSMISSION SHIFT SELECTOR

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

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

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

TRANSMISSION COOLING SYSTEM

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling. An external transmission cooler shall also be plumbed into the system to provide retarder cooling capacity. For retarder applications, an additional oil to water tube bundle cooler shall be installed. The cooler will be installed into the retarder circuit providing cooling for the retarder. The tube bundle cooler shall be mounted to the chassis, plumbed into the engine cooling system plumbing.

TRANSMISSION DRAIN PLUG

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

TRANSMISSION WARRANTY

The Allison EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

PTO LOCATION

The transmission shall have two (2) power take off (PTO) mounting locations, one (1) in the 8:00 o'clock position and one (1) in the 4:00 o'clock position.

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with Spicer 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®. U-joints to have grease shields mounted above to prevent build-up of grease on bottom of apparatus.

MIDSHIP PUMP / GEARBOX

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

MIDSHIP PUMP / GEARBOX MODEL

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

MIDSHIP PUMP GEARBOX DROP

The Hale pump gearbox shall have an "X" (extra long) drop length.

MIDSHIP PUMP RATIO

The ratio for the midship pump shall be 2.32:1 (23).

MIDSHIP PUMP LOCATION C/L SUCTION TO C/L REAR AXLE

The midship pump shall be located so the dimension from the centerline of the suction to the centerline of the rear axle is 75.50 inches.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a Fleetguard FS1098 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

A secondary fuel filter shall be included as approved by the engine manufacturer.

FUEL LINES

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

FUEL SHUTOFF VALVE

A fuel shutoff valve shall be installed in the fuel draw line, near the fuel tank to allow maintenance to be performed with minimal loss of fuel.

ELECTRIC FUEL PRIMER

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

FUEL TANK

The fuel tank shall have a capacity of fifty (50) gallons and shall measure 35.00 inches in width X 19.00 inches in height X 18.50 inches in length. The increased height and reduced length allows for the use of a shorter rear frame overhang on the chassis.

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

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00 inch NPT fill ports for right or left-hand fill. A 0.50 inch NPT drain plug shall be centered in the bottom of the tank.
The fuel tank shall be mounted below the frame, behind the rear axle. Two (2) three-piece strap hanger assemblies with "U" straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the upper tank mounting brackets. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

FUEL TANK MATERIAL AND FINISH

The fuel tank shall be constructed of 12-gauge aluminized steel. The exterior of the tank shall be powder coated black and then painted to match the frame color.
All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross-hatch adhesion test per ASTM D3359 Method B, results to be 5B minimum. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of H-2H. The direct impact resistance test per ASTM D2794, results to be 5B minimum.

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

FUEL TANK STRAP MATERIAL

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

FUEL TANK FILL PORT

The fuel tank fill ports shall be in-line with the left side fill ports located in the forward position of the fuel tank.

FUEL TANK SERVICEABILTY PROVISIONS

The chassis fuel lines shall have additional length provided so the tank can be easily lowered and removed for service purposes. The additional 8.00 feet of length shall be located above the fuel tank and shall be coiled and secured. The fuel line fittings shall be pointed towards the right side (curbside) of the chassis.

FUEL TANK DRAIN PLUG

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

FRONT AXLE

The front axle shall be a Meritor Easy Steer Non-drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00-inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle.

FRONT AXLE WARRANTY

The front axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

FRONT WHEEL BEARING LUBRICATION

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

FRONT SHOCK ABSORBERS

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.

The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.

The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and "road sensing" shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers. Shocks shall be set at the stiffest setting.

Proposals offering the use of conventional twin tube or "road sensing" designed shocks shall not be considered.

FRONT SUSPENSION

The spring capacity shall be rated at 21,500 pounds.

STEERING COLUMN/ WHEEL

The cab shall include a Douglas Autotech steering column which shall include a seven (7) position tilt, a 2.25 inch telescopic adjustment, and an 18.00 inch, four (4) spoke steering wheel located at the driver's position. The steering wheel shall be covered with black polyurethane foam padding.

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

ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

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

POWER STEERING PUMP

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

FRONT AXLE CRAMP ANGLE

The chassis shall have a front axle cramp angle minimum of 48-degrees to the left and 44-degrees to the right.

POWER STEERING GEAR

The power steering gear shall be a TRW model TAS 85 with an assist cylinder.

CHASSIS ALIGNMENT

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

REAR AXLE

The rear axle shall be a Meritor model RS-24-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 24,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.50 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

The axle shall have heavy-duty Hypoid gearing for longer life, greater strength and quieter operation. Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage will be used.

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR AXLE WARRANTY

The rear axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

VEHICLE TOP SPEED

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

REAR SUSPENSION

The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type conventional multi-leaf spring suspension, with 57.50 inch X 3.00 inch springs. One (1) adjustable and one (1) fixed torque rod shall be provided.

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

FRONT TIRE

The front tires shall be Goodyear 385/65R-22.5 18PR "J" tubeless radial G296 MSA mixed service tread.

The front tire stamped load capacity shall be 18,740 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

FRONT TIRE (Continued)

The Goodyear Intermittent Service Rating maximum load capacity shall be 20,050 pounds per axle with a speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum speed capacity shall be 18,740 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.
The Goodyear Intermittent Service Rating limits the operation of the emergency vehicle to no more than fifty (50) miles of continuous operation under maximum recommended payload, or without stopping for at least twenty (20) minutes. The emergency vehicle must reduce its speed to no more than 50 MPH after the first fifty (50) miles of travel.

REAR TIRE

The rear tires shall be Goodyear 12R-22.5 16PR "H" tubeless radial G182 RSD mixed service tread.

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

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

The Goodyear Intermittent Service Rating limits the operation of the emergency vehicle to no more than fifty (50) miles of continuous operation under maximum recommended payload, or without stopping for at least twenty (20) minutes. The emergency vehicle must reduce its speed to no more than 50 MPH after the first fifty (50) miles of travel.

REAR AXLE RATIO

The rear axle ratio shall be 5.38:1.

TIRE PRESSURE INDICATOR

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

FRONT WHEEL

The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch LvL One™ polished aluminum wheels. The hub piloted mounting system shall provide easy

installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and a polished finish that lasts.

REAR WHEEL

The outer rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch LvL One™ aluminum wheels with a polished outer surface. The inner rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch aluminum wheels with LvL One™ bright machine finish. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

WHEEL TRIM

The front wheels shall include two (2) sets of stainless steel lug nut covers and stainless steel baby moons shipped loose with the chassis for installation by the apparatus builder. The baby moons shall have cutouts for oil seal viewing when applicable.

The rear wheels shall include two (2) sets of stainless steel lug nut covers and band mounted spring clip stainless steel high hats shipped loose with the chassis for installation by the apparatus builder.

The lug nut covers, baby moons, and high hats shall be RealWheels brand constructed of 304L grade, non-corrosive stainless steel with a mirror finish. Each wheel trim component shall meet D.O.T. certification.

BRAKE SYSTEM

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system with a total of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss. All air reservoirs provided on the chassis shall be labeled for identification.

The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.
A four (4) sensor, four (4) modulator anti-lock braking system (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the single rear axle. The ATC system shall apply

the ABS when the drive wheels loose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

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

FRONT BRAKES

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

REAR BRAKES

The rear brakes shall be Meritor 16.50 inch X 7.00 inch S-cam drum type. The brakes shall feature a cast iron shoe.

PARK BRAKE

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

In addition to the mechanical rear brake engagement, the front service brakes will also engage via air pressure, providing additional braking capability.

PARK BRAKE CONTROL

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

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

REAR BRAKE SLACK ADJUSTERS

The rear brakes shall include Meritor automatic slack adjusters installed on the axle which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

AIR DRYER

The brake system shall include a Wabco System Saver 1200 air dryer with an integral heater with a Metri-Pack sealed connector. The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be mounted behind the battery box on the left-hand side.

FRONT BRAKE CHAMBERS

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

REAR BRAKE CHAMBERS

The rear axle shall include TSE 30/30 H.O.T. (High Output Technology) brake chambers shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE 30/30 H.O.T. chambers are designed to provide the same performance as 30/36 chambers in a smaller package.

AIR COMPRESSOR

The air compressor provided for the engine shall be a Wabco SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life.

AIR GOVERNOR

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be located on the air dryer bracket on the left frame rail behind the battery box.

AUXILIARY AIR RESERVOIR

One (1) auxiliary air reservoir with a 2084 cubic inch capacity shall be installed on the chassis to act as an additional reserve supply to the air system for air horn, air tool, or other non-service brake use. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

MOISTURE EJECTORS

Manual ¼ turn drain valves shall be furnished for all air reservoirs. The valves shall be located under the left side running board with each drain clearly labeled.

AIR SUPPLY LINES

The air system on the chassis shall be plumbed with black textile braid covered high tensile steel reinforced wire braided hose with steel reusable fittings. All air plumbing inside the cab shall be reinforced nylon tubing. All drop hoses shall be fiber reinforced neoprene covered hose. The braided air supply lines shall be located on the right side of the frame rail.

AIR INLET CONNECTION

An air connection for the shoreline air inlet shall be supplied.

AIR INLET LOCATION

The air inlet shall be shipped loose with an additional hose length. The additional 10 feet of hose shall be located at the rear of the cab and shall be coiled and secured for shipping.

AIR OUTLET CONNECTION

A quick release air outlet female connector shall be provided for the use of auxiliary air tools and shipped loose with air fittings for installation. The air outlet connector shall be compatible with a Milton 787, Parker Hannifin B13 or Meyers 54-410 connector.

PLUMBING AIR OUTLET CONNECTION

An airline for the shipped loose air outlet connection shall be plumbed to the chassis auxiliary air system reservoir. A 15.00 foot coil of airline shall be provided and fastened to the frame rear of the cab. The airline shall be capped off to prevent depletion of air during chassis transport to the body manufacturer.

AIR INLET/ OUTLET FITTING TYPE

The air connector supplied shall be a 0.25-inch size Tru-Flate Interchange style manual connection which is compatible with Milton 'T' style, Myers 0.25-inch Automotive style and Parker 0.25 inch 10 Series connectors.

AIR TANK SPACERS

There shall be spacers included with the air tank mounting. The spacers shall move the air tanks 1.50 inches inward towards the center of the chassis. This shall provide clearance between the air tanks and the frame for body U-bolt clearance.

WHEELBASE

The chassis wheelbase shall be from 170.00 to 174" inches max.

REAR OVERHANG

The chassis rear overhang shall be 48.00 inches.

FRAME

The frame shall consist of single rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, 10.25 inch web X 3.50 inches deep upper and lower flanges X 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each single rail shall be rated by a Resistance Bending Moment (RBM) minimum of 1,830,400 inch pounds and have a minimum section modulus of 16.64 cubic inches calculated by the radius method. The outside dimension frame shall measure 34.25 inches in width.

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

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

A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The bolt heads shall be flanged type, held in place by distorted thread flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.

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

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

The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.

Proposals offering warranties for frames not including cross members shall not be considered.

FRAME WARRANTY

Summary of Warranty Terms:

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty period shall commence on the date the vehicle is delivered to the first end user.

FRAME PAINT

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

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils.

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

FRONT BUMPER

The chassis shall be equipped with a severe duty front bumper constructed from structural steel channel. The bumper material shall be 0.38 thick ASTM A36 steel which shall measure from a range of 9.00 inches to 12.00 inches high with a 3.05 inch flange and shall be 104.50 inches wide with angled front corners. Bumper shall have provision for mounting license plate, centered.

The bumper shall be primed and painted as specified.

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 6.00 inches ahead of the cab.

FRONT BUMPER PAINT

The front bumper shall be painted the same as the lower cab color.

FRONT BUMPER APRON

The 6.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

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

MECHANICAL SIREN

The front bumper shall include an electro mechanical Federal Q2B siren, which shall be streamlined, chrome-plated and shall produce 123 decibels of sound at 10.00 feet. The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances. A unique clutch design provides a longer coast down sound while reducing the amp draw to 100 amps. The siren shall measure 10.50 inches wide X 10.00 inches high X 14.00 inches deep. The siren shall include mounting hardware designed to recess or flush mount. The siren shall have an emergency disconnect inside officers side footwell to disable the siren.

MECHANICAL SIREN LOCATION

The siren shall be mounted on the left side of the front fascia of the bumper approximately in the center of the flat surface between the bumper radius and the frame rail. The siren shall be mounted with the drive motor recessed with siren head exposed.

MECHANICAL SIREN ACCESSORIES

The front of the siren shall include (2) stainless steel flat bars approximately 2.00 inch wide by 19.00 inches long. Each bar shall be placed vertically on the right and left side of the siren face wrapping around towards the back of the siren into the bumper extension offering protection to the Q2B siren.

Provide a 12 V battery disconnect switch with guard for the siren in the forward cab, right front door step. Exact mounting configuration TBD at the pre-construction meeting.

MECHANICAL SIREN ACTIVATION

The mechanical siren shall be actuated by two (2) Linemaster model SP491-S81 foot switches mounted in the front section of the cab for use by the driver and officer. Two (2) red momentary siren brake rocker switches shall be provided in the switch panels on the dash.

The siren shall only be active when master warning switch is on to prevent accidental engagement, disabled when parking brake set.

AIR HORN

The chassis shall include one (1) Grover model 1510 Stutter Tone air horn which shall measure 24.0 inches long with a 6.00 inch round flare. The air horn shall be trumpet style with a chrome finish. In the case there is not adequate clearance a 21.0 inch long horn will be used.

AIR HORN ACTIVATION

The air horn activation shall be accomplished by the steering wheel horn button for the driver and a right-hand side Linemaster Model SP491-S81 foot switch for the officer. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

AIR HORN LOCATION

The air horn shall be recess mounted in the front bumper face in the furthest inboard position, relative to the outside of the frame rail, on the right side of the bumper.

AIR HORN RESERVOIR

One (1) air reservoir, with a 1200 cubic inch capacity, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

ELECTRONIC SIREN SPEAKER

Provide a Whelen 295HFSA2 remote mount siren with control head. The control head shall be flush mounted in the rocker switch panel on the lower left-hand side of dash. The unit is to have one (1) amplifier and one (1) Cast SA2403 100-watt speaker. The speaker shall include a polished aluminum trim bezel. Yelp and Wail Shall not be connected to the horn ring in the steering wheel. Exact locations TBD at the pre-construction conference.

ELECTRONIC SIREN SPEAKER LOCATION

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

FRONT BUMPER TOW EYES

The bumper shall include two (2) chrome plated tow eyes shall be installed through the front bumper. The eyes shall be fabricated from 0.75 inch thick #1020 ASTM-A36 hot rolled steel. The inside diameter of the eye shall be 2.00 inches and include a chamfered edge.

FOG LIGHTS

Two (2) clear rectangular PIAA model 7603 driving lights shall be installed in the front bumper and wired to a switch in the cab. Location between the frame rails spread as much as possible.

CAB TILT SYSTEM

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

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

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

CAB TILT SYSTEM (Continued)

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

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

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

CAB TILT AUXILIARY PUMP

A manual cab tilt pump module shall be attached to the cab tilt pump housing.

CAB TILT LIMIT SWITCH

A cab tilt limit switch shall be installed. The switch will effectively limit the travel of the cab when being tilted. The limit adjustment of the switch shall be preset by the chassis manufacturer to prevent damage to the cab or any bumper mounted option mounted in the cab tilt arc. Further adjustment to the limit by the apparatus manufacturer shall be available to accommodate additional equipment.

CAB TILT CONTROL RECEPTACLE

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

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

CAB TILT LOCK DOWN INDICATOR

The cab dash shall include a message located within the dual air pressure gauge which shall alert the driver when the cab is unlocked and ajar. The alert message shall cease to be displayed when the cab is in the fully lowered position and the hold down hooks are secured and locked to the cab mounts.

CAB WINDSHIELD

The cab windshield shall have a surface area of 2969.88 square inches and be of a two (2) piece wraparound design for maximum visibility.

CAB WINDSHIELD (Continued)

The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs.
Each windshield shall be installed using black self-locking window rubber.

GLASS FRONT DOOR

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.
There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more commonly known as "cozy glass" ahead of the front door roll down windows.

GLASS TINT FRONT DOOR

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

GLASS REAR DOOR RH

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

GLASS TINT REAR DOOR RIGHT-HAND

The window located in the right-hand side rear window shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS REAR DOOR LH

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

GLASS TINT REAR DOOR LEFT-HAND

The window located in the left-hand side rear door shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS SIDE MID RH

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

GLASS TINT SIDE MID RIGHT-HAND

The window located on the right-hand side of the cab between the front and rear doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS SIDE MID LH

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

GLASS TINT SIDE MID LEFT-HAND

The window located on the left-hand side of the cab between the front and rear doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

CLIMATE CONTROL

A ceiling mounted combination defroster and cabin heating and air conditioning system shall be located above the engine tunnel area. The system covers and plenums shall be of sever duty design made of aluminum which shall be coated with a customer specified interior paint. The design of the system's covers shall provide quick access to washable air intake filters as well as easy access to other serviceable items.
The air delivery plenums provide targeted airflow directly to the vehicle occupants. Six (6) adjustable louvers will provide comfort for the front seat occupants and ten (10) adjustable louvers will provide comfort for the rear crew occupants.

CLIMATE CONTROL (Continued)

The system shall be capable of producing up to 12 FPM of air velocity at all occupant seating positions. Separate front and rear blower motors shall be of brushless design and shall be controlled independently. It shall be capable of reducing the interior cabin air temperature from 122° F (+/- 3° F) to 80° F in thirty minutes with 50% relative humidity and full solar load as described in SAE J2646.
The system shall also provide heater pull up performance which meets or exceeds the performance requirements of SAE J1612 as well as defrost performance that meets or exceeds the performance requirements of SAE J381.

A gravity drain system shall be provided that is capable of evacuating condensate from the vehicle while on a slope of up to a 13% grade in any direction.

The air conditioning system plumbing shall be a mixture of custom bent zinc coated steel fittings and Aero-quip GH134 flexible hose with Aeroquip EZ-Clip fittings.
The overhead heater/defroster plumbing shall include an electronic flow control valve that re-directs hot coolant away from the evaporator, via a bypass loop, as the temperature control is moved toward the cold position.
Any component which needs to be accessed to perform system troubleshooting shall be accessible by one person using basic hand tools. Regularly serviced items shall be replaceable by one person using basic hand tools.

**Performance data is based on testing performed by an independent third party test facility using a medium four-door 10" Raised roof Gladiator chassis equipped with an ISL engine.

CLIMATE CONTROL DRAIN

The climate control system shall include a gravity drain for water management. The gravity drain shall remove condensation from the air conditioning system without additional mechanical assistance. Gravity drains will not block line of forward sight of Firefighter seated facing forward or block field of vision.

CLIMATE CONTROL ACTIVATION

The heating, defrosting and air conditioning controls shall be located on the center dash panel in the lower left-hand side, in a position which is easily accessible to the driver. The climate control shall be activated by a rotary switch.

HVAC OVERHEAD COVER PAINT

The overhead HVAC cover shall be painted with a multi-tone onyx black texture finish.

A/C CONDENSER LOCATION

A roof mounted A/C condenser shall be installed longitudinally on the right (or left) side of the cab, mid-roof.

A/C COMPRESSOR

The air-conditioning compressor shall be a belt driven, engine mounted compressor. The compressor shall be compatible with R134-a refrigerant.

UNDER CAB INSULATION

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

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

The engine tunnel insulation shall measure approximately 0.75 inch thick including a vertically lapped polyester fiber layer, a 1.0 lb/ft^2 PVC barrier layer, an open cell foam layer, and a moisture and heat reflective foil facing reinforced with a woven fiberglass layer. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat, hold in place fastening heads.

INTERIOR TRIM FLOOR

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

INTERIOR TRIM

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

REAR WALL INTERIOR TRIM

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

REAR WALL COAT HOOKS

There will be provided and installed three (3) hooks to hang turnout coats. Two on the rear wall and one behind the officer seat. Exact locations and style TBD.

REAR WALL ELECTRICAL

There will be 12v power on both sides of the rear cab wall for mounting of portable handlight chargers. There will also be cab wall aluminum re-enforcement for the purpose of mounting hand lights. Locations to be determined at preconstruction. Aluminum will be finished cab interior onyx black. Power will be direct from the batteries.

PORTABLE HANDLIGHTS

There will be installed four (4) department supplied Streamlight Ultrastinger LED rechargeable flashlights with chargers. These lights will have a choice of three user selectable programs from 90 lumens to 1,100 lumens and be IPX4 water resistant. There will also be provided and installed three (3) Streamlight Fire Vulcan rechargeable hand lanterns. Hand lanterns shall have C4 LED's and Ultra-bright blue taillight LEDs.

HEADER TRIM

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

TRIM CENTER DASH

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

JOHNNY RAY BRACKET

There shall be a Johnny Ray low profile swivel radio bracket provided and installed on the center dash. Location to be determined at preconstruction.

TRIM LH DASH

The left-hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate for a perfect fit around the instrument panel. For increased occupant protection, the extreme duty left-hand dash utilizes patent pending

break away technology to reduce rigidity in the event of a frontal crash. The left-hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.

TRIM RH DASH

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

ENGINE TUNNEL TRIM

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

STEP TRIM

Each cab entry door shall include a three-step entry. The first step closest to the ground shall be constructed of SAE 304 stainless steel with indented perforations. The perforations shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The stainless-steel material shall have a number 7 mirror finish. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in 0.08 inch thick 3003-H22 embossed aluminum tread plate.

UNDER CAB ACCESS DOOR

The cab shall include two (2) aluminum access doors, one in each of the left and right crew step risers painted to match the cab interior paint with a push and turn latch. The under cab access doors shall provide access to the diesel exhaust fluid fill and the battery box area under the cab.

INTERIOR DOOR TRIM

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

DOOR TRIM CUSTOMER NAMEPLATE

The interior door trim on the front doors shall include a customer nameplate which states the vehicle was custom built for their Department.

CAB DOOR TRIM REFLECTIVE

The interior of each door shall include high visibility reflective tape. A white reflective tape shall be provided vertically along the rear outer edge of the door.

The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes. The chevron tape shall measure 6.00 inches in height.

INTERIOR GRAB HANDLE "A" PILLAR

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

INTERIOR GRAB HANDLE FRONT DOOR

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

INTERIOR GRAB HANDLE REAR DOOR

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

ADDITIONAL INTERIOR GRAB HANDLE REAR DOOR

Each interior rear door shall include an additional grab handle. The handle shall be an ergonomically contoured 9.00-inch-long cast aluminum grab handle. Each handle shall be mounted horizontally on the upper interior door trim panel. Each handle shall be textured and feature a black powder coat finish and shall assist personnel entering and exiting the cab.

INTERIOR SOFT TRIM COLOR

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

INTERIOR TRIM SUNVISOR

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

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be black in color.

CAB PAINT INTERIOR DOOR TRIM

The inner door panel surfaces shall be painted with multi-tone onyx black texture finish.

HEADER TRIM INTERIOR PAINT

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

TRIM CENTER DASH INTERIOR PAINT

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

TRIM LH DASH INTERIOR PAINT

The left-hand dash shall be painted with a multi-tone onyx black texture finish.

TRIM RIGHT-HAND DASH INTERIOR PAINT

The right-hand dash shall be painted with multi-tone onyx black texture finish.

DASH PANEL GROUP

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

SWITCHES CENTER PANEL

The center dash panel shall include nine (9) standard rocker switch positions in the upper left portion of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

SWITCHES LEFT PANEL

The left dash panel shall include three (3) switches. There shall be one (1) headlight switch over one (1) windshield wiper/washer control switch and one (1) instrument lamp dimmer switch on the left-hand portion of the panel. All switches shall have backlighting provided.

SWITCHES RIGHT PANEL

The right dash panel shall include three (3) rocker switch positions in a single row configuration.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

SEAT BELT WARNING

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide

a visual warning indicator in the Vista display and control screen(s), an indicator light in the instrument panel, and an audible alarm which is a different tone than the "DO NOT MOVE APPARATUS" tone.
The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened

SEAT MATERIAL

The seats shall be covered with a 45.00-ounce vinyl material. This material shall be semi- resistant to UV rays and from being saturated or contaminated by fluids.

SEAT COLOR

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

SEAT DRIVER

The driver's seat shall be an H.O. Bostrom Sierra model seat with air suspension. The four-way seat shall feature a 1.50 inches' vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.
This model of seat shall have successfully completed the static load tests set forth by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208.

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

SEAT BACK DRIVER

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

SEAT MOUNTING DRIVER

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

12V POWER

There will be a 12V clean power source behind the driver seat for powering the mobile radio. Power will be supplied when master battery switch is on.

SRFD provided VHF antenna will be routed to this location as well. There will be a Kenwood remote radio head wiring harness from this location to the center dash Johnny Ray bracket. There will also be wiring routed for an external speaker to be mounted in the cab ceiling centered between the driver, officer, and forward facing firefighter seats. TBD in pre-construction meeting.

OCCUPANT PROTECTION DRIVER

The driver's position shall be equipped with the Advanced Protection System (APS). The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

The driver's seating area APS shall include:

· Advanced seat belt system - retractor pre-tensioner tightens the seat belt around the driver, securing the occupant in the seat and the load limiter plays out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.

· Large side curtain airbag - protects the driver's head, neck, and upper body from dangerous cab side surfaces and contact points with intrusive surfaces as a result of a collision as well as provides ejection mitigation protection to the driver in a qualifying event by covering the window and the upper portion of the door.

· Dual knee airbags (patent pending) with energy management mounting (patent pending) - protects the driver's lower body from dangerous surface contact injuries, acceleration injuries, and from intrusion as well as locks the lower body in place so the upper body shall be shall be slowed by the load limiting seat belt.

Steering wheel airbag - protects the driver's head, neck, and upper torso from contact injuries, acceleration injuries, and contact points with intrusive surfaces as a result of a collision.

SEAT OFFICER

The officer's seat shall be an H.O. Bostrom 400 Series Firefighter model seat. The seat shall feature eight-way electric positioning. The eight (8) positions shall include up and down, fore and aft and front and rear tilt. The seat shall also feature integral springs to isolate shock.

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

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

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

SEAT BACK OFFICER

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

SEAT MOUNTING OFFICER

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

12V POWER

There will be a 12V power source behind the officer seat for the purpose of powering 2 portable radio chargers. This will be wired directly to the batteries.

OCCUPANT PROTECTION OFFICER

The officer's position shall be equipped with the Advanced Protection System (APS). The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

The officer's seating area APS shall include:

· Advanced seat belt system - retractor pre-tensioner tightens the seat belt around the officer, securing the occupant in the seat and the load limiter plays out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.

· Large side curtain airbag - protects the officer's head, neck, and upper body from dangerous cab side surfaces and contact points with intrusive surfaces as a result of a collision as well as provides ejection mitigation protection to the officer in a qualifying event by covering the window and the upper portion of the door.

Knee airbags - protects the officer's lower body from dangerous surface contact injuries, acceleration injuries, and from contact points with intrusive surfaces as result of a collision as well as locks the lower body in place so the upper body shall be slowed by the load limiting seat belt.

POWER SEAT WIRING

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

SEAT BELT ORIENTATION CREW

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

SEAT REAR FACING OUTER LOCATION

The crew area shall include one (1) rear facing crew seat located directly behind the left-hand front seat.

SEAT CREW REAR FACING OUTER

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom 400 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.
The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

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

SEAT BACK REAR FACING OUTER

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

SEAT MOUNTING REAR FACING OUTER

The rear facing outer seat shall be mounted facing the rear of the cab.

OCCUPANT PROTECTION RFO

The rear facing outer seat position(s) shall be equipped with the Advanced Protection System™ (APS). The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.
Each rear facing outer seating position APS shall include:

· APS advanced seat belt system - retractor pre-tensioners tighten the seat belts around each occupant, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.

· Side curtain airbag - protects each occupant's head, neck, and upper body from dangerous cab side surfaces and contact points with intrusive surfaces as a result of a collision as well as provides ejection mitigation protection to each occupant in a qualifying event by covering the windows and walls adjacent to each seating position with an airbag custom designed for each cab configuration.

SEAT FORWARD FACING CENTER LOCATION

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

SEAT CREW FORWARD FACING CENTER

The crew area shall include a seat in the forward facing center position which shall be a H.O. Bostrom 400 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion. The seat and cushion shall be hinged and compact in design for additional room. The seat shall include a "Fold and Hold" feature so that the cushion shall remain in the seated position and simply touched to flip up.
The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches. No less than 39" from top of seat cushion to ceiling. Exceptions must be approved.
This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of

seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK FORWARD FACING CENTER

The seat in the forward-facing center position shall include a standard seat back. The seat back shall feature an all belts to seat (ABTS) style safety restraint. The ABTS feature shall include a red, three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The seat back shall feature a contoured, adjustable head rest.

OCCUPANT PROTECTION FFC

The forward-facing center seat position(s) shall be equipped with the Advanced Protection System™ (APS). The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.
Each forward-facing center seating position APS shall include:

OCCUPANT PROTECTION FFC (Continued)

· APS advanced seatbelt system - retractor pre-tensioners tighten the seat belts around each occupant, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.

· Side curtain airbag - provides ejection mitigation protection to each occupant in a qualifying event by covering the windows and walls adjacent to crew seating with an airbag custom designed for each cab configuration.

SEAT FRAME FORWARD FACING

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

The seat frame will have one (1) 12V dual USB charger mounted on the front face, centered between the seats, and near the top.

SEAT FRAME FORWARD FACING STORAGE ACCESS

There shall be two (2) access points to the seat frame storage area, one (1) on each side of the seat frame. Each access point shall be covered by a hinged door which measures 15.00 inches in width X 10.63 inches in height.

SEAT MOUNTING FORWARD FACING CENTER

The forward-facing center seats shall offer a special mounting. The seats shall be installed at a minimum of 6.00 inches apart offering additional room for each occupant.

CAB FRONT UNDERSEAT STORAGE ACCESS DOOR

The left under seat storage area shall have a removable aluminum cover. The right under seat storage area shall have a solid aluminum door with locking latch.

SEAT COMPARTMENT DOOR FINISH

All under seat storage compartment access doors shall have a multi-tone onyx black texture finish.

REAR CAB CUP HOLDERS

There shall be provided and installed up to 3 cup holders in the rear cab area. Locations and type to be determined.

WINDSHIELD WIPER SYSTEM

The cab shall include a dual arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers which shall be affixed to a radial wet arm. The system shall include a single motor which shall initiate the arm in which both the left-hand and right-hand windshield wipers are attached, initiating a back and forth motion for each wiper. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

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

CAB DOOR HARDWARE

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of aluminum with a chrome plated finish.

The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel.

All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout.

The exterior pull handles shall include a scuff plate behind the handle constructed of polished stainless steel to help protect the cab finish.

DOOR LOCKS

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

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

GRAB HANDLES

The cab shall include one (1) 24.00-inch three-piece ribbed aluminum, anti-slip exterior assist handle, installed behind each cab door. The assist handle shall be made of extruded aluminum with a knurled finish to enable non-slip assistance with a gloved hand.

REARVIEW MIRRORS

Retrac Aerodynamic West Coast style single vision mirror heads model 607004 shall be provided and installed on each of the front cab doors.

The mirrors shall be mounted via 1.00-inch diameter tubular stainless steel arms to provide a rigid mounting to reduce mirror vibration. Controlled by a 4-way adjustable switch on the dash area.
There will be provided and installed two (2) 7 ½" polished stainless convex mirrors attached below each rear view mirror.

REARVIEW MIRROR HEAT SWITCH

The heat for the rearview mirrors shall be controlled through a virtual button on the Vista display and control screen.

TRIM REAR WALL EXTERIOR

The exterior rear wall of the cab have tread plate guards at the upper corners to prevent damage to paint finish from telescoping light heads.

CAB FENDER

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of aluminum and an outer fenderette 3.50 inches wide made of SAE 304 polished stainless steel. The inner liner surface facing the tire shall coated with Sparliner black spray on bed liner.

MUD FLAPS FRONT

The front wheel wells shall have mud flaps installed on them.

IGNITION

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a one-quarter turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches.
Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the "ON" position.
The starter button shall only operate when both the master battery and ignition switches are in the "ON" position.

BATTERY

The single start electrical system shall include six (6) Harris BCI 31 925 CCA batteries with a 210-minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541.

BATTERY TRAY

The batteries shall be installed within two (2) steel battery housings with integrated slide-out trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame.

The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air flow and help prevent moisture build up. The batteries shall be held in place by non-conducting phenolic resin hold down boards. The design for the slide-out feature shall include remote terminal studs for the battery cables to improve ease of maintenance.

BATTERY BOX COVER

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

BATTERY CABLE

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

BATTERY JUMPER STUD

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

ALTERNATOR

The charging system shall include a 360 amp Niehoff 12 volt alternator. The alternator shall include an ignition excited external regulator.

ELECTRICAL INLET

A Kussmaul 20 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed. No substitution allowed.
A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to.
Amp Draw Reference List:
Kussmaul 1000 Charger - 3.5 Amps
Kussmaul 1200 Charger - 10 Amps
Kussmaul 35/10 Charger - 10 Amps
1000W Engine Heater - 8.33 Amps
1500W Engine Heater - 12.5 Amps
Exhibit A
Type I Fire Apparatus Specifications
120V Air Compressor - 4.2 Amps

ELECTRICAL INLET LOCATION

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

ELECTRICAL INLET CONNECTION

The electrical inlet shall be pre-wired.

ELECTRICAL INLET COLOR

The electrical inlet connection shall include a red cover.

HEADLIGHTS

The cab front shall include four (4) rectangular Model 8800 JW Speaker LED headlamps with separate high and low beams mounted in bright chrome bezels.

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model M6 4.00-inch x 6.00-inch LED amber turn signals which shall be installed in a chrome bezel outboard of the front warning and above the headlamps.

HEADLIGHT LOCATION

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

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include two (2) LED round side marker lights which shall be provided just behind the front cab radius corners.

MARKER AND ICC LIGHTS

In accordance with FMVSS, there shall be five (5) LED cab marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level.

HEADLIGHT AND MARKER LIGHT ACTIVATION

The headlights and marker lights shall be controlled through a rocker switch within easy reach of the driver. There shall be a dimmer switch within easy reach of the driver to adjust the brightness of the dash lights. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the battery master switch is in the "On" position and the parking brake is released.

GROUND LIGHTS

Each door shall include Amdor H2O LED model AY-9500-012 ground lighting mounted to the under side of the cab step below each door. The lights shall be 12.00 inches in length. The ground lighting shall be activated by the opening of the door on the respective cab side as well as rocker switched.

INTERMEDIATE STEP LIGHTS

The intermediate step well area at each door shall include an LED light within a chrome housing. The Egress step lights shall provide visibility to the step well area for the first step exiting the vehicle. The Egress step lights shall activate with Entry step lighting.

ENGINE COMPARTMENT LIGHT

There shall be two (2) LED NFPA compliant lights mounted under the engine tunnel for area work lighting on the engine. The lights shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The lights shall activate automatically when the cab is tilted.

FRONT SCENE LIGHTS

The front of the cab shall include a Whelen Pioneer model PFS2 contour roof mount scene light installed on the brow of the cab.

Each lamp head shall have two (2) 12 volt high intensity LED panels. Each lamp head shall include a flood light and a spotlight. Each lamp head shall draw 6.5 amps in flood light mode and 6.3 amps in spotlight mode and generate 16,200 lumens total. Each lamp head shall measure 4.13 inches in height X 14.00 inches in width. The lamp heads and brackets shall be powder coated white.

FRONT SCENE LIGHTS ACTIVATION

The front scene lighting shall be activated by a rocker switch in the center dash panel labeled "Brow Light".

FRONT SCENE LIGHT LOCATION

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

INTERIOR OVERHEAD LIGHTS

The cab shall include a two-section, red and clear Weldon LED dome lamp located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 7.00 inches in length X 3.00 inches in width with a black colored bezel. The red portion of each lamp shall be activated by opening the respective door and both the red and clear portion can be activated by individual push lenses on each lamp.

An additional incandescent three (3) light module with dual map lights shall be located over the engine tunnel which can be activated by individual switches on the lamp.

MAP LIGHTS

A Federal Signal gooseneck style map light shall be provided. The light shall have red and white LEDs to eliminate the need for a filter, shall be 18.00 inches tall and shall have a control switch on the base. The light shall be located on the right-hand side of the dash.

CAB SPOTLIGHTS

The cab shall include two (2) Unity 335 series LED spotlights. The spotlights shall be mounted one (1) on each side of the cab just above the outer end of the windshield. The spotlights shall feature a 12 volt, 30 watts LED lamp with 215,000 candle power of output in a 6.00 inch diameter chrome plated plastic head and a rubber grip control handle. Exact locations of manual controls and light heads shall be determined at the preconstruction conference.

PAINTING (Continued)

The entire apparatus shall be rust proofed. Rust preventive compounds shall be applied to the underside and internal panels of the apparatus body. Rust preventive compounds shall be highly resistant to moisture, shall not wash off with water, and shall remain pliable.

Located on the front cab doors shall be "SANTA ROSA FIRE DEPT" in "GOLD LEAF" lettering with black outline shadow (letters shall be bookman style 3 inches). Located just above the front radiator grill shall be "SANTA ROSA" in "GOLD LEAF" (letters shall be bookman style 3 inches). The break line around the cab between the white top and red bottom shall be "GOLD LEAF" with black pin stripe using

"Scotchlite" brand material, no exceptions. Exact design, size and layout will be determined at the pre-construction conference.

Provide and install NFPA Chevron striping at the rear of the apparatus. This striping shall cover 50% of the rear surface. This striping shall slope downward and away from the centerline of the vehicle at an angle of 45 degrees. The striping shall be pin striped in black outline. Exact layout, color and design shall be determined at pre-construction conference.

MANUALS/ SOFTWARE

Diagnostic software transmission. The cab and chassis shall include the latest version of Allison's DOC diagnostic software for the transmission, which shall interface with the MagiKey. The software shall be compatible with both the 3000 and 4000 gen IV transmissions. Allison DOC for PC-Service Tool shall be backward compatible with older electronically controlled transmissions. The feature matrix for Allison Transmission Diagnostic Tools shall offer a user friendly table which shall guide you through all available and unavailable functions of the Allison Transmission diagnostic tools. The software shall be supported by Microsoft Windows, XP, Professional and window 2000 (SP4 or later).

Diagnostic Software Engine. The cab and chassis shall include a Cummins Quick Check QC5100 kit. The system shall be shipped loose with the chassis and shall include the following: A QC5100 handheld computer, cables, AC power supply, and the QC5100 software application suite.

Diagnostic Interface Module. The shipped cab and chassis shall include a MagiKey parallel port universal interface module equipment kit which, shall communicate between the vehicle and the computer. The PDM is compatible with RP1210A OEM diagnostic software including: Caterpillar, Cummins, Detroit Diesel, Allison Transmission and Meritor Wabco. The kit shall include the Magikey parallel port data module, a standard IEEE-1284 interface cable which shall be 10.00 feet in length, the installation guide and driver, the NEXIQ RP-1210A API single use license and a 6 and 9 pin "Y" Deutsch adapter. The software shall be supported by Windows 95, 98, 2000, NT, XP and ME.

Provide Two (2) copies of the following manuals:

· Complete chassis parts manual.

· Complete chassis and body electrical as built.

· Complete engine and transmission.

· Complete Hale pump.

TRAINING

The Manufacturer shall provide three (3) days of training, one (1) day per shift, from a qualified person after the delivery of the apparatus for basic operations and maintenance of the apparatus.

DIAGNOSTIC SOFTWARE OCCUPANT PROTECTION

Diagnostic software will be available
The software has been validated to be compatible with the following RP1210 interface adapters:
· Dearborn Group DPA4 Plus
· Noregon Systems JPRO® DLA+
· Cummins INLINE5
· NexIQ™ USB-Link™
The software and adapter utilize the SAE J1939-13 heavy duty nine (9) pin connector which is located below the driver's side dash to the left of the steering column.

WARRANTY

Summary of Warranty Terms:

· The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom built cab and chassis for a period of twenty-four (24) months, or the first 36,000 miles, whichever occurs first. The warranty period shall commence on the date the unit is placed into service.
Additional warranties listed below:
- · Hi-Tech- 2 year/36,000 miles
- · Cummins Engine- 5 year/100,000 miles
- · Allison Transmission- 5 year/unlimited miles
- · Body (structural)- 10 year/unlimited miles
- · Hale Pump- 2 year labor/5 year parts
- · Water Tank- Lifetime
- · Paint- 7 year/unlimited miles
- · Plumbing- 5 year/unlimited miles
- · Electrical- 5 year/unlimited miles
- · Axles- 2 year/unlimited miles

CHASSIS OPERATION MANUAL

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

ENGINE AND TRANSMISSION OPERATION MANUALS

The following manuals specific to the engine and transmission models ordered will be included with the chassis in the ship loose items:
· Hard copy of the Engine Operation and Maintenance manual with CD
· Digital copy of the Transmission Operator's manual
· Digital copy of the Engine Owner's manual

CAB/CHASSIS AS BUILT WIRING DIAGRAMS

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

PERFORMANCE TESTS AND REQUIREMENTS

A road test equal to the requirements of NFPA 1901 will be performed within 15 working days after apparatus has been delivered to the City of Santa Rosa. Additionally, a pump test equal to the requirements of the annual service test specified in NFPA 1911 will be performed within 15 working days after apparatus has been delivered to the City of Santa Rosa. The road test shall be conducted with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and be free from abnormal vibration or noise throughout the
operating range of the apparatus. Vehicle shall adhere to the following parameters:

The apparatus, when fully equipped and loaded, shall have not less than 25% nor more than 50% of the weight on the front axle, and not less than 50% nor more than 75% on the rear axle.

The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed rpm of the engine.

The service brakes shall be capable of stopping a fully loaded vehicle in 35 feet at 20 mph on a level concrete highway. The air brake system shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.

The apparatus, fully loaded, shall be capable of obtaining a speed of 68 mph on a level concrete highway with the engine not exceeding its governed rpm (full load).

SERVICE FACILITY LOCATION

Hi-Tech E.V.S.
444 W. Greger St
Oakdale CA 95361

Transport of the apparatus to the service facility for any warranty work will be at no cost to the City.
The service center shall be available for inspection prior to award of the contract.

FACTORY PRE-BUILD INSPECTION TRIPS

The manufacturer and/or vendor of the unit shall provide, at no cost to the City of Santa Rosa or its representative, two (2) trips to the manufacturer's plant for three (3) representatives of the City. This will consist of three (3) representatives. During these trips, the manufacturer and/or vendor shall pay all expenses for transportation, meals and lodging for the City's representatives. The manufacturer
and/or vendor shall be responsible for making all travel arrangements and lodging accommodations with approval of the Fleet Manager as to dates and times. The intent of these pre-build inspections trips is to secure agreement between the manufacturer and the City of Santa Rosa as to the exact design and detail of the unit being built per the City's specifications.

DO NOT MOVE APPARATUS LIGHT

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

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

The light and alarm shall be interlocked for activation when either a cab door is not firmly closed or an apparatus compartment door is not closed, and the parking brake is released.

MASTER WARNING SWITCH

A master switch shall be included, as a virtual button on the Vista display and control screen which shall be labeled "E Master" for identification. The button shall feature control over all devices wired through it. Any warning device switches left in the "ON" position when the master switch is activated shall automatically power up.

HEADLIGHT FLASHER

An alternating high beam headlight flashing system shall be installed into the high beam headlight circuit which shall allow the high beams to flash alternately from left to right.

Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per NFPA, these clear flashing lights will also be disabled "On Scene" when the park brake is applied.

HEADLIGHT FLASHER SWITCH

The flashing headlights shall be activated through a virtual button on the Vista display and control screen.

INBOARD FRONT WARNING LIGHTS

The cab front fascia shall include two (2) Whelen M6 Super LED front warning lights in the left and right inboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel

INBOARD FRONT WARNING LIGHTS COLOR

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

FRONT WARNING SWITCH

The front warning lights shall be controlled through a virtual control on the Vista display and control screen. This switch shall be clearly labeled for identification.

INTERSECTION WARNING LIGHTS

The chassis shall include two (2) Whelen M6 series Super LED intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn.

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red.

INTERSECTION WARNING LIGHTS LOCATION

The intersection lights shall be mounted on the side of the cab on the front radius angled 15 degrees forward.

SIDE AND INTERSECTION WARNING SWITCH

The side warning lights shall be controlled through a virtual button on the Vista display and control screen. This button shall be clearly labeled for identification. Red Strobes

HORN BUTTON SELECTOR SWITCH

A rocker switch shall be installed in the switch panel between the driver and officer to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

BACK-UP ALARM

An ECCO model 505 backup alarm shall be installed at the rear of the chassis with an output level of 87 dB. The alarm shall automatically activate when the transmission is placed in reverse.

INSTRUMENTATION

An ergonomically designed instrument panel shall be provided. Each gauge shall be backlit with LED lamps. Stepper motor movements shall drive all gauges. The instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring.
A twenty-eight (28) icon lightbar message center with integral LCD odometer/trip odometer shall be included. The odometer shall display up to 999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD message center screen shall be capable of custom configuration by the users for displaying certain vehicle status and diagnostic functions.
The instrument panel shall contain the following gauges:

INSTRUMENTATION (Continued)

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

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

· One (1) four-movement gauge displaying engine oil pressure, coolant temperature, voltmeter, and transmission temperature shall be included. The scale on the engine oil pressure gauge shall read from 0 to 100 pounds PSI with a red line zone indicating critical levels of oil pressure. A red indicator light in the gauge and audible alarm shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (°F) with a red line zone indicating critical coolant temperatures. A red indicator light in the gauge and audible alarm shall indicate high coolant temperature. The scale on the voltmeter shall read from 9 to 18 volts with a red line zone indicating critical levels of battery voltage. A red indicator light in the gauge and an audible alarm shall indicate high or low system voltage. The low voltage alarm shall indicate when the system voltage has dropped below 11.8 volts for more than 120 seconds in accordance with the requirements of NFPA 1901. The scale on the transmission temperature gauge shall read from 100 to 300 degrees °F with a red line zone indicating critical temperatures. A red indicator light in the gauge and an audible alarm shall indicate a high transmission temperature.
The light bar portion of the message center shall include twenty-eight (28) LED backlit indicators. The lightbar shall be split with fourteen (14) indicators on each side of the LCD message screen. The lightbar shall contain the following indicators and produce the following audible alarms when supplied in conjunction with applicable configurations:
RED INDICATORS

Stop Engine - indicates critical engine fault
Air Filter Restricted - indicates excessive engine air intake restriction
Park Brake - indicates parking brake is set
Seat Belt - indicates a seat is occupied and corresponding seat belt remains unfastened
Low Coolant - indicates critically low engine coolant
Cab Tilt Lock - indicates the cab tilt system locks are not engaged.
AMBER INDICATORS

Malfunction Indicator Lamp (MIL) - indicates an engine emission control system fault
Check Engine - indicates engine fault
Check Transmission - indicates transmission fault
Anti-Lock Brake System (ABS) - indicates anti-lock brake system fault
High exhaust system temperature – indicates elevated exhaust temperatures
Water in Fuel - indicates presence of water in fuel filter
Wait to Start - indicates active engine air preheat cycle
Windshield Washer Fluid – indicates washer fluid is low
DPF restriction - indicates a restriction of the diesel particulate filter

INSTRUMENTATION (Continued)

Regen Inhibit-indicates regeneration of the DPF has been inhibited by the operator
Range Inhibit - indicates a transmission operation is prevented and requested shift request may not occur.
SRS - indicates a problem in the supplemental restraint system
Check Message - indicates a vehicle status or diagnostic message on the LCD display requiring attention.
GREEN INDICATORS

Left and Right turn signal indicators
ATC - indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system
High Idle - indicates engine high idle is active.
Cruise Control - indicates cruise control is enabled

OK to Pump - indicates the pump is engaged and conditions have been met for pump operations
Pump Engaged - indicates the pump transmission is currently in pump gear
Auxiliary Brake - indicates secondary braking device is active
BLUE INDICATORS

High Beam indicator
AUDIBLE ALARMS

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

BACKLIGHTING COLOR

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

RADIO

An Alpine radio with an AM/FM stereo receiver, compact disc player, satellite radio, Bluetooth capability, Alpine KTP-445 amplifier, and four (4) Polk Audio DB651 speakers shall be installed in the cab. The radio shall be installed in the left-hand overhead position. The speakers shall be installed inside the cab with two (2) speakers recessed within the sidewalls and two (2) speakers recessed within the rear wall of the cab.

AM/FM ANTENNA

A small antenna shall be located on the left-hand side of the cab roof for AM/FM and weather band reception.

CAB EXTERIOR PROTECTION

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer.

FIRE EXTINGUISHER

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

DOOR KEYS

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

CAB INTERIOR EMS AND MAP HOLDER

One (1) EMS Tray constructed of 3/16" smooth aluminum shall be mounted in the cab. This tray shall be installed rear facing behind the officer's seat. Exact design and size TBD at the pre-construction conference. A drawing will be provided for approval prior to construction. Tray shall have a sprayed finish to match the interior of the cab.
A map book holder shall be installed in cab as directed by the Fire department. Finish shall match the cab interior. Exact design and size TBD at the pre-construction conference. A drawing will be provided for approval prior to construction.

INTERCOMS

Provide and install one (1) complete David Clark 3800 series intercom system with 5 headset stations in the cab. The Officer and driver positions shall have radio interface with a Kenwood model TK790 radio. This will include all necessary

hardware to make this system complete. Officer and driver positions shall have push-to-talk button. Location to be discussed at the pre-construction conference.

INTERCOMS (Continued)

Provide hooks for hanging all David Clark headsets in cab area. Bidder will use cabling and connections furnished by David Clark, spliced cabling is unacceptable. All wire loops shall be gradual, pinched or tight loops will be unacceptable. All components shall be securely fastened in place to cab structure. Trim pieces shall be recessed for cable passages where necessary, so trim maintains its original fit. Headsets to be provided by proposer.

Headset Intercom System

A David Clark 3800 series intercom system shall be installed to provide noise suppression while providing clear voice communications for five (5) seated positions in the cab.

Communications are provided by five (5) H3442 series under the helmet headsets. The system includes:

· MS Connectors 6-socket

· Power cord

· 12' Jumper cord

· 25' Jumper cord

· Connector Kit

· Protective Caps w/ Cord

The driver and officer headsets include the intercom and two-way communication functions, while the crew headsets are capable of intercom communications and radio communications listening.

Master Intercom Station (1)

· One master station shall be provided. The U3800 accommodates two headsets and placed where transmit function is not required, adjusts automatically for 12 or 24 VDC power source. Contains system on/off, master volume control, two headset jacks with listen level controls, power input connector, and two remote output connectors. System draws less than 600 milliamp ere of current.

Mobile Radio Interface Cords (1)

· The intercom system shall be provided with one (1) radio interface cable between the Departments Kenwood TK790 radio and the David Clark system.

Drivers Headset Station (1)

· There shall be one model U3815 interface module provided for the driver's position. The module combines the transmit/receive functions of a mobile radio. This module has one headset jack with listen level control. One PTT switch, one radio input connector (C3821), two intercom connectors (C38-XX) and one connector allowing use of an optional footswitch (40017G-04) or other remote PTT.

Officers Headset Station (1)

· There shall be one Model U3811 interface module provided for the officer's position. This module provides isolated radio transmit function for one headset and radio receive function for all users. This unit contains one radio PTT switch, one headset jack and listen level control, one system input connection and one radio input connection.

Crew Position Headset Station (1)

· There shall be one model U3801 remote headset station provided for the crew position. The headset station expands and shall include one (1) headset jack and a listen level control. There are no output connectors to connect additional modules. It has one headset jack and a listen level control.

Dual Ear Headsets (5)

INTERCOMS (Continued)

· There shall be five (5) dual ear model H3442 headsets provided, one (1) for each station. The headset shall provide a single plug under helmet radio transmit headset. The headset shall come with an adjustable volume, noise canceling electric microphone, adjustable head strap, and flexible style boom for rotation of left and right dress. It shall have an on/off button located on the microphone. The headset shall provide high clarity speakers and fully shielded EMI/RFI protected 5' coil cord. The headset shall have gel foam ear seals and provide 23dB of noise reduction. Each headset shall have a one (1) year warranty

Location of PPT button to be determined at preconstruction meeting.

Provide two (2) 12-volt outlets and two (2) dual USB ports. All outlets shall be wired directly to the batteries. Exact location TBD at the preconstruction meeting.

The cab dash area shall have a highly visible plaque noting overall height of vehicle (feet and inches), overall length (feet and inches), and GVWR (tons). This plaque shall be mounted in direct view of the driver.

Provide and install a permanent label on the driver's door that specifies the quantity and type of the following fluids used in the vehicle and tire information per NFPA:

· Engine oil
· Engine Coolant
· Chassis transmission fluid
· Drive axle lubrication fluid
· Air conditioning refrigerant
· Air conditioning lubrication oil
· Power steering fluid
· Cab tilt mechanism fluid
· Transfer case fluid
· Front tire cold pressure
· Rear tire cold pressure

Each tire shall be equipped with a monitoring system and visual indicator that indicates tire pressure. Exact design to be determined at the preconstruction meeting.

Auxiliary battery cut-off switch to be provided on right side with door to provide immediate access to switch without raising cab. Exact location TBD at preconstruction conference.

All wiring to be appropriate gauge cross-link with 311 degree F. insulation. All wires in the chassis shall be circuit numbered and function coded, in addition the SAE wiring will be color-coded. The wiring shall be protected by 275 degree F. minimum high temperature flame retardant loom as required. All nodes and sealed Deutsch connectors shall be waterproof.

A detailed (As Built) wiring diagram shall be provided for the entire apparatus. Information shall be provided by the final stage manufacturer at the time of delivery. Provide three (3) sets of colored diagrams with CD backups. All multiplexed modules shall be grouped in no more three different locations. Each location shall be easily accessible, serviceable, protected and clearly marked with permanent labeling.

All wires, circuit breakers or fuses that terminate at the battery location will be labeled as to their function and will be enclosed in a box.

BODY AND COMPARTMENT ELECTRICAL SYSTEM

The following specifications are intended to provide minimum guidelines for the apparatus 12VDC electrical power system. The apparatus shall be equipped with heavy-duty 12-volt negative ground system using the most current material and techniques available to the industry.

All lighting and monitoring functions within the apparatus body shall be multiplexed and intergraded with chassis electrical system.

All lights required shall meet Government Code for vehicles of this size and design shall be provided and installed. These lights shall include the headlamps and front turn signals with hazard switch, cab marker and clearance lights, backup lights, stop-turn-tail and license plate lights.
All wiring shall be SXL or GXL rated stranded copper alloy conductors of a gauge rated to carry a minimum of 125% of the maximum current for which the circuit is protected. The apparatus shall be wired to meet or exceed SAE J1292, Automobile, Truck, Truck Tractor, Trailer, and Motor Coach Wiring, for such loading at the potential employed. Voltage drops in all wiring from the power source conductors shall not be used in the cab or chassis. Ground wires for ABS, ECU, engine, and transmission ECM shall run directly to a ground connection at the frame rails. NO EXCEPTIONS.

Wiring shall be clearly labeled by circuit function code every three inches over each conductor's entire length. All multiplexed instrumentation wiring looms shall be independently routed and clearly identifiable as such. The entire labeling system shall correspond with the electrical wiring schematics furnished with the apparatus. Wiring shall be thoroughly mechanically secured in place. Relays shall have mounting tabs for a secure connection. Adhesive loom clips or double sided tape will not be acceptable. Where wire passes through sheet metal, rubber grommets shall be used to protect both wiring and wire looms.

All circuits shall be protected by means of automatic reset breakers clearly marked and located within chassis electrical panel. Fuses shall not be used for any emergency lighting circuits and should only be used for those add on features that come equipped with a fuse holder from the manufacturer such as the electronic siren, radios, intercom, etc. Where fuses are used, they shall be readily accessible either at the device or in the chassis electrical panel and shall be clearly and permanently labeled. No in line fuse shall be located or hidden inside a loom.

All splices will be crimped and shrink tubed with sealant. All wires will run un-spliced to termination wherever possible.

BODY AND COMPARTMENTS

The body shall be designed with, high sides both sides, 99" in width. Body shall have Beavertails at rear of apparatus. All compartment dimensions, with clear door openings, exact number of shelves, slide-out trays and location will be established after preliminary engineering drawings have been provided by the successful bidder.

Beavertails shall measure approximately 3.5" on top and 12" on the bottom. Outer edges shall be painted while the inner edges shall have polished treadplate.

Body and compartments shall be constructed of high grade, 12-gauge galvanized steel. All components fabricated will be pre-fit, removed and painted prior to final assembly.

Rivets, sheet metal screws, or self-tapping screws shall not be used in the assembly of all body components affecting the structural integrity of the apparatus body. NOTE: All fasteners shall be stainless steel. All fasteners to be Torx type and have LocTite. Whenever possible fasteners shall be backed up with nylon locking nuts or lock washers with a stainless steel cap nut.

BODY AND COMPARTMENTS (Continued)

The rear axle wheel wells shall be an integral part of the body design and shall be flush with the exterior surface of the body sides. The wheel well openings shall be circular and shall provide ample tire clearance for road travel.
The body wheel well openings shall be equipped with round radius, polished stainless steel fenderettes bolted in place.
Full-length drip moldings shall be installed around the complete perimeter of the body sides.

There shall be an extruded aluminum drip rail between the upper and lower side compartments. The tread plate shall be 1 inche in total height. This will run the full length of the body and will have a matching piece beneath the front transverse hose beds. Pictures will be provided upon request.
All compartments shall be provided with ventilation in the back wall of the compartments.

Polished aluminum diamond plate .125" shall be provided on the entire rear of the apparatus body except where restricted by placement of NFPA recommended chevron striping or where paint is preferred. Actual design and color scheme to be determined at preconstruction.

The left and right side compartment tops shall have 1/8" NFPA knurled aluminum diamond plate. This aluminum diamond plate shall not form any portion of the compartments.

All compartments shall have stainless steel or aluminum lower edge protection. This material will protect paint and body from chips and dents while removing equipment.

Outside body sheets shall be below the height of the cab and to be the same height as hose dividers to form an even enclosure all the way around the hose bed.
Provide left-hand fuel access with a Cast Aluminum Products Inc. aluminum hinged door with latch and rubber bump stop and a "DIESEL FUEL ONLY" label mounted inside of door. Door to match Cast Products SCBA doors on other fender locations.

All compartments shall be of the sweep out design. The following minimum compartments shall be provided on the apparatus. All dimensions are approximate. Compartments shall use all available space and be as large as engineering allows. Engineered drawings shall be provided by all bidders identifying the size and location of all compartments.

One (1) compartment, (modular L1/R1) left and right side behind the cab, forward of the pump panel and below the cross lay. Compartment shall be transverse above the frame rails. Compartment doors shall be vertically hinged. This compartment will be designed as wide as the cross lay hose bed. Dimensions shall be approximately 17.5" wide x 38" high with a door opening of 14" wide x 35" high. There shall be a polished stainless trim above the drip rail and below the hose bed rollers.

One (1) compartment, (compartment L2) on the left side, forward of the rear wheels. This compartment shall be approx. 30w x 29h x 25 ½" d. The compartment shall have one (1) vertically hinged door with a usable opening of approximately 24.5"w by 26"h and contain one (1) adjustable shelf with 2" lip front (45 degree bevel on front for ease of tool removal) and rear using the full width and depth of the bottom of the compartment. Exact size and configuration of shelves and tray shall be determined at the preconstruction conference.

One (1) high side compartment (compartments L3/L4) on the left side over the wheel well. The compartment shall have two (2) door openings with one (1) horizontally hinged lift up door for each opening. Each door shall have a useable opening of approximately 62"w x 31.5"h. Interior dimensions of compartment shall be approximately 134"w x 33"h x 13"d. Two (2) adjustable shelves with dividers shall be provided with exact size of shelves and divider configuration to be determined at the preconstruction conference.

BODY AND COMPARTMENTS (Continued)

One (1) compartment, (compartment L5) on the left side, behind the rear wheels. This compartment shall have one (1) vertically hinged door and have an actual opening of 10" w x 26" h x 27 ½" of depth. Compartment shall have a usable door opening of approximately 10" w x 26"h. Compartment will house three (3) MSA 45 minute SCBA bottle in a vertically stacked arrangement. Exact design and dimensions to be determined at the preconstruction meeting.
One (1) compartment, (compartment L6) on the left side, behind the rear wheels. This compartment shall have one (1) vertically hinged door and be approximately 24.5"w x 26"h x transverse depth. Compartment shall have a usable door opening of approximately 24.5W x 26H. Compartment shall have one (1) adjustable shelf using full width of compartment and shall extend transverse partially into rear tail board compartment. Shelf lip will have a 45 degree bevel on the outer edge. Exact design and dimensions to be determined at the preconstruction meeting.
One (1) compartment, (compartment TB 1) at the rear of the vehicle and below the ladder compartment. This compartment shall have two (2) vertically hinged doors with a usable door opening of approximately 46'w x 23"h. Doors shall be
mounted flat. Exact design and dimensions to be determined at the preconstruction meeting.

One (1) compartment, (compartment R2) on the right side, forward of the rear wheels. This compartment shall be approximately 30" x 29"h x 25 1/2"d. Compartment shall have one (1) vertically hinged door with usable opening of approximately 24.5"w x 26"h. This compartment shall have one (1) adjustable shelf. Shelf lip will have a 45 degree bevel on the outer most edge. There shall be no intrusions into this compartment. Exact design and dimensions to be determined at the preconstruction meeting. Measurements for this compartment are a strict minimum. All available space will be utilized. No Exceptions.

One (1) compartment, (compartment R3) on the right side forward and above the wheel well. The compartment shall have one (1) door opening with a usable opening of approximately 56"w x 293.5"w. with one (1) horizontally hinged door shall be installed. The interior dimensions of the compartment shall be approximately 60"w x 33"h x 13"d. Exact design and dimensions to be determined at the preconstruction meeting.

One (1) compartment, (compartment R4) on the right side behind and above the wheel well. The compartment shall have one (1) door opening with a usable opening of approximately 56" w x 29.5" w. with one (1) horizontally hinged door shall be installed. The interior dimensions of the compartment shall be approximately 60" w x 33"h x 13" d. Compartment shall have one (1) adjustable shelf w/divider. Exact design and dimensions to be determined at the preconstruction meeting.

There shall be one (1) ZICO Ziamatic ladder rack model HLAS mounted between the right side upper compartments/doors. Exact design and dimensions to be determined at the preconstruction meeting. More information provided in Tools and Equipment section.
One (1) compartment, (compartment R5) on the left side, behind the rear wheels. This compartment shall have one (1) vertically hinged door and have an actual opening of 10" w x 26" h x 27 ½" of depth. Compartment shall have a usable door opening of approximately 10" w x 26"h. Compartment will house three (3) MSA 45 minute SCBA bottle in a vertically stacked arrangement. Exact design and dimensions to be determined at the preconstruction meeting.
One (1) compartment, (compartment R6) on the left side, behind the rear wheels. This compartment shall have one (1) vertically hinged door and be approximately 24.5"w x 26"h x transverse depth. Compartment shall have a usable door opening of approximately 24.5W x 26H. Exact design and dimensions to be determined at the preconstruction meeting.

BODY AND COMPARTMENTS (Continued)

All compartment doors unless otherwise specified shall be bevel edge overlapping Doors shall utilize a polished D-ring handle with rotary style latch. Doors shall be painted to match cab.

A plunger switch shall be used for control of "open compartment door" warning lights. This same mechanism shall control interior lights for each compartment.

All compartment doors shall feature a lock and key system utilizing a SRFD provided key code on all doors.

All body compartment shelves shall be covered with Black Turtle Tile type removable matting.

All body compartment floors shall be covered with Black Turtle Tile type removable matting.

All body compartment floors to have Black Turtle tile beveled edges.

Provide extra air bottle storage, one (1) on each side, located fore of the rear fender wells. Each storage compartment shall include a Cast Products inc. aluminum hinged door with latch and rubber bump stop. The interior surface shall be lined with rubber and designed to hold one (1) MSA 45 minute SCBA bottle.

Provide extra air bottle storage, one (1) on right side, located aft of the rear fender wells. Storage compartment shall include an Cast Products Inc. aluminum hinged door with latch and rubber bump stop. The interior surface shall be lined with rubber and designed to hold one (1) MSA 45 minute SCBA bottle.

One (1) horizontal intermediate handrail shall be provided on the rear of the apparatus under the hose bed. The handrail shall be constructed of ribbed extruded aluminum for maximum gripping ability with chrome plated zinc die cast end stanchions. Exact design and dimensions TBD at preconstruction meeting.
Provide two (2) rear tow eyes with a minimum 3" I.D. hole, constructed with 3/4" steel plate. Tow eye shall be located at the rear of the apparatus body and fastened to the rear chassis frame rails. Inside of the eye shall be smooth and rounded.

All running boards and tailboard shall be a minimum of 3/16" polished aluminum diamond plate with all edges turned down not less than 2".

Running boards and tailboard shall be bolted on and be spaced at least .375" from the body. Rear tailboard step to be 16" deep. Tailboard height to be 25" under load. Tailboard shall have cone holder mounted on right side inside edge of beavertail.

At the left side rear of the apparatus, provide a minimum of two (2) Cast Product SP2004-D Steps. These steps shall be 8" x 8" fixed style and shall be lighted. Steps shall be placed in a location that will allow personnel easy access to the hose bed cover area. Exact location shall be determined at the preconstruction meeting or at the appropriate time of construction.

On the right and left side running boards, at the pump panels, a floating/drop-in style hose well shall be installed in each running board. Provide two (2) straps with seatbelt type buckles to secure hose at each well. Approximate size of well is 12" deep by 35" long by 9.5" wide with drain holes provided in each corner. Exact dimensions/design to be determined at the preconstruction meeting.
Provide two (2), removable, aluminum, L-shaped, I-zone Wildland interface hose brackets designed to accommodate 100' of partially charged 1 ½" Forestry hose with nozzle. Exact mounting, storage location and finish to be determined at the preconstruction meeting. Fire Department to provide sample at preconstruction meeting.

HOSE BEDS

Hose bed to be fabricated of 12-gauge galvanized steel or equal. Sides are not to form any portion of the fender compartments. Sides shall not extend upward any higher than the height of the cab or body compartments. Hose bed height shall not exceed 67" from the ground to the bottom of the hose bed.
Four (4) Hose bed dividers must be adjustable to accommodate different hose loads and strong enough to resist side forces while vehicle is in motion. Dividers shall be constructed of 1/4" aluminum with a 3" radius on one end. There shall be provisions for a nozzle notch on two of the dividers. Exact dimensions TBD at preconstruction conference.

Uni-Strut type channel tracks shall be provided for the mounting of hose bed partitions. There shall be two (2) located at the front and one (1) at the rear of the hose bed.

Hose bed decking shall be constructed with aluminum extrusions.

Hose bed covers shall be constructed of 3/16" polished aluminum diamond plate. These covers shall be hinged along outer edges with 1/4" stainless steel piano type hinges.

The covers must be reinforced and supported to allow a suitable walking surface and shall contain interior mounted LED strip lights to light the hose bed while reloading hose. Hose bed lighting will be controlled by the rear scene light cup switch at the body rear.

Each cover to have gas chamber openers to assist in opening and hold open the hose bed cover at 90 degrees with a positive safety latch. Safety cables shall be provided for each cover.

Hinged panels must be installed in the water and foam tank tower covers to provide access to the water and foam tank fill towers. Lids must be of adequate size to facilitate ease of filling. Exact dimensions to be determined at the preconstruction meeting. No spring securing latches shall be used. Latches must be flush mounted. Hinges will be on the edge towards the front of the vehicle.
The back shall be equipped with removable black vinyl flaps extending down to the bottom of the hose bed. These flaps shall be anchored using seatbelt type straps. Exact dimensions/design to be provided at the preconstruction meeting.

Provide two (2) Cast Products Inc. model HD0007 polished aluminum hand grabs on the top rear of each hose bed covers for easy opening. Hose bed shall also have two (2) Cast Products Inc. model HD0007 polished aluminum grab handles at front of covers towards cab.
Provide two (2) vertical ribbed aluminum handrails, approximately 40" long, mounted on the left and right beavertails that run from mid step to top of apparatus. The handrails shall be constructed of ribbed aluminum for maximum gripping ability with chrome plated zinc die cast end stanchions. Exact dimensions TBD at the preconstruction meeting.

4" SUPPLY HOSE BED NEEDS 87 ½ " LONG BY 29 ½" WIDE.
2 ½ PRECONNECT NEEDS 5 ¼ WIDE BY 88" LONG
2 ½ HOSE LOAD NEEDS 23 ½ WIDE X 88" LONG

2 - 1 ¾" LIVELINES NEED 4 ½" WIDE X 88" LONG
SRFD WILL PROVIDE PICTURE FOR LAYOUT REFERENCE
THE HOSE BED width SHALL BE 69" MINIMUM

Provide two (2) transverse hose beds located behind the cab in the forward section of the body. The two forward hose beds shall be designed to carry 200' of 1 3/4" double jacket fire hose. The rear hose bed shall be designed to carry 200' of 1 3/4" hose. The entire width of the hose bed shall be the same width as the transverse compartment #1. The plumbing shall allow for the hose to lay flat and not kink when charged.

HOSE BEDS (Continued)

The depth and width of the transverse beds shall be adequate to accommodate the described hose complements with nozzles in a manner that the hose can be smoothly deployed.

Vertical and horizontal hose rollers shall be provided on the left, right, and bottom sides of the transverse hose bed. A polished stainless trim piece shall be installed below the rollers and above the drip rail.

The transverse hose bed height shall not exceed 67" from the ground to the bottom of the hose bed. The top of the hosebed cover shall not be higher than the upper most part of the pump panel.

The transverse hose bed decking shall be constructed with aluminum extrusions.

Provide one (1) adjustable cross lay hose bed divider constructed of ¼" smooth aluminum with radius corners.

Provide and install a knurled aluminum diamond plate hose bed cover for the two (2) transverse hose lines. Provide black vinyl flaps on ends of covers. Flaps shall include a positive locking (seatbelt style) system. The hose bed cover shall be equipped with a safety latch (RV style) to secure when the hose bed cover is opened. Provide paint protection at the rear of the cab where the cover will rest in the open position. The lid shall include two (2) Cast Products Inc. model HD0007 polished aluminum grab handles to assist with opening the lid. Exact location of handles to be determined at the preconstruction meeting.

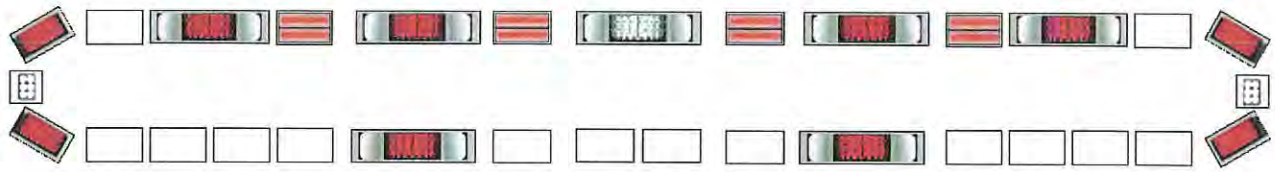
EMERGENCY AND UTILITY LIGHTING

All emergency and utility lighting shall be wired to the Information Center located on the dash. If lighting components specified do not meet NFPA 1901, 2009 or latest edition, it shall be the bidder's responsibility to identify and provide the necessary changes in writing. The general requirements for the NFPA Standard pertaining to this vehicle shall be as follows:

· Apparatus shall meet standards for vehicle over twenty two (22') feet.

· Apparatus shall have side lower level warning lights no more than fifteen (15') feet apart.

LIGHT BAR



There will be a Whelen 92" Rota-Beam light bar. This will have 4 forward facing Red rotators, 4 forward facing Red 400 series super LED modules (2 steady, 2 flashing), one forward facing white rotator center position with medium to fast back and forth sweep to simulate the older wobblers, 4 corner Red rotators, 2 flashing alley lights on each end between the corner rotators, 2 rear facing Red 400 rotators. Flash patterns will be un-synchronized and provide maximum dwell time. Patterns to be finalized during preconstruction. Rear modules may be relocated due to obstructions in visibility like the ladder rack or A/C condenser. To be finalized at preconstruction.

TRAFFIC LIGHT CONTROLLER (OPTICOM)

There will be a GTT, Model 794*M Multimode LED Opticom™ traffic light infrared emitter with national standard high priority remote mounted on the front edge of the cab roof, left of the brow light.

The Opticom™ traffic light controller will be activated with the emergency master switch only.
The Opticom™ traffic light controller will have a driver side momentary cab switch with no emergency master control.
The Opticom™ traffic light controller will be disabled when the parking brake is applied.
There will be an aluminum cover, painted job color provided over the Opticom traffic light controller for protection.

TRAFFIC ADVISOR

A Whelen TAZ86 traffic advisor will be installed on the rear body of the apparatus. It will be positioned between the bottom of the hose bed and the top of the rear compartment doors. There will be a polished aluminum 3/16" tread plate cover for protection. The traffic advisor will be controlled by a TACTL5 control head installed in the cab. Exact location TBD at preconstruction.

CAB SCENE LIGHTING

There will be two (2) Whelen M6ZC gradient opti-scene LED lights mounted, one each side, on the upper portion of the 'B' pillar behind the front doors. These will be controlled by a "Right Scene" and a "Left Scene" light switches in the center dash panel. These will not be tied to the parking brake.

REAR CAB TELE-LIGHTS

There will be two Pioneer Plus tele-lights mounted to the rear of the cab. One on each side. A PFS2 light will be mounted on a 3000 series Pole assembly (Maximum possible length for flat cab installations). They will be controlled by a switch on the corresponding pump panel. The pole will feature a 12" outer body with a bottom mount lower cradle sensor. The sensor will activate the do not move apparatus

light when the parking brake is released and the light is in an extended position. These poles will have the top mount locking collars.

REAR WARNING (ZONE C UPPER)

There will be two (2) Whelen Rota-beam R416AF beacons mounted on the rear of the apparatus. They will be mounted on the rear wall outside the beavertail so that in the fully installed position the top of the beacon is level with the top of the apparatus body. They will be mounted on Cast Products Inc. Stanchions Parts LB0049-A and LB0049-B. LED clearance lights will be provided in these stanchions. The beacons will not be synchronized and will have a medium rate rotation steady rate flash pattern.

ZONE C LOWER

There will be two (2) Red 600 series super LED lights mounted on the tailboard in Cast Products Inc. LH46001 Light housing/step polished aluminum bezels (or equal). These will be mounted, one each side, centered on the side profile of the tailboard facing outward to the side of the apparatus.

REAR SCENE

There will be two (2) Whelen M6ZC gradient opti-scene LED lights mounted in Cast Products Inc. LH46107 bezels. One on each side below the zone c upper beacons. These will be controlled by a rear scene switch in the dash and a cup switch at the rear of the apparatus. They will be separate from the backup lights.

REAR FMVSS LIGHTING

The rear stop/tail/turn/backup/warning lights will be mounted on the rear of the body in Cast Products Inc. (if possible) LH46114 polished aluminum quad light housings. The lights will be Whelen 600 Series. From top to bottom in the following order. Flasher/warning, brake/tail, backup, turn. The rear electrical outlets will be below the FMVSS bezel.

There will be a Red LED strip light mounted immediately beneath the traffic advisor as a third brake light. Preferably an Amdor Lumabar if red is available. Approximately 12-18" in length.

There will be one Whelen Red M6 series LED on the body forward of or over the rear fender on each side of the apparatus. Mounted in a chrome bezel.

Additionally, there will be one each side Whelen M6 series Red LED mounted on the front lower side of the cab just above the bumper return. This will be in a polished aluminum bezel with a 15-degree forward angle.

UNDERBODY PERIMETER LIGHTING

There will be Amdor Lumabar LED strip lights under the rear body compartments, right and left, as well as one under the center of the tailboard to illuminate the ground. The tailboard light shall not be visible to the rear of the apparatus. These will be controlled by the 'Underbody Lights' switch in the dash that also controls the cab perimeter lights.

COMPARTMENT LIGHTING

All compartments will be illuminated with LED strip lighting. Compartment lights shall be controlled by the corresponding door switch and will be available with the master battery switch in the on position. They shall not be tied to the ignition

POWER INVERTER

A Xantrex Freedom SW3012 power inverter/charger shall be provided and installed on the apparatus that produces 3000-watts of continuous power. The inverter shall be under the rear seat compartment on the drivers side and shall include a 110 volt outlet.

With filtered modified sine wave output, Freedom inverters/chargers run virtually anything from office equipment to household appliances and electronics. Temperature controlled multistage charging ensures that your batteries are recharged quickly, and automatic shutdown and other safety features protect your expensive deep- cycle batteries from excessive depletion.

For inverter/charger control and basic system monitoring, use Freedom basic remote. For advanced battery monitoring and remote control, Freedom 458 systems can be paired with optional link instrumentation.

Pure sine wave output to operate sensitive electronics, advanced configuration options for customized applications, built in transfer switch automatically transfers between inverter power and incoming AC power, power factor corrected multi stage charger for fast, efficient charging, temperature compensated charging for most climate conditions, ignition lockout feature helps to minimize unnecessary battery drain, full inverter output up to 40°C (104°F) for 3000W model, conformal circuit boards for humid environments, dual input/dual output AC interface for 3000W and ability to charge batteries drained to extremely low voltage.

Battery over voltage and under voltage protection, over-temperature protection, automatic overload protection, short circuit protection and integrated resettable AC breakers.

Inverter/Charger will be mounted under the rear forward facing crew seats. Remote facing driver side.

RECEPTACLES

There shall be two (2) NEMA L5-15, 120 volt 15 amp twist-lock receptacles shall be installed wired to the breaker panel. A weatherproof spring loaded cover shall be installed over the receptacles.

Location-One (1) each side rear of apparatus below the tail light housings

WATER TANK

The apparatus shall be equipped with a polypropylene thermoplastic water tank manufactured by Mtech Incorporated or equal. The tank and body end bulkheads shall be constructed of .5" thick, polypropylene, nitrogen-welded and tested inside and out. Tank size to be 500 gallons and have a lifetime warranty. Tank construction shall conform to NFPA standards.

The transverse and longitudinal .375" thick swash partitions shall be interlocked and welded to each other as well as to the walls of the tank. The partitions shall

be designed and equipped with vent holes to permit air and liquid movement between compartments.

The .5" thick cover shall be recessed .375" from the top of the sidewalls. Hold down dowels shall extend through and be welded to both the covers and the transverse partitions, providing rigidity during fast fill operations. Drilled and tapped holes for lifting eyes shall be provided in the top area of the water tank.

The water fill tower shall be designed, sized, and located in the left front of the tank. The fill and overflow tower shall be equipped with a hinged lid and a removable screen.

The overflow tube shall be 4" and be installed in the fill tower and piped with schedule 40 PVC pipe through the tank and exiting behind the rear axle.

WATER TANK (Continued)

Suction from water tank to 1500 GPM main pump must be 4" ID minimum. Plumbing connection between water tank and pump shall be aligned, without bends. All fittings and valves from the water tank must be stainless steel or brass

A 4" brass check valve must be properly installed in this line to prevent damage to the tank and prevent water from backing up through the tank suction if the tank-to-pump valve is in open position.

Water Tank shall be equipped with a FRC Tank Vision water level gauge, or equal located in the right and left side pump panel areas. Exact location TBD at preconstruction meeting.

FIRE PUMP

The fire pump shall be Hale QMAX model, 1500 GPM single stage. Pump to be mid-ship mounted on the chassis frame. The successful bidder shall adhere to the transfer case clearances specified by the pump manufacturer.

The pump, when dry, shall be capable of taking suction and discharging water with a lift of 10 feet in not more than 45 seconds through 20 feet of suction hose of the appropriate size.

The fire pump shall have a minimum two-year warranty. The pump shall comply with the latest recommendations of the National Fire Protection Association and the Underwriters Laboratories requirements.

A U.L. pump certification certificate shall be provided. Pump shall be a Class "A" type and shall deliver the percentage of rated discharge at pressure 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 shall be equipped with a self-adjusting, maintenance free, mechanical shaft seal.

An electronic Class 1 TPG+ Pressure Governor with an inline resistor module for use with a Cummins engine shall be supplied for the pump panel. A pump interlock relay to activate the hand throttle circuits shall be provided for the OEM to activate. Throttle shall include throttle, tachometer, RPM, Volts, date, time, oil pressure, engine temperature, pump hours, incident hours, audible warning: Transmission temperature, voltage, Hi RPM, oil pressure and engine temperature. Sun shade shall be provided for TPG+.

An Akron #59 intake relief valve shall be provided in the pump system. The relief valve is adjustable from 50-175 psi and set at the factory at 125 psi.

The intake relief (dump) valve shall be mounted on the intake side of the pump where discharged water flowing through the valve provides a self-cleaning process and virtually eliminates possibility of the valve remaining in an open position due to contamination.

SPECIAL PUMP RATIO OF 2.32 TO 1 shall be provided to assure that the lowest discharge pressure at idle is attained with the engine specified.

Provide a Hale Pump Power Shift on the left side of the driver's position in the forward cab. One green light is to indicate when both the pump has been engaged and the chassis transmission is in pump gear. This indicator light shall be labeled "OK to Pump". Note location of the power shift shall not interfere with any cab interior functions, i.e. window handle, etc.

The priming pump shall be a HALE ESP 12V primer system, positive displacement vane type, electrically driven and conform to standards outlined in NFPA Pamphlet 1901. One priming control shall both open the priming valve and start the priming motor.

FIRE PUMP (Continued)

A supplementary heat exchange cooling system shall be provided to allow the use of water from the discharge side of the pump for cooling the engine water. Heat exchanger is to be constructed of all brass and is to be a separate unit with a ½" quarter turn valve in the pump panel.

Pump cooler shall be equipped with a 3/8" line discharge to water tank controlled by a 3/8" valve at pump panel.
The pump shall be equipped with a Hale Thermal relief valve that will automatically dump to the water tank through a .375" discharge line when water temperature exceeds 120 degrees F. Valve shall be equipped with an integral strainer and shall reset automatically. A red-light indicator on the pump panel shall turn on when this valve is activated.
Provide and install four (4) pump mounted anodes.

PUMP INLETS AND OUTLETS

All discharge plumbing and manifolds shall be constructed of stainless steel or brass, sized to provide sufficient water to the required outlets. All discharge valves in the pump house will be labeled with corresponding numbers to the pump panel.

Provide Class 1 high-pressure flexible piping with a 1200 PSI burst pressure rating and 30 HG vacuum rating. Aero Quip wire braided hose with brass or stainless steel fittings, will be acceptable.

The fire pump, all piping and associated equipment shall be hydrostatically tested to 250 PSI in conformance to applicable NFPA standards.

Plumbing shall not hang below the exhaust system or interfere with the angle of approach or departure.

The entire fire pump and plumbing located in the fire pump enclosure shall be painted black.

One master Drain valve located below pump modular under side running board to discharge water simultaneously from all locations.

All valves will have ¼ turn bleeder valves. Locations and order to be determined at preconstruction.

All water carrying gauge lines are to be flexible polypropylene tubing.
All intake and discharge valves shall be flange mounted Akron Brass push/pull type ball valves with stainless steel balls with a simple two-seat design. All valve controllers shall be Akron 1477 push-pull with color coding option located on the pump panel. The monitor and large diameter discharge shall be Akron 9323 Navigator Pro with color coding option located on the pump panel which include valve position indicators that identify the position of the valve . The left and right inlet valves shall be Hale Model MIV electrically operated with 6" NST inlet. 6" inlet caps shall not be provided. The valves shall have built in pressure relief, sealed gear drive, bronze body construction, and an indicator light package. There shall also be installed with this valve one (1) Hale air bleeder valve. 4" Storz connectors and caps will be provided.
Provide two (2) 2 1/2" ball valve suction inlets, one at the right front side, and one at the left rear side pump panel. Valves to be Akron swing operated ball valves with controls on the left side pump panel. Inlet connections to be positioned and configured to allow the simultaneous use of all inlets and discharges without undo obstruction.

Valves to be plumbed directly to the suction side of the main pump and located behind the pump panel. These valves shall have 2 1/2"" female swivel with plug and chain and ¾" drain valve.

Provide one (1) 2" tank fill and one (1) 4" tank-to-pump valve at the pump panel. Valves to be (locking "T" handle) push-pull controlled at the pump operators panel.

Five (5) 2 ½" outlets must be provided as follows:

PUMP INLETS AND OUTLETS (Continued)

· Two (2) (each side) Akron 2 ½" Heavy Duty ball valves with ¾" drains shall be plumbed to the left and right side pump panels terminating with 2 ½" MNST 30° droops with ¼" turn handle controlled at the pump operators panel. Each side will have one 2 ½" to 1 ½" reducer with a 1 ½" cap on a chain. There shall be remote handles on the left side operators panel to control the 2 ½" discharges on the right side as well as handles on the right side pump panel.

· One (1) Akron 2 ½" Heavy Duty ball valve with ¾" drain shall be installed at the rear of the apparatus under the hose bed approximately 5" left of center. Controlled from the pump operators' panel with a push/pull handle and labeled "Center Rear Discharge".

· Two (2) 1 1/2" discharges shall be plumbed to the front cross lays behind the cab in the forward part of the body. Valves to be 2" Akron push/pull controlled from the left side pump panel. These discharge lines shall have 2" chicksan swivels with 1 1/2" N.S.T.

· Two (2) 1 1/2" discharges shall be plumbed to left and right rear hosebed livelines. Valves to be 2" Akron push/pull controlled from the left side pump panel. These discharge lines shall terminate with 1 1/2" N.S.T threads.

At the right side front pump panel, provide one (1) high volume (Slo-Close) discharge using a 3" Akron electric valve. The discharge outlet shall be fitted with 3" inch NST outlet turned down 30° with a 4" Storz connector and a cap provided with chain attached. This outlet will be electronically controlled from the left side pump panel and labeled "Passenger Side Large Discharge".

DECK GUN

An Excell 1000 (Akron style 1747) user selectable gallonage fog nozzle will be mounted on a Stream Shaper (Akron Style 3488) with the Stream Shaper mounted to an Akron Apollo Monitor. The Apollo monitor will be manually controlled, capable of 360 degrees of horizontal travel, and a range of -15 degrees to 90 degrees of vertical travel. The Apollo monitor will be connected to 3" plumbing via a quick release Apollo base plate. Height of the top of the deck gun, with the nozzle stored at the 0-degree mark, will be at 3" below the highest protrusion of the cab- excluding communication antennas. One Akron Apollo portable monitor base with a single 4" Storz inlet and folding legs and Quad Stacked Tips (Akron Style 2499) will be provided loosely in the cab for installation by the SRFD.

An Akron electric 3" ball valve (or equal) shall be provided for the monitor.

There shall be one (1) Akron Navigator Pro 9323 electric control unit for the monitor valve located at the rear right side of the dunnage area and one (1) located on the left side pump panel. Exact locations to be determined at preconstruction.

Monitor shall be mounted to a Task Force Tips Extenda-gun telescoping waterway.

Dunnage well area shall have 3/16" knurled aluminum diamond plate decking. Diamond plate decking shall be removable to allow for maintenance of the fire pump. The dunnage well shall have minimum depth of 8". Diamond plate shall be reinforced to hold the weight of personnel operating monitor. Exact dimensions of dunnage well area TBD at preconstruction meeting.

One (1) Hannay painted steel Hose Reel with 12V motor and auto brake to be installed in Dunnage area. Reel to be plumbed with 1 ½" hose and Stainless Steel couplings. Reel shall have capacity for 200' of ¾" hose.

Chrome hose rollers to be installed on both sides of apparatus above R/L pump panels.

Two (2) hose reel control Foot switches to be installed, one (1) below pump operators panel and one (1) TBD by department at preconstruction meeting.

PUMP PANEL

There shall be a brushed stainless steel or extruded aluminum light shield above the driver and officer side pump panels.
There shall be LED strip lighting to illuminate the pump panel controlled by a weatherproof switch at the pump panel.
Pump compartment access doors will be provided on both pump panels.

There will be an air inlet fitting and an air outlet fitting provided at the left side pump panel. Connection type will be determined at preconstruction.
Panel shall include:
1. VACUUM AND PRESSURE GAUGES

a) The pump vacuum and pressure gauges will be liquid filled and manufactured by Class 1 Inc. All gauge bezels will be chrome

finished. All gauges will be white faced with black lettering. All gauges will be backlit red when pump panel light switch is activated.

b) The master intake and pump discharge pressure gauges will be a minimum of 4.50 inches in diameter and will have a pressure range of 30.00"-0-400#.

c) The individual discharge pressure gauges will be 2 ½" in diameter liquid filled Class 1 with pressure ranges form 0-400psi. The gauges shall be installed at each discharge control on the pump operator's panel.
The following engine gauges shall be located on the pump panel:
· One (1) pump hour meter.
Class 1 TPG+ with the following:
· One (1) engine oil pressure and temperature gauge.
· One (1) engine temperature gauge.
· One (1) Volt meter with low voltage alarm.
· One (1) tachometer.
· One (1) transmission temperature gauge.
· One (1) engine hours.
· One (1) pump hours.
· One (1) fuel rate.
Specific Santa Rosa TPG settings will be provided at Pre-Conference meeting
The following controls shall be provided on the left pump panel:
· One (1) primer control.
· One (1) auxiliary cooler valve control.
· One (1) Tankvision water level indicator, each side (right and left).
· One (1) foam control panel and one foam flow meter for the class "A" system.
· Main pump drain.
· Test gauge panel.

Pump operator's panel to be well illuminated for night operation with switch mounted on the panel. Provide and install one (1) On Scene Solutions Access strip light, LED at pump operator panel. Provide and install one (1) On Scene Solutions Access strip light, LED, at the right side pump panel. Lights shall be covered by metal cover over the top. Lights shall be positioned far enough out to not create shadows over panel controls.

PUMP PANEL (Continued)

Pump access doors will be provided on the right-side pump panel that will allow maintenance personnel full access to the fire pump and foam pump. Doors to be vertically hinged.

Pump panel on the left side shall be designed to allow maintenance personnel easy access to all gauges, valves and controls. Access panel(s) shall be hinged vertically where possible.

Provide and install a minimum of (2) white LED lights inside the pump enclosure area for safe maintenance operations; one per side.

There will be two (2) Cast Products Inc lighted folding steps model SP4410-1CH-LED on the wall between the front of the body and the rear of the pump panel both left

and right sides for a total of 4 steps. These steps shall be placed in a location that will allow personnel safe access to the dunnage area. Exact location to be determined at the preconstruction meeting.

One (1) pair of 20" ribbed aluminum hand rails shall be installed above the pump panels, one each side during the final inspection. These handrails shall be placed in a location that will allow personnel safe access to the dunnage well. The handrails shall be constructed of extruded aluminum for maximum gripping ability with chrome plated zinc die cast end stanchions. Exact location to be determined at the preconstruction meeting.

Prior to any fabrication of the pump panel, a print of the proposed layout and design will be submitted for approval to the Santa Rosa Fire Department. Bidder shall clearly identify in the design the number, location and size of hinge panels furnished.

Install access holes in pump panels as needed to facilitate the manual use of discharge shutoff valves for all discharges using hand tools (7/16 wrench). Exact configuration/location to be determined at the preconstruction meeting.

All discharge and valve control openings to be finished with 1/8" thick polished aluminum.

TOOLS AND EQUIPMENT

There shall be a ZICO Ziamatic model HLAS, single arm hydraulic ladder rack mounted horizontally on the right side of the apparatus body.

The control shall be located in such a manner to allow the operator full view of the area in which the ladders will be lowered. Right side pump panel TBD.

The electric actuator control will have a master switch and be interlocked to prevent operation should a compartment door, in the travel area of the ladder bracket, be in the open position.

Flashing amber LED lights facing the front and rear will be provided on the ladder rack and activated whenever the rack is in the down position. The do not move apparatus indicator will flash and alarm will sound if the parking brake is released and the ladder rack is not fully stowed.

Electric locks will be provided for the Zico Quic-Lift system.

There shall be a hinged body panel attached to the ladder rack to conceal the hydraulic mechanism when the ladder rack is stowed. This panel shall be painted body color and measure approximately 37.5" high x 15.5" wide.

Two (2) aluminum tubes shall be installed on the ladder rack for Pike Pole storage with one end notched to allow the poles to be locked in place.

TOOLS AND EQUIPMENT (Continued)

Two (2) aluminum suction hose storage trays shall be installed on the ladder rack. Each tray shall hold one (1) ea. 10' section of 3" clear corrugated PVC hard suction hose. The hose will be equipped with a 2.50" NST long handle female coupling on one (1) end and a 2.50" NST rocker lug coupling on the other end. Couplings will be hard coated aluminum. Trays will have three (3) Velcro straps to hold hoses in position. Hose shall be provided by dealer.

One (1) attachment shall be provided on the ladder rack for a folding attic ladder.

One (1) 10.00' aluminum, series 585-A, Duo-Safety folding ladder will be installed on the hydraulic ladder rack
One (1) pike pole 10' long Duo-Safety with a fiberglass handle will be provided.
There will be a 24' two-section Duo-Safety Series 900-A extension ladder provided.
There will be a 14' aluminum Duo-Safety Series 775-A roof ladder provided.
Provisions shall be provided on the ladder rack that holds the 14' ladder in place and also places the fly section of the 24' ladder against the beam of the 14' ladder. Example provided at Preconstruction.

There shall be one (1) compartment with the capacity to hold one (1) Fresno ladder. The compartment shall be fabricated from aluminum tread plate with a rear drop down hinged door. Compartment to be mounted on top of the driver's side hose bed cover. Compartment shall be mounted 5 inches away from the piano hinge.

There shall be one (1) compartment with the capacity to hold one (1) long style backboard. The compartment shall have a rear drop down hinged door and shall be located below the rear hose bed on officer's side. The compartment shall be 19"w x 4.5"h x 74" long.

One pair of Zico SAC-44-E folding chocks part with QCH2H locking type mounting brackets, shall be provided with the apparatus. Chock locations TBD at preconstruction meeting. Provide stainless steel protection on the body just above chock location.

CLASS "A" FOAM SYSTEM

There shall be a Foam Pro 2001 fully automatic electronic direct injection foam proportioning system furnished and installed on the apparatus. The system shall be capable of Class A foam concentrates and most Class B foam concentrates.
The system shall be equipped with a digital electronic control display installed on the pump operator's panel.

Paddlewheel-type flow meters shall be installed in the discharges specified to be foam capable. When the use of more than one flow meter is required, an interface electronic module will be provided to totalize these flows and send the flow total to the microprocessor in the computer control display.
Foam shall be plumbed to the following six (6) outlets:
· Two (2) pre-connected cross lays behind cab
· Two (2) left and right side of rear hose bed
· One (1) center of rear hose bed
· One (1) hose reel in dunnage area
Provide one (1) 20-gallon class "A" foam tank designed as an integral part of the water tank and shall have a manual fill tower. Fill tower shall be constructed of ½" PT3 polypropylene and shall be a minimum dimension of 8" X 8" outer perimeter. Fill tower shall be located in the right front corner of the tank unless otherwise specified.

The foam concentrate supply line shall be non-collapsible. There shall be a means provided to prevent water backflow into the foam proportioning system and the foam concentrate storage tank.

CLASS "A" FOAM SYSTEM (Continued)

There shall be either a filter or strainer provided on the foam concentrate supply side of the foam proportioner to prevent any debris that may affect the operation of the foam proportioning system from entering the system. The strainer assembly

shall consist of a removable straining element, housing and retainer. The strainer assembly shall allow full flow capacity of the foam supply line.

Foam concentrate system flush line(s) shall be provided as required by the foam system manufacturer. The design shall incorporate a means to prevent into the concentrate tank or water tank during the flushing operation.

Tank shall be clearly marked CLASS "A" FOAM TANK

Foam tank shall have tank shut-off valves and drain valves located in a convenient place and marked with the same metal labels as used at pump panel.

All foam controls, gauges and pre-plumbed discharge lines, will be clearly identified on the pump panel with the same metal labels.

Inside the right side pump access panels, provide a circuit breaker with reset for the foam pump.

INTEGRAL CHECK VALVE/INJECTOR FITTINGS

There shall be integral check valves/injector fittings installed to prevent contamination of the foam concentrate supply. The foam concentrate shall be injected into the water pump discharge stream through this check valve/injector fitting. The check valve/injector fitting shall be of one-piece construction of brass and stainless steel.

WATERWAY CHECK VALVES

There shall be wafer type check valves installed in the water pump discharge piping prior to the foam injection point. This shall prevent the contamination of the water pump and apparatus booster tank.

PAINTING

After fabrication of the independent left and right body compartment assemblies and prior to being mounted to the apparatus, all inaccessible areas of the body compartments shall be properly primed, sealed and finish painted. The body compartments shall have all seams and flanges caulked throughout with a non-silicone automotive type caulk.

All aluminum diamond plate, stainless steel, brackets, bumpers, fenders, mirrors, lights and any other items attached to the body or cab shall be removed to prevent corrosion in preparation for paint, the body and cab shall have a two-step cleaning process.

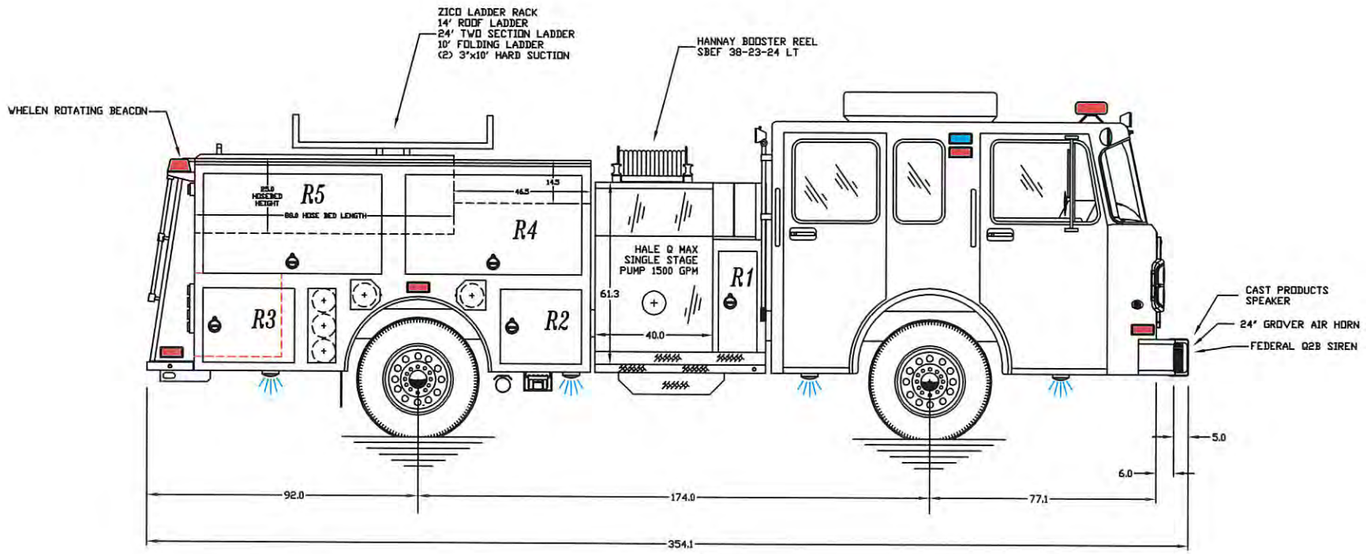
The interior of all compartments shall be painted with "Rhino Lining" type material; exact color TBD at pre-construction meeting.

FACTORY PRE-BUILD INSPECTION TRIPS (Continued)

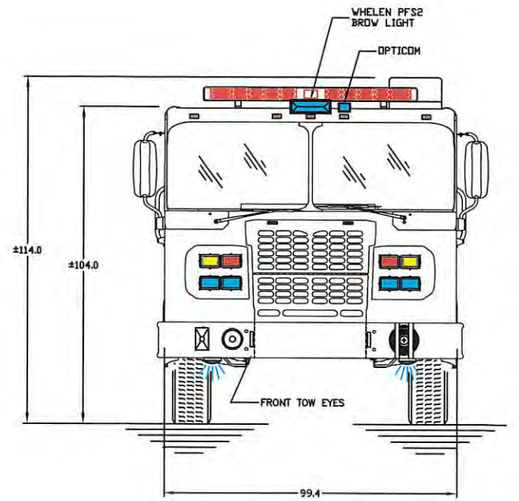
The first trip shall be for the inspection of plumbing, wiring, and pre-paint of the entire apparatus. The second trip will be for final inspection of the completed units prior to delivery. The manufacturer understands that additional visits may be necessary throughout the construction process as deemed necessary by Fire Department and City Staff in order to ensure the final product meets all performance and specification requirements. Each meeting shall have a representative from the manufacture present.

DELIVERY

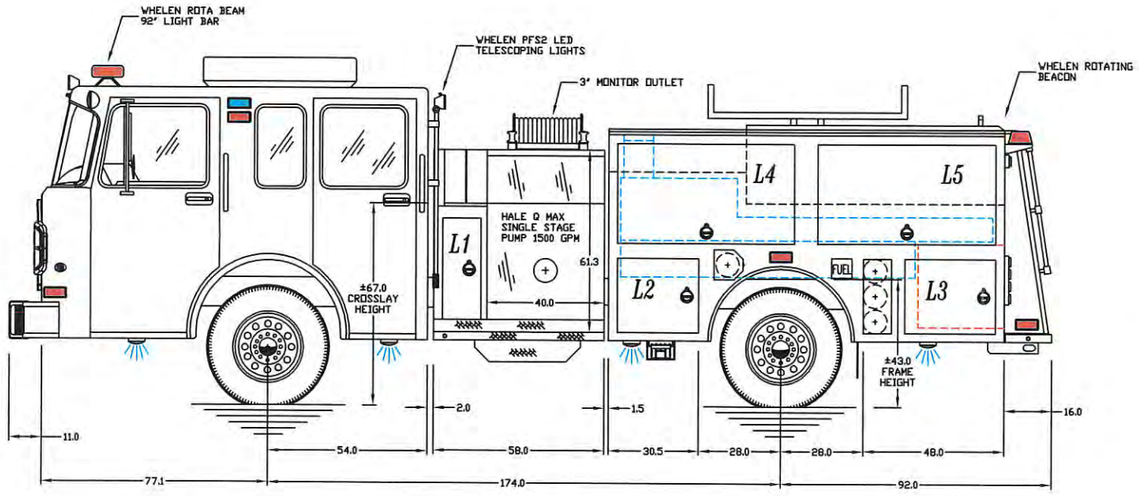
The apparatus shall be delivered by the bidder under its own power within 365 calendar days from the date the purchase order is issued with all equipment specified, to the City of Santa Rosa Fire Department located at 2373 Circadian Way, Santa Rosa, Ca 95407. Contractor must submit a firm delivery time (number of calendar days from the date of the order to date of delivery) of said apparatus with the bid



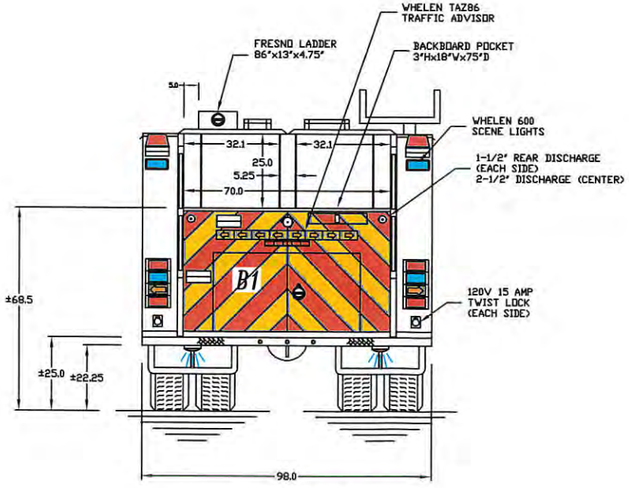
RIGHT SIDE VIEW



FRONT VIEW



LEFT SIDE VIEW



REAR VIEW

COMPARTMENT DIMENSIONS	
INSIDE	OPENING
L1.38"Hx18"Wx15"/72"D	L1.34"Hx13"W
L2.30"Hx30.5"Wx25"D	L2.25"Hx27.5"W
L3.30"Hx38.5Wx25"D	L3.25"Hx31"W
L4.38.5"Hx67"Wx14"D	L4.33.5"Hx60"W
L5.38.5"Hx67Wx14"D	L5.33.5"Hx60"W
B1.28"Hx50"Wx29.5"D	B1.26"Hx50"W
R1.38"Hx18"Wx15"/72"D	R1.34"Hx13"W
R2.30"Hx30.5"Wx25"D	R2.25"Hx27.5"W
R3.30"Hx38.5Wx25"D	R3.25"Hx31"W
R4.38.5"Hx60"Wx14"D	R4.33.5"Hx54"W
R5.38.5"Hx60Wx14"D	R5.33.5"Hx54"W

HI-TECH EMERGENCY VEHICLE SERVICE
444 W. GREGER ST. OAKDALE, CA. 95361 (209)847-3042

SANTA ROSA F.D.

SCALE:	APPROVED BY:	DRAWN BY: B RUTHMAN
DATE: 4-17-17		REVISED: 5-3-17

500 GAL. POLY WATER TANK / 20 GAL. FOAM TANK

PRELIMINARY DRAWING — DRAWING NUMBER 1-B

EXHIBIT B - BAFO
Type I Fire Apparatus
Estimated Cost Proposal Sheet

I/We agree to Design and Manufacture of Two (2) Type I Fire Apparatus, for the estimated prices listed on these proposal sheet. It is understood that the pre-construction meetings could result in negotiable changes that my affect the estimated cost originally proposed, and that award will not be executed until a final design and cost has been agreed to by both parties. Upon completion of pre-construction meetings, by mutual agreement of both parties, this form will be revised to identify all fully negotiated costs and will be made part of the executed contract as a Best and Final.

Estimated Total Unit Cost Written:

Six hundred twenty three thousand
Seven hundred fifty six Dollars, and
twenty five Cents

COST SUMMARY BREAKDOWN

Price per unit:	$ 574,229.00
8.625% sales tax:	$ 49,527.25
Total cost per unit:	$ 623,756.25
Grand Total (2 Units)	$ 1,247,512.50

Delivery, Two (2) Units: 365 calendar days

Note: Costs includes two build inspections trips for City staff members to manufacture destination per Section 27.0 of RFP.

Signature of Authorized Signing Officer: B. Ruthman

Title: Vice President

HI-TECH EMERGENCY VEHICLE SERVICE, INC.

444 W. GREGER ST. • OAKDALE, CA 95361 • (209) 847-3042 • FAX (209) 847-2110

May 23, 2017

City of Santa Rosa Fire Department
635 1st Street-Second Floor
Santa Rosa, CA 95404

Attn: Jennifer Myles, Senior Buyer
jmyles@srcity.org

Chassis & Pump prepayment after chassis arrives at Hi-Tech and is inspected and approved by Fire Department representative.

Amount $ 244,052.00 per unit

Progress payment after pre-paint inspection.

Amount $ 165,088.50 per unit

Final payment within 30 days of delivery.

Amount	$ 165,088.50 per unit
Sales Tax@ 8.625%	$ 49,527.25 per unit
Total	$ 214,615.75 per unit
Discount	$ - 3,500.00 per unit
Final Amount Due	$ 211,115.75 per unit

Brian Ruthman — 5-24-17

Brian Ruthman — Date

Approval — Date

TWO (2) YEAR BUMPER TO BUMPER WARRANTY: The manufacturer shall provide a bumper-to-bumper warranty for the Fire Apparatus for a period of two (2) years from the date the unit is placed into service or for 36,000-miles; whichever comes first. During the warranty period, no cost what so ever for warranty related issues, including any cost associated with parts, components or labor shall be incurred by the City.

If the warranty contains any limitations or conditional items, they must be clearly identified in the Proposer's response.

1.	The Proposer has a service center within a 150-mile radius of the City of Santa Rosa for warranty work and repairs.	YES ✓	NO
If the Proposer does not have a service center within the 150-mile radius, the Proposer will either:			
1.	Provide mobile warranty service from a factory authorized dealer; or provide for transportation of the unit, or reimburse costs for transportation to/from a factory authorized warranty facility for warranty repairs within the warranty period. Service providers shall be certified to Fire Mechanic level II or equivalent.	YES	NO
2.	Utilize the City's service facility and fully reimburse the City for all covered repairs and costs within the warranty period.	YES	NO

CHASSIS WARRANTY SERVICE LOCATION (All sections must be completed):

CHASSIS:
Name: HI-TECH E.V.S., Inc.

Location: Oakdale, California

ENGINE:
Name: Righetti Enterprizes

Location: 1633 Channel Street, Stockton, CA 95205

TRANSMISSION:
Name: HI-TECH E.V.S., Inc.

Location: Oakdale, California

BODY & SUBCOMPONENTS:
Name: HI-TECH E.V.S., Inc.

Location: Oakdale, California

FIRE PUMP:
Name: HI-TECH E.V.S., Inc.

Location: Oakdale, California

WARRANTY TIMEFRAMES: The PROPOSER shall summarize all standard time/mileage warranties that are provided on the unit:

Chassis: 2- year / 36,000 miles

Engine: 5 - Year / 100,000 miles

Transmission: 5 - Year / unlimited miles

Body (Structural): 10 - Year / unlimited miles

Fire Pump: 2 Years labor / 5 year parts

Water Tank: Lifetime

Paint: 7 years / unlimited miles

Plumbing: 5 year / unlimited miles

Electrical: 2 year / unlimited miles

Axels: 2 year / unlimited miles

Other: _____

EXHIBIT D
Type 1 Fire Apparatus
Special Provisions

1. Liquidated Damages

If the Manufacturer Product fails to pass performance tests or determine the quality as unsatisfactory, or fails to deliver the two completed Fire Apparatus by the Scheduled Delivery Date identified in the Agreement, Manufacturer shall pay to the Purchaser, as liquidated damages and not as a penalty, $250 per engine, per each business day that the failure continues.

1.1 **Parties' Acknowledgements.** The parties' acknowledge the following:

a. Manufacturer's failure to deliver the Products on or before the Scheduled Delivery Date will adversely affect Purchaser's ability to provide proper transportation for public safety services.
b. Purchaser has already made significant investments in City staff time going through the initial solicitation process and contract management.

1.2 **Remedies:**

a. *No Delivery by Scheduled Delivery Date.* If Manufacturer fails to deliver the Products by the Scheduled Delivery Date, Manufacturer shall pay to Purchaser, as liquidated damages and not as a penalty, $250 per each business day that the failure continues.
b. *Non- compliance to specifications, performance testing or unsatisfactory quality.* If Manufacturer fails to comply to mutually agreed specifications, pass performance testing, or delivers any part of the Product deemed unsatisfactory, and is not cured within thirty (30) days, the Purchaser is entitled to, as liquidated damages and not as a penalty, $250 per engine, per each business day that the failure continues, has the right to refuse delivery and request full refund of any payments made through to this date.

2. Acceptability of Equipment

The pre-build inspections at the Manufacturer's facility; or delivering and storing the unit at a City facility SHALL NOT be considered final acceptance of said apparatus. Permission to keep and/or store the apparatus in any building owned or occupied by the City shall not constitute acceptance of same. The unit shall remain the property of the Manufacturer until final acceptance inspection, sign off and final payment has been processed.

EXHIBIT E

Typical Fire Apparatus

Additional Purchase Provisions

All Proposer's will identify provisions for additional engine purchases under the terms of this contract for a period of ten (10) years. The Proposer's preferred price escalation clause on future purchases shall be identified on the Proposal sheet. For example, base price, plus change orders, plus annual adjustment using Producer's Price Index, Finished Goods Price Index, etc. Please attach provisions proposal to this page.

The City, by any means, is not bound for future purchases by the additional purchase extension provision. At its own discretion, the City may exercise this option during this time frame; or at any time may re-advertise this RFP or similar RFP for future purchases.

OTHER AGENCY "PIGGY-BACK" PROCUREMENTS: Other municipalities, fire districts or public agencies may be interested in purchasing equipment as procured through this solicitation. The seller is to indicate in this Request for Proposal if pricing offered in this bid will be extended to other public agencies not later than one hundred eighty (180) days after award by the City of Santa Rosa, and extend Additional Purchase Provisions to other public agencies. Any such "piggy-back" awards will be made independently by each agency, and the City of Santa Rosa is not an agent, partner or representative of these agencies and is not obligated or liable for any action of debts that may arise out of such independently negotiated "piggy-back" procurements.

BID ITEM AVAILABLE FOR OTHER AGENCY:
"PIGGY-BACK" PROCUREMENT: YES _✓_ NO ____.

NOTE: ***Prospective sellers are referred to GENERAL PROVISIONS for terms and conditions of OTHER AGENCY "PIGGY-BACK" PROCUREMENTS.***

SANTA ROSA F.D. PRICING SCHEDULE

Exhibit A

RFP 17-14

Original proposal price of $574,229.00 held until 7/30/17

Price increases 3% July 1st of every year

Any future change orders will be in addition to annual price increase.

Plus any additional Federal, State or local fee, or mandated safety or emmissions equipment applicable at time of delivery.

Prices below do not include sales tax (8.625%)

Original subtotal	$574,229.00
July 1st 2017 price increase (3%)	$17,226.87
July 2017 subtotal	$591,455.87
July 1st 2018 price increase (3%)	$17,743.68
July 2018 subtotal	$609,199.55
Changes made after July 2018	
Total	$609,199.55
July 1st 2019 price increase (3%)	$18,275.99
July 2019 subtotal	$627,475.54
Changes made after July 2019	
Total	$627,475.54
July 1st 2020 price increase (3%)	$18,824.27
July 2020 subtotal	$646,299.81
Changes made after July 2020	
Total	$646,299.81
July 1st 2021 price increase (3%)	$19,388.99
July 2021 subtotal	$665,688.80
Changes made after July 2021	
Total	$665,688.80
July 1st 2022 price increase (3%)	$19,970.66
July 2022 subtotal	$685,659.46
Changes made after July 2022	
Total	$685,659.46
July 1st 2023 price increase (3%)	$20,569.78
July 2023 subtotal	$706,229.24
Changes made after July 2023	
Total	$706,229.24
July 1st 2024 price increase (3%)	$21,186.88
July 2024 subtotal	$727,416.12
Changes made after July 2024	
Total	$727,416.12
July 1st 2025 price increase (3%)	$21,822.48
July 2025 subtotal	$749,238.60
Changes made after July 2025	
Total	$749,238.60
July 1st 2026 price increase (3%)	$22,477.16
July 2026 subtotal	$771,715.76
Changes made after July 2026	
Total	$771,715.76
July 1st 2027 price increase (3%)	$23,151.47
July 2027 subtotal	$794,867.23
Changes made after July 2027	
Total	$794,867.23