COUNTY OF SHASTA REQUEST FOR QUOTES

Issued by: Shasta County Department of Support Services
Purchasing Division
1450 Court Street, Suite 348
Redding, CA 96001

Date Issued: November 5, 2010

Closing Date: December 8, 2010 @ 2 p.m.

Sealed Responses to this Request for Quotes (RFQ) are subject to: (1) the Terms and Conditions of Requests for Quotes (Exhibit A, attached and incorporated herein by reference); (2) such other contract/agreement provisions as may subsequently be agreed upon; (3) the Specifications (Exhibit B, attached and incorporated herein by reference); (4) Optional Pricing (Exhibit C, attached and incorporated herein by reference); and (5) Price Sheet (Exhibit D, attached and incorporated herein by reference).

The Shasta County Fire Department is requesting quotes for One Fire Apparatus.

The process for responding to this RFQ is as follows.

Submission of Responses

**ONE original and TWO copies of your Response are required.** All Responses shall be delivered to: Shasta County Department of Support Services - Purchasing Division located at 1450 Court Street, Suite 348, Redding, CA 96001. All Responses must be clearly labeled as responses to this RFQ.

All Responses must be received before 2:00 p.m. on December 8, 2010. Responses received after 2:00 p.m. on December 8, 2010 will not be considered. Mailed Responses not received before 2:00 p.m. on December 8, 2010 will not be considered, even if postmarked before December 8, 2010. Faxed and emailed Responses will not be accepted.

Please feel free to attach additional pages of specifications regarding your equipment/product, or pages with additional relevant information, to your signed Response, and return it in the envelope provided, or in another package, which must be clearly labeled as a response to this RFQ.

The format and content for each response shall be identified in the Specifications (Exhibit B).

For additional information please contact:

Danny Skyes, Forestry Equipment Manager I
530 225-2430
Email address: danny.symes@fire.ca.gov

OR
RESPONDERS MUST FILL IN APPROPRIATE SPACES AND BOXES BELOW  (Please Print or Type)

(1) Responder represents that he/she/it is a ( ) regular dealer in, ( ) manufacturer of, the product(s) and/or service(s) quoted upon.

(2) Responder operates as an ( ) individual, ( ) partnership, ( ) corporation, incorporated in the State of ____________________________ ( ) other entity (Specify): ____________________________

Responder agrees to provide the requested service(s) and/or product(s) on the terms and conditions stated in the Response for ___ days after the deadline for receipt of responses.

COMPANY NAME

SIGNATURE OF PERSON AUTHORIZED TO SIGN RESPONSE

PRINT OR TYPE SIGNER’S NAME AND TITLE

STREET ADDRESS

CITY          STATE          ZIP CODE:

PHONE NUMBER: ______________________  FAX NUMBER: ______________________
Exhibit A
COUNTY OF SHASTA
Department of Support Services, Purchasing Division

TERMS AND CONDITIONS OF REQUESTS FOR QUOTES

The following terms and conditions (the “Terms and Conditions”) apply to solicitations by the County of Shasta, Department of Support Services, Purchasing Division (“County”), for Requests for Quotes (an “RFQ”).

For the purposes of these Terms and Conditions, an RFQ is an invitation by the County for the provision of particular service(s) or product(s), including the price thereof, meeting specific criteria. The primary focus of an RFQ is upon the price a person/entity submitting a response (the “Responder”) proposes to charge for the particular service or product the County desires. While the price is a primary factor, it is not the only factor and the County is not required to enter into a contract/agreement with the particular Responder who submits the lowest price.

1. RESPONSES TO RFQ’s.

Responses to RFQ’s (“Responses”), modifications, and requests for withdrawal thereof, received after the deadline for receipt of the Response will not be considered. Telephoned Responses or those sent by facsimile (“FAX”) or email will not be accepted.

Responses shall be written in ink, typewritten, or written using a word processing program/printer. Prior to submitting a Response, mistakes may be crossed out and corrections inserted adjacent thereto and must be initialed in ink by the person signing the Response.

Prices proposed in an RFQ shall include all costs of packing and of transportation to the delivery point or points indicated in the RFQ, including applicable sales and use taxes, unless otherwise specified. Unless stated otherwise in the RFQ, a Response may be tendered for any item or group of items, or portion thereof, of the service(s) or product(s) specified in the RFQ. Unit prices, a total price for each group of units, and a grand total may also be provided in the Response, depending upon the specifications of the RFQ. In case of a conflict between a unit price and the total price(s), or the grand total, the unit price, multiplied by the number of units to be provided, will govern. Unless stated otherwise in the RFQ, a Response may be tendered for any one service or one product, or group of services or products, or portion thereof, of the service(s) or product(s) specified in the RFQ, or for all the services or products sought by the County.

When a particular brand or make of a product is specified in an RFQ, an "equal" brand or make will be considered by the County. However, in such cases, the Responder must establish that the alternate brand or make is equal to or better than the specified brand or make, and indicate the brand name, model, and catalog number of each item listed as an alternative. Unless otherwise indicated in the Response, the brand or make specified in the RFQ shall be furnished if the RFQ is accepted by the County and a contract/agreement between the Responder and the County is executed.
The time, date, and location for delivery of the service(s) or product(s) shall be as specified in the RFQ or the contract/agreement between the Responder and the County. Delivery time, if stated in days, includes Saturdays, Sundays, and holidays. Responder may propose in the Response alternate times, dates, and locations for delivery of the service(s) or product(s) for the County’s consideration.

Samples of products, when required by the specifications of the RFQ, must be submitted within the time specified and at no expense to the County. If not destroyed by testing, or if not required for the purpose of inspecting deliveries during the term of the contract/agreement between the Responder and the County, samples will be returned to the Responder at the County's expense.

The services and products described in a Response must conform to the safety orders of the State of California, Division of Industrial Safety and with all applicable federal, state, and local laws, ordinances, regulations, rules and policies. Only current product models as offered by manufacturers will be accepted. All products offered must be new and unused unless otherwise specified in the RFQ.

2. LOCAL PREFERENCE.

Unless otherwise stated in the specifications of the RFQ, or unless prohibited by law, a five percent preference not to exceed $10,000.00 shall be granted to qualified Responders. To qualify for local preference, a Responder must either submit a copy of a current city business license, issued by a city within the geographical boundaries of the County of Shasta, or complete and sign a declaration under penalty of perjury, stating that as of the date the RFQ was issued, the Responder’s business was physically maintained and operated at a fixed office or other business premises located within the geographical limits of the County of Shasta, and providing such other information as may be requested by the County.

3. EVALUATION AND SELECTION PROCESS

Unless otherwise stated in the specifications for the RFQ, an evaluation panel, made up of persons selected by the Shasta County Director of Support Services (or designee), will review and rank each response. Reviewed and ranked criteria may include but are not limited to:

1. The price identified for the service(s) or product(s).
2. The clarity, conciseness, and completeness of the response.
3. Satisfaction of the identified specifications for the service(s) or product(s).
4. The quality and reputation of the service(s) or product(s) and of the Responder.
5. Such other factors as the evaluation panel may deem appropriate based upon a review of the responses submitted.

After the evaluation panel has ranked the Responders, the County may enter into negotiations with the top ranked Responder regarding the terms and conditions of a contract for the provision of the requested service(s) and product(s); or the County may, in its sole discretion, elect to reject all submitted Responses and terminate the RFQ process.

If an agreement to enter into a Contract cannot be reached with the highest ranked Responder, then the negotiations with that Responder will be terminated. Negotiations will then be opened with the next ranked Responder and the process repeated, or the County may elect to reject all submitted Proposals.
In any event, once negotiations with a particular Responder are terminated, the County will not reopen negotiations with that Responder.

4. RESERVATIONS.

Notwithstanding any other provisions, the County reserves the right, in its sole discretion, to accept or reject any or all Responses, or any part thereof; to reject any Response for failure to submit the Response in conformity with the requirements of the RFQ and these Terms and Conditions; and to waive informalities and irregularities in a Response, if deemed to be in the best interest of the County. The County reserves the right to cancel this RFQ process at any time.

In addition, the County reserves the right to waive any deviations from the requirements or specifications of an RFQ that are included in any Response.

Solicitation of an RFQ does not commit the County to finalize any contract/agreement with a particular Responder, to pay any costs associated with the preparation of any Response, and/or to enter into a contract/agreement with the Responder submitting the least costly Response. The County reserves the right to enter into negotiations with, and to finalize a contract and its terms with, the Responder that, in the sole discretion of the County, submits the Response that is in the best interests of the County.

5. VALID CONTRACT.

Receipt of an Official Purchase Order of the County of Shasta covering the supplies, materials, equipment, or services as described in the Response to an RFQ will indicate acceptance of the Response and will constitute a contract to purchase (unless a separate contract or agreement is otherwise entered into between the Responder and the County).

6. DISQUALIFICATION.

Unless a Responder provides all the information requested in the RFQ, the Response may, at the sole discretion of the County, be disregarded and given no consideration. Any Responder who attempts to influence the RFQ process by interfering or colluding with other Responders and/or with any County officer, employee, or agent; or who deviates from the RFQ process as set forth in the requirements of the RFQ and/or in these Terms and Conditions, may be disqualified at any time from further participation in the RFQ process. Responders are specifically directed not to contact any person other than the designated County contact person listed in this RFQ for meetings, conferences, information, or technical discussions related to this RFQ. Failure to comply with the preceding sentence may result in a Responder being disqualified from this RFQ process. No questions regarding this RFQ will be answered by other County staff. The RFQ process shall extend until the date stated on the County’s written notice of intent to award a contract or the date stated on the County’s written notice of cancellation of the RFQ process that will be issued to Responders.

7. RETENTION OF RESPONSES/PUBLIC RECORD.

All Responses shall become the sole property of the County. The County reserves the right to use any ideas in a Response regardless of whether that Responder is selected to enter into a contract/agreement with the County. At such time as a Responder is selected and a contract/agreement is finally negotiated,
all Responses and related documents become a matter of public record, with the exception of those parts of each Response which are clearly designated by the Responder as business or trade secrets and marked as “confidential” or “proprietary.” The County, however, shall not in any way be liable or responsible in connection with the County’s disclosure of any Response or any part thereof, if disclosure is required by the California Public Records Act (Gov. Code, §6250 et seq.) or pursuant to law or legal process. By submitting a Response, the Responder agrees to save, defend, keep, hold harmless, and fully indemnify the County of Shasta, its elected officials, officers, employees, agents, and volunteers from all damages, claims for damages, costs, or expenses, whether in law or in equity, that may at any time arise for not disclosing a business or trade secret pursuant to the California Public Records Act.

8. PROTESTS.

The County will consider any protest or objection regarding the award of a contract/agreement pursuant to the RFQ, provided that it is submitted in writing and received by the County contact person listed in this RFQ within 10 calendar days of the date stated on the County’s written notice of intent to award a contract issued to Responders. Mailed objections not received before the deadline will not be considered, even if postmarked before the deadline. The County’s determination with respect to any protest shall be in the County’s sole discretion and shall be final and conclusive.

9. COMPLIANCE WITH REQUIREMENTS OF RFQ.

Any Responder submitting a Response to an RFQ understands and agrees that his/her/its submitted Response shall constitute acknowledgment and acceptance of, and intent to comply with, all these Terms and Conditions and the requirements of the RFQ. The determination of the compliance with these Terms and Conditions and the requirements of the RFQ shall be in the County’s sole judgment and shall be final and conclusive.

10. COUNTY NOT RESPONSIBLE FOR COSTS OF PREPARATION.

The County shall not be liable for any costs of work performed in the preparation and production of a Response, or for any work performed prior to the formal execution of a contract/agreement between a Responder and the County. By submitting a Response, the Responder agrees not to make any claims for, or have any right to, damages because of any misunderstanding or misrepresentation of these Terms and Conditions and the requirements of the RFQ, or because of any misinformation or lack of information.
Exhibit ‘B’

INDEX & SPECIFICATIONS

SECTION

1. ADMINISTRATIVE & APPARATUS REQUIREMENTS
2. CAB – CHASSIS – ENGINE
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   3.2 TANK(s)
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6. EQUIPMENT
7. LETTERING – DECALS – STRIPIING
8. WARRANTY
9. NFPA OPTIONAL PRICING.

1.0 Intent of Specifications
It shall be the intent of these specifications to cover the furnishing and delivery of a complete apparatus equipped as herein specified. These specifications shall cover only the general requirements as to the type of construction and test to which the apparatus shall conform, together with certain details as to finish, equipment and appliances to which the successful bidder shall conform. Minor details of construction and materials, which are not otherwise specified, shall be left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features.

1.1 NFPA 1901 Standards
The apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in the current edition of the NFPA 1901 Standard for Automotive Fire Apparatus at the time of contract execution.

Certain aspects of NFPA standards, at the discretion of the department (SCFD) may be excluded from this contract. The department will be willing to sign documentation of these exclusions if required by the vendor.

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

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

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

Loose equipment shall be provided only as stated in the following pages.
1.2 Quality and Workmanship

The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: accessibility of the various units, which require periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and off road requirements and speed conditions as set forth under the Performance Tests and Requirements section of this document.

1.3 Welding Requirements

Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any component part for service or repair. All steel welding shall follow American Welding Society D1.1-96 recommendations for structural steel welding. All aluminum welding shall follow American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum. Flux core arc welding shall use type 7000 alloy rods following American Welding Society standards A5.20-E70T1. The manufacturer shall be required to have an American Welding Society certified welding inspector in plant during working hours to monitor weld quality.

1.4 Delivery

To insure proper break-in of all components while still under warranty, the apparatus shall be delivered under its own power (rail or truck freight shall not be acceptable). A qualified delivery engineer representing the contractor shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in the proper operation, care and maintenance of the equipment delivered.

Chassis and build up warranty start at the time that SCFD puts vehicle into service. This date will not exceed 30 days after delivery.

1.4.1 Apparatus delivery time frame.

The vendor will supply a time frame of time of construction of apparatus. This time frame will be from the date that the vendor is notified of the award of the contract to the delivery and acceptance of the apparatus at SCFD headquarters.

The contractor will, on a date prior to date of delivery advice Shasta County Fire Chief or his department representative of the exact delivery date. The bidder shall indicate in the space provided on page 59 the date construction of the apparatus will be completed and delivery to the County of Shasta for final acceptance.

A penalty clause for being over the stated delivery date will be $150.00 per working day, not to exceed 10% of the total purchase order amount as described in the pre construction conference.

Transfer of possession to the County of Shasta will have been made when the unit is delivered (complete) to the Shasta County Fire Chief, 875 Cypress Avenue Redding, CA 96001 and accepted.
Any damage, abuse or breakdowns occurring to the apparatus before delivery to the County Fire Chief for acceptance shall be the absolute responsibility of the contractor. The County Fire Chief shall be under no obligation to accept said repaired apparatus and may at the option of the county demand a replacement apparatus.

1.5 Operation and Maintenance Information

At the time of delivery, the manufacturer shall supply complete operation and maintenance manuals covering the completed apparatus as delivered. A permanent plate shall be mounted in the driver's compartment, specifying the quantity and type of fluids required including engine oil, engine coolant, transmission fluid, pump transmission lubrication, pump primer lubrication, and drive axle oil.

1.6 Performance Tests and Requirements

A 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 typical driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shafts and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. The vehicle shall adhere to the following parameters:

When fully equipped and loaded, the apparatus shall have no less than 25% nor more than 50% of the weight on the front axle and no 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 within 35 feet at 20 mph on a level concrete highway. The air brake system shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.

When fully loaded, the apparatus shall be capable of attaining a speed of 50 mph on a level concrete highway with the engine not exceeding its governed rpm.

Parking Brake will hold vehicle on a 20% grade with vehicle parked in either direction.

1.7 Failure to Meet Test

In the event the apparatus fails to meet the test requirements of these specifications on the first trials, second trials may be made at the option of the bidder within 30 days of the date of the first trials. Such trials shall be final and conclusive, and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes to conform to any clause of the specifications, within 30 days after notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser, or its use by the purchaser during the above-specified period with the permission of the bidder, shall not constitute acceptance.

1.8 Liability

The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.
1.9 Specification Bid Requirements

Exceptions shall be allowed if they are equal to or superior to the components specified and provided they are listed and fully explained on a separate page. Proposals taking total exception to specifications shall not be acceptable. Bidders shall also submit a detailed proposal. A letter only, even though written on a company letterhead, shall not be sufficient. For ease of evaluation, exceptions to the bid proposals shall be submitted in the same sequence as specifications. Any exception to these proposal requirements shall not be tolerated.

1.10 Exceptions

All exceptions shall be stated no matter how seemingly minor. Any exceptions not taken shall be assumed by the purchaser to be included in the proposal, regardless of the cost to the bidder.

1.11 Vehicle Weight Design

The apparatus shall be designed with due consideration to distribution of load between the front and rear axles. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association.

1.12 Commercial General Liability Insurance

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance:

- Products/completed operations aggregate: $2,000,000
- Personal and advertising injury: $1,000,000
- Each occurrence: $1,000,000

Coverage shall be written on a commercial general liability form. The policy shall be written on an occurrence form and shall include contractual liability coverage subject to the terms and conditions of the policy. The policy shall include the business owner as an additional insured, as their interest may appear. The required limits can be provided by one or more policies, provided all other insurance requirements are met. Coverage shall be provided only by carriers rated Excellent by A.M. Bests.

1.12.1 Commercial Automobile Insurance

The successful bidder shall, during the performance of the contract keep in force at least the following minimum limits of commercial automobile insurance:

- Each Accident: $1,000,000

Coverage shall be written on a Commercial Automobile form.

Umbrella/Excess Liability Insurance

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:
Aggregate $25,000,000
Each occurrence $25,000,000

The umbrella policy shall be written on an occurrence basis and at a minimum provide excess to the bidder's general liability, automobile liability and the employer's liability policies. The business owner shall be included as an additional insured on the general liability policy as their interest may appear. The required limits can be provided by one or more policies, provided all other insurance requirements are met. Coverage shall be provided by a carrier rated A- or better by A.M. Bests. The bidder agrees to furnish the owner with a current certificate of insurance with the coverage's listed above along with its bid. The certificate shall be made out to the purchaser. The certificate of insurance shall provide that the owner be given 30 days advance notice of cancellation or nonrenewal in coverage.

1.13 ISO Compliance

The manufacturer shall operate a quality management system under the requirements of ISO 9001. These standards sponsored by the International Organization for Standardization specify the quality systems that shall be established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance shall be included with the bid.

1.14 NFPA 1901 CURRENT STANDARDS

This unit shall comply with the NFPA 1901 (Current) standards

1.15. Inspection Trips

The bidder shall provide two (2) factory inspection trips for two (2) customer representatives for each unit ordered. This will be a total of four (4) trips per unit. The inspection trips shall be scheduled at times mutually agreed upon between the manufacturer's representative and the customer. All costs such as travel, lodging and meals shall be the responsibility of the bidder. Cost of each trip will be specified in the bid. Any Inspection trips not used will be credited back on the final invoice to SCFD

1.16 Approval Drawing

A drawing of the proposed apparatus shall be provided for approval before construction begins. The sales representative shall also have a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, location of the lights, siren, horns, compartments and other major components. A revised approval drawing of the apparatus shall be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing. These drawings will be complete and accurate prior to construction.

1.17 Performance Bond

The successful bidder shall provide a performance bond, which guarantees performance of all terms and conditions of the contract and warranty agreement and a signed copy of the contract. This shall occur within 30 days after the contract has been awarded. The performance bond shall specifically cover the performance of the contract according to its terms and conditions, as well as payment of all related bills and encumbrances. The performance bond shall be issued by a surety company, whose name appears, as of the bid date, on the U.S. Treasury Department's list of approved sureties, as published in Department Circular 570. The performance bond shall be issued in an amount equal to 100% of the contract amount and shall be dated concurrent or subsequent to the date of the contract.
One (1) Each - Commercial Chassis
One (1) Vocation and Basic Attributes - Apparatus

APPARATUS VOCATION AND BASIC ATTRIBUTES
When completed this fire apparatus shall have the following attributes:

Order Information:
Apparatus Builder:
Sales Representative:

User Information:
End User: SHASTA COUNTY FIRE DEPARTMENT
Mailing Address: 875 CYPRESS AVENUE
City: REDDING
State: CALIFORNIA
Zip Code: 96001
F.D. Contact: Danny Sykes
Phone Number: 530-225-2430 (office) 530-448-2430 (cell)
Fax Number: 530-225-4852
Contacts email: danny.sykes@fire.ca.gov

HEIGHT RESTRICTION

126" Inches from the ground to the top of the highest part of apparatus when fully loaded

ANGLE OF APPROACH AND DEPARTURE

Minimum angle of approach - 55 degrees
Minimum angle of departure - 18 degrees

2. CAB – CHASSIS - ENGINE

2.1 One (1) Paint Codes and Basic Attributes - Apparatus

PAINT CODES AND BASIC ATTRIBUTES

Paint Information
Paint Manufacturer: DuPont Imron

2.1.1 CAB EXTERIOR

Two Tone Color:
Upper paint color: White Elite BC
Upper paint code: L0006 EB
Lower paint color: Viper Red Elite BC
Lower paint code: L3781 EA
Paint Break Line: At the top of the cab doors or drip rail.
Note: Will be determined at pre construction
2.1.2 FRONT BUMPER PAINT
Front Bumper Color:* Viper Red
Front Bumper Code:* L3781 EA

2.1.3 BODY PAINT
Color Body Panels Color:* Same as main cab color.
Hosebed sides are to be painted the same color as main cab color.
Hard suction trays are to painted the same as main cab color.
Exact painting layout will be covered at pre construction.

2.1.4 RIMS
Color Painted Rims Color: * Viper Red Elite SS
Color Painted Rims Code: * L3781 EA

2.1.5 FRAME RAILS
Color Painted Frame Color: Red

NOTE: Frame rails paint will closely match main cab color.

2.2 ORDER CONFIRMATION
Details of construction such as, but not limited to mounting positions for siren heads, grab handles, switches, labeling and materials where not otherwise specifically detailed in the written specifications at time of order, shall be left to the discretion of VENDOR as the manufacturer who shall be solely responsible for the design, construction and placement of the components. AS DISCUSSED AT THE PRE-CONSTRUCTION AND APPROVED BY PURCHASER.
A drawing is provided as part of the order confirmation. The drawing is an overall representation of the apparatus proposed and not an exact representation of the apparatus to be built. The exact locations of accessories and/or components may be revised pending complete engineering of the custom requirements of the individual apparatus order. If there is a discrepancy between the drawing and the written order confirmation; the specifications within this order confirmation prevail.

One (1) VENDOR Supplied Commercial Chassis

2.2.1 COMMERCIAL CHASSIS Supplied By APPARATUS MANUFACTURER
One (1) Commercial Chassis, International

2.2.2 COMMERCIAL CHASSIS DESCRIPTION
Code Description
2.2.3 SR52500 Base Chassis, Model 7400 SFA 4X4 with 224.00" Wheelbase,

2.2.4 TOW EYES, FRONT (2) Inside Rail, Frame Mounted.

2.4.5 These tow eyes will be mounted in a manor that no other equipment or chassis parts will interfere or cause damage to rescue equipment. (Rescue rope)
NOTE: These eyes shall be constructed with no sharp edges to allow use as a rope rescue anchor point.

2.2.5 FRAME RAILS Heat Treated Alloy Steel (120,000 PSI Yield); 10.125" x 3.580" x 0.312" (257.2mm x 90.9mm x 8.0mm); 480.0" (12192) Maximum OAL

2.2.5.1 FRAME REINFORCEMENT Outer "C" Channel, Heat Treated Alloy Steel (120,000
2.2.6 BUMPER, FRONT Steel, Swept Back Includes:
   A) : BUMPER, FRONT Powder Coated Gray (Argent) Color

   NOTE: Bumper painted red by apparatus manufacturer.

2.2.7 WHEELBASE RANGE 224.00"

2.2.8 AXLE, FRONT DRIVING {Meritor MX-12-120} Single Reduction, 14,600-lb
   Capacity Includes:
   A) DRAIN PLUG
   B) DRIVING FRONT AXLE Magnetic
   C) AXLE, FRONT DRIVING
   D) LUBE {Emgard 75W-90} Synthetic Oil; 1 thru 29.99 Pints

2.2.8.1 SUSPENSION, FRONT, SPRING Parabolic, Taper Leaf; 14,600-lb Capacity;

2.2.8.2 Shock Absorbers Includes:
   A) : SPRING PINS Rubber Bushings, Maintenance-Free

2.3 BRAKE SYSTEM

2.3.1 4091 BRAKE SYSTEM, AIR Dual System for Straight Truck Applications Includes:
   A) : BRAKE CHAMBERS, SPRING (2) Rear Parking
   B) : BRAKE LINES Color Coded Nylon
   C) : DRAIN VALVE Twist-Type
   D) : DUST SHIELDS, FRONT BRAKE
   E) : DUST SHIELDS, REAR BRAKE
   F) : GAUGE, AIR PRESSURE (2) Air 1 and Air 2 Gauges; Located in Instrument
       Cluster
   G) : PARKING BRAKE VALVE Color-Coded Yellow Knob, Located on Instrument
       Panel
   H) : SLACK ADJUSTERS, FRONT Automatic
   I) : SLACK ADJUSTERS, REAR Automatic
   J) : SPRING BRAKE MODULATOR VALVE

2.3.2 DRAIN VALVE {Berg} Manual; With Pull Chain, for Air Tank

2.3.3 AIR BRAKE ABS {Bendix Anti Lock Brake System} Full Vehicle Wheel Control
   System (4-Channel)

2.3.4 AIR DRYER {Bendix AD-IP} With Heater

2.3.5 BRAKE CHAMBERS, SPRING Rotated Forward and Up For Maximum Ground
   Clearance with 4x4

2.3.6 BRAKES, FRONT, AIR CAM S-Cam; 16.5" x 5.0"; Includes 20 Sq. In. MGM Long
   Stroke Brake Chambers

2.3.7 BRAKES, REAR, AIR CAM 16.5" x 7.0"; Includes MGM TR3030 Long Stroke Brake
   Chamber and Heavy Duty Spring Actuated Parking Brake

2.3.8 AIR COMPRESSOR {Bendix Tu-Flo 550} 13.2 CFM Capacity

2.4 STEERING
2.4.1 STEERING COLUMN Tilting
2.4.2 STEERING WHEEL 2-Spoke, 18" Diam., Black
2.4.3 STEERING GEAR {Sheppard M-100} Power

2.4.10 DRIVESHAFT {Dana Spicer} SPL170XL Series in lieu of SPL140

2.5 EXHAUST SYSTEM
EXHAUST SYSTEM Single, Horizontal, After treatment Device Frame Mounted Outside Right Rail Under Cab.

NOTE: EXHAUST SYSTEM SHALL BE ROUTED UNDER CHASSIS WITH EXHAUST PIPE ENDING AHEAD OF THE REAR WHEELS ON THE PASSANGER SIDE.

2.5.1 ENGINE BRAKE, DLOGIC {Diamond Logic} for MaxxForce 9 / DT570, MaxxForce 10 / HT570 Engines; Combination Engine and Exhaust Brake, Electronically Activated OR EQUIVALENT ENGINE BRAKE MUST SPECIFY

2.5.2 The area over the right side under cab compartment shall have the tailpipe wrapped to prevent excessive heat in the compartment and in the cab.

2.6 ELECTRICAL SYSTEM

2.6.1 ELECTRICAL SYSTEM 12-Volt, Standard Equipment Includes

A) : BATTERY BOX Steel with Fiberglass Cover; Mounted Right Side, Back of Cab
NOTE: Option modified for batteries on RH rail in lower cab enclosure by apparatus builder
B) : DATA LINK CONNECTOR For Vehicle Programming and Diagnostics In Cab
C) : FUSES, ELECTRICAL SAE Blade-Type
D) : HAZARD SWITCH Push On/Push Off, Located on Top of Steering Column Cover
E) : HEADLIGHT DIMMER SWITCH Integral with Turn Signal Lever
F) : HEADLIGHTS (2) Sealed Beam Halogen, 5" X 7" Rectangular, w/Chrome Plated Bezels
G) : HORN, ELECTRIC Single
H) : JUMP START STUD Located on Positive Terminal of Outermost Battery
I) : PARKING LIGHT Integral with Front Turn Signal and Rear Tail Light
J) : RUNNING LIGHT (2) Daytime, Included With Headlights
K) : STARTER SWITCH Electric, Key Operated
L) : STOP, TURN, TAIL & B/U LIGHTS Dual, Rear, Combination with Reflector
NOTE: Removed by apparatus builder
M) : TURN SIGNAL SWITCH Self-Cancelling for Trucks, Manual Cancelling for Tractors, with Lane Change Feature
N) : TURN SIGNALS, FRONT Includes Reflectors and Auxiliary Side Turn Signals, Solid State Flashers; Flush Mounted
P) : WINDSHIELD WIPER SWITCH 2-Speed with Wash and Intermittent Feature (5 Pre-Set Delays), Integral with Turn Signal Lever
Q) : WINDSHIELD WIPERS Single Motor, Electric, Cowl Mounted
S) : WIRING, CHASSIS Color Coded and Continuously Numbered
T) : CIGAR LIGHTER Includes Ash Cup
U) : HORN, ELECTRIC (2)
V) : TOGGLE SWITCH, AUXILIARY and Wiring; For Driving Lights or Fog Lights Mounted by Customer

2.6.2 POWER SOURCE Cigar Type Receptacle without Plug and Cord
2.6.3 ALTERNATOR (Leece-Neville 4949PA) Brush Type; 12 Volt 270 Amp. Capacity, Pad Mounted

2.6.4 BODY BUILDER WIRING Back of Standard Cab at Left Frame or Under Extended or Crew Cab at Left Frame; Includes Sealed Connectors for Tail/Amber Turn/Marker/ Backup/Accessory Power/Ground and Sealed Connector for Stop/Turn

2.6.5 BATTERY SYSTEM (International) Maintenance-Free (3) 12-Volt 2775CCA Total

2.6.6 2-WAY RADIO Wiring Effects; Wiring With 20 Amp Fuse Protection, Includes Ignition Wire With 5 Amp Fuse, Wire Ends Heat Shrink and 10’ Coil Taped to Base Harness This needs to terminate at the front passenger seat.

2.6.7 RADIO (International) AM/FM Stereo With CD Player, Weatherband, Clock, Auxiliary Input, Includes Multiple Coaxial Speakers Includes
   A) : SPEAKERS IN CAB (2) Coaxial with Deluxe Interior
   B) : SPEAKERS IN CAB (4) Coaxial with Premium Interior

2.6.8 BACK-UP ALARM Electric, 102 dBA

2.6.9 BATTERY DISCONNECT SWITCH (Joseph Pollack 51-315) Positive Type, Lever Operated, Mounted on Cab Floor at drivers door.

2.6.10 HORN, AIR ACCOMMODATION PACKAGE;
   Note: air horn shall be supplied by vendor. The air horn shall be mounted on the passenger side frame rail under cab hood. The air horn will face forward. This horn will be activated by a lanyard mounted in the drivers are as to allow operation from both front seats.

2.6.11 HEADLIGHTS Long Life Halogen; for Two Light System

2.6.12 COURTESY LIGHT (4) Mounted In Front & Rear Map Pocket Left and Right Side

2.6.13 INDICATOR, LOW COOLANT LEVEL With Audible Alarm

2.6.14 STARTING MOTOR (Delco Remy 42MT Type 450) 12-Volt; with Thermal Over-Crank Protection

2.6.15 CIRCUIT BREAKERS Manual-Reset (Main Panel) SAE Type III With Trip Indicators, Replaces All Fuses Except For 5-Amp Fuses

2.6.16 FENDER EXTENSIONS Omit

2.6.17 INSULATION, UNDER HOOD for Sound Abatement

2.6.18 GRILLE Stationary, Chrome

2.6.19 INSULATION, SPLASH PANELS for Sound Abatement

2.6.20 LOGOS Ship Loose Door Badges in Cab for Installation after Customer Graphics

2.6.21 BUG SCREEN Front End; Mounted Behind Grille

2.6.22 GRILLE EMBER SCREEN
   Cab heater and engine air intake-stainless steel wire cloth screens shall be installed on the apparatus fresh air intake system, air filter housing and outside cab vent. The air intake and outside cab vent shall be protected so to prevent particulate matter greater than .039 inches in diameter from entering the intake system. Particular attention is required on the screening of the remote through hood style intake systems. The wire cloth specifications shall be as follows: .014 inch, 304 stainless steel, 20 meshes per lineal inch.

2.6.23 HOOD FRONT END Tilting, Fiberglass, With Three Piece Construction.

2.6.24 PAINT SCHEMATIC, PT-1 Two Tone.

2.6.25 TOOL KIT Rim Wrench and Handle Only

2.6.26 PAINT IDENTITY Frame/Running Gear, Wheels, and fuel tank

2.6.27 PAINT TYPE Base Coat/Clear Coat, 1-2 Tone

2.6.28 CLUTCH Omit Item (Clutch & Control)
2.6.29 BLOCK HEATER, ENGINE (Phillips) 120 Volt/1250 Watt Includes
   : BLOCK HEATER SOCKET Receptacle Type; Mounted below Drivers Door
   NOTE: Pre construction will determine type of outlet and accessories attached to outlet.

2.7 ENGINE
2.7.1 ENGINE, DIESEL (International MaxxForce 9) OR EQUIVALENT 330 HP, 950 lb-ft Torque @ 1200 RPM, 2200 RPM Governed Speed, # 2 Bell Housing Includes:
   A) : AIR COMPRESSOR AIR SUPPLY LINE Naturally-Aspirated
   B) : COLD STARTING EQUIPMENT Intake Manifold Electric Grid Heater with Engine ECM Control
   C) : CRUISE CONTROL Electronic; Controls Integral to Steering Wheel
   D) : ENGINE OIL DRAIN PLUG Magnetic
   E) : ENGINE SHUTDOWN Electric, Key Operated
   F) : FUEL FILTER Included with Fuel/Water Separator
   G) : FUEL/WATER SEPARATOR Fuel/Water Separator and Fuel Filter in a Single Assembly;
        With Water-in-Fuel Sensor; Engine Mounted
   H) : GOVERNOR Electronic
   I) : OIL FILTER, ENGINE Spin-On Type
   J) : WET TYPE CYLINDER SLEEVES

2.8 COOLING SYSTEM
2.8.1 FAN DRIVE (Horton Drivemaster) "Two Speed" Direct Drive, With Residual Torque Device for Disengaged Fan Speed Includes:
   A) : FAN Nylon
   B) : FAN Optimized Position
2.8.2 RADIATOR Cross Flow, Series System; 1228 Sq In Aluminum Radiator Core With Internal Water to Oil Transmission Cooler and 1167 In Charge Air Cooler Includes:
   A) : ANTI-FREEZE Shell Rotella Extended Life Coolant -40F (-40C)
   B) : DEAERATION SYSTEM with Surge Tank
   C) : RADIATOR HOSES Premium, Rubber

2.9 EMISSIONS - FEDERAL EMISSIONS for 2010.
2.9.1 FEDERAL EMISSIONS 2010 for International MaxxForce 9 & 10 Engines (DT570&HT570) OR EQUIVALENT
2.9.2 AIR CLEANER Dual Element Includes:
   A) : GAUGE, AIR CLEANER RESTRICTION Air Cleaner Mounted
2.9.3 OVER-TEMPERATURE PROTECTION (For Engine Coolant) Omit Item
2.9.4 THROTTLE, HAND CONTROL Engine Speed Control for PTO; Electronic, Stationary Pre- Set, Two Speed Settings; Mounted on Steering Wheel
2.9.5 ENGINE CONTROL, REMOTE MOUNTED Provision for; Includes Wiring for Body Builder Installation of PTO Controls; With Ignition Switch Control for International post 2010 Emissions Electronic Engines
2.9.6 FAN OVERRIDE Manual; With Electric Switch on Instrument Panel.
2.9.7 ENGINE WATER COOLER {Sen-Dure} Auxiliary, For Use With Fire Trucks
2.9.8 EXPANDED ENGINE TEMP EFFECTS to Allow Higher Engine Operating Temperature Range; Includes Nylon Surge Tank and 15 psi Pressure Cap

2.9.9 EMISSION COMPLIANCE Engine Shutdown System Exempt Vehicles, Complies With California Clean Air Regulations

2.10 TRANSMISSION, AUTOMATIC (ALLISON 3000EVSP) 4th Generation Controls; Close Ratio, 5-Speed; With Overdrive, Includes Oil Level Sensor, With Provision for PTO, Less Retarder, Max. GVW N/A Includes:

A) : OIL FILTER, TRANSMISSION Mounted on Transmission

B) : TRANSMISSION OIL PAN Magnet in Oil Pan

2.10.1 TRANSFER CASE (Meritor T-4210 2) 2 Spd, 10000 lb-ft Total Capacity, Without Provision for PTO, With Electric Over Air Control, With Lube Pump Includes:

A) : LIGHT, INDIC, ALL-WHEEL DRIVE Illuminates With All Wheel Drive Engaged, Located on Instrument Panel

B) : TRANSMISSION SHIFT CONTROL (ALLISON) T-Bar Type; for Allison 3000 & 4000 Transmission

2.10.3 OIL COOLER, TRANSFER CASE Remote Mounted Back of Cab

2.10.5 SHIFT CONTROL PARAMETERS WT-Allison S-1 Performance Programming in Primary and Allison S-4 Economy Programming in Secondary

2.10.6 TRANSMISSION OIL (Castrol TranSynd) Synthetic; 29 thru 42 Pints

2.10.7 ALLISON SPARE INPUT/OUTPUT for Emergency Vehicle Series (EVS); Fire/Pumper, Tank, Aerial/Ladder

2.11 REAR SUSPENSION

AXLE, REAR, SINGLE (Meritor RS-23-160) Single Reduction 24,000-lb Capacity With 200 Wheel Ends. Gear Ratio: 4.89 Includes:

A) : REAR AXLE DRAIN PLUG (1) Magnetic, For Single Rear Axle

2.11.1 SUSPENSION, RR, SPRING, SINGLE Vari-Rate; 24000-lb Capacity

2.11.2 SPRINGS, REAR AUXILIARY Multi leaf; 4,500-lb Capacity

2.11.3 SHOCK ABSORBERS, REAR (2)

2.11.4 AXLE, REAR, LUBE (EmGard 75W-90) Synthetic Oil; 30 thru 39.99 Pints

2.12 FUEL/WATER SEPARATOR With Filter Restriction/Change Indicator, Includes Standard Equipment Water-in-Fuel Sensor

2.12.1 FUEL TANK Top Draw; D Style, Steel, 19" Deep, 50 U.S. Gal., 265 L Capacity, With Quick Connect Outlet, Mounted Left Side, Under Cab

2.13 CAB Conventional 5-Man Crew Cab Includes

A) : ARM REST (2) Molded Plastic; One Each Door

B) : CLEARANCE/MARKER LIGHTS (5) Flush Mounted
C) : COAT HOOK, CAB Located on Rear Wall, Centered Above Rear Window
D) : CUP HOLDERS Two Cup Holders, Located in Lower Center of Instrument Panel
E) : DOME LIGHT, CAB Rectangular, Door Activated and Push On-Off at Light Lens, Integral to Console, Center Mounted
F) : GLASS, ALL WINDOWS Tinted
G) : GRAB HANDLE, CAB INTERIOR (1) "A" Pillar Mounted, Passenger Side
H) : GRAB HANDLE, CAB INTERIOR (2) Front of "B" Pillar, One Each Side
I) : GRAB HANDLE, CAB INTERIOR (4) Two Each Side, Rear Door Mounted at Hinge Side and "C" Pillar Mounted
J) : INTERIOR SHEET METAL Upper Door (Above Window Ledge) Painted Exterior Color
K) : PLEASE NOTE: 43.9" CA Loss
L) : STEP (8) Two Steps Per Door

2.13.1 GAUGE CLUSTER English With English Electronic Speedometer Includes:
A) : GAUGE CLUSTER (6) Engine Oil Pressure (Electronic), Water Temperature (Electronic), Fuel (Electronic), Tachometer (Electronic), Voltmeter, Washer Fluid Level
B) : ODOMETER DISPLAY, Miles, Trip Miles, Engine Hours, Trip Hours, Fault Code Readout
C) : WARNING SYSTEM Low Fuel, Low Oil Pressure, High Engine Coolant Temp, and Low Battery Voltage (Visual and Audible)

2.13.2 GAUGE, OIL TEMP, ALLISON TRAN
2.13.3 GAUGE, AIR CLEANER RESTRICTION {Filter-Minder} With Black Bezel Mounted in Instrument Panel

2.13.4 IP CLUSTER DISPLAY On Board Diagnostics Display of Fault Codes in Gauge Cluster

2.13.5 SEAT, DRIVER {Gra-Mag} Non-Suspension, High Back With Integral Headrest, Vinyl, With Fixed Back Includes:
A) : SEAT BELT 3-Point, Lap and Shoulder Belt Type. Red in color

2.13.6 SEAT, PASSENGER {Gra-Mag} Non Suspension, High Back With Integral Headrest, Vinyl, With Fixed Back Includes:
A) : SEAT BELT 3-Point, Lap and Shoulder Belt Type. Red in color

2.13.7 SEAT, REAR {International} BENCH; Full Width; Vinyl, With Fixed Back and Two Integral Outboard Headrest Includes:
A) : SEAT BELT (3) Two 3-Point Shoulder Belts and One 2-Point Lap Belt (Center Position)
Red in color.

2.13.7.1 SEAT BELT All Red; 4 to 6

2.13.7.2 SEAT BELT WARNING LABELS
The cab shall be equipped with two (2) seat belt warning labels. These labels are to be in full view of the occupants in the seated position.

2.13.8 GRAB HANDLE (2) Chrome Towel Bar Type With Anti-Slip Rubber Inserts; for Cab Entry, Mounted Left and Right, Each Side at "B" Pillar and "C" pillar for cab entry at rear doors.

2.13.9 MIRRORS (2) {Lang Meдра} Styled; Rectangular, 7.09" x 15.75", Brackets Breakaway Type, With 102" Wide Spacing, With Integral Convex Both Sides, With All Heated Heads, Thermostatically Controlled, With Clearance Lights LED, Powered Both Sides, With Bright Heads & Brackets

2.13.10 CAB SOUND INSULATION Includes Dash Insulator and Engine Cover Insulator
2.13.11 INSTRUMENT PANEL Center Section, Flat Panel

2.13.12 AIR CONDITIONER (International Blend-Air) With Integral Heater & Defroster Includes:
   A) : FRESH AIR FILTER
   B) : HEATER HOSES Premium
   C) : REFRIGERANT Hydrofluorocarbon HFC-134A

2.13.13 FRESH AIR FILTER for HVAC

2.13.14 STORAGE POCKET, DOOR Molded Plastic, Full Width; Mounted on Passenger Door

2.13.15 HOURMETER, PTO for Customer Provided PTO; With Indicator Light and Hourmeter in
       Gauge Cluster Includes Return Wire for PTO Feedback Switch

2.13.16 CAB INTERIOR TRIM Deluxe; for Crew Cab Includes
   A) : "A" PILLAR COVER Molded Plastic
   B) : CAB INTERIOR TRIM PANELS Cloth Covered Molded Plastic, Full Height; All Exposed
       Interior Sheet Metal is covered
   C) : CONSOLE, OVERHEAD Molded Plastic with Dual Storage Pockets and Retainer Nets and
       CB Radio Pocket
   D) : DOOR TRIM PANELS Molded Plastic; Driver and Passenger Doors
   E) : FLOOR COVERING Rubber, Black
   F) : HEADLINER Soft Padded Cloth
   G) : INSTRUMENT PANEL TRIM Molded Plastic with Black Center Section
   H) : STORAGE POCKET, DOOR (1) Molded Plastic, Full-Length; Driver Door
   I) : SUN VISOR (2) Padded Vinyl with Driver Side Toll Ticket Strap, Integral to Console

2.13.17 CAB REAR SUSPENSION Air Bag Type

2.14 WHEELS & TIRES

2.14.1 WHEEL, SPARE, DISC 22.5" Painted Steel, 10 Stud (285.75MM BC Hub Piloted) 8.25    DC Rim

2.14.1.1 WHEELS, FRONT DISC; 22.5" Painted Steel, 2 Hand Hole, 10 Stud (285.75MM BC) Hub
      Piloted, Flanged Nut, Metric Mount, 8.25 DC Rims; With Steel Hubs Includes:
      A) : PAINT IDENTITY, FRONT WHEELS (same as cab color)
      B) : WHEEL SEALS, FRONT Oil Lubricated, Includes Wheel Bearings

2.14.2 WHEELS, REAR DUAL DISC; 22.5" Painted Steel, 2 Hand Hole, 10-Stud (285.75MM BC) Hub
      Piloted, Flanged Nut, Metric Mount, 8.25 DC Rims; With Steel Hubs Includes:
      A) : PAINT IDENTITY, REAR WHEELS (same as cab color)
      B) : WHEEL SEALS, REAR Oil Lubricated, Includes Wheel Bearings

2.14.3 WHEEL BEARING, FRONT, LUBE {EmGard 50W} Synthetic Oil

2.14.4 TIRES

2.14.5 7382130152 TWO (2) TIRES, FRONT 11R22.5 G282 MSD (GOODYEAR) 497 rev/mile, load
        range H,16 ply

        NOTE: or equivalent
2.14.6 7382130152 FOUR (4) TIRES, REAR 11R22.5 G282 MSD (GOODYEAR) 497 rev/mile, load range H,16 ply

NOTE: or equivalent

2.15 Cab schematic 211GM

2.15.1 Location 1: 2303, Red (Std)
2.15.2 Location 2: 9219, Winter White (Std)
2.15.3 Front, Rear and spare wheels: 2303 Red
2.15.4 Chassis schematic 946GM
2.15.5 Frame: 2303, Red (Std)

2.16 WARRANTY, LTD, BASIC VEHICLE DSPEC (Diamond SPEC) OR EQUIVALENT To 12-Month/Unlimited Mileage; Includes Diamond Emergency Breakdown Service, With 90-Day Towing
2.16.1 Vendor will supply optional pricing for extended warranty if offered by chassis supplier.

2.17 One (1) Mud Flaps, Front Axle, Black Rubber

CAB MUD FLAPS
Mud flaps shall be installed behind the front tires. These mud flaps shall be provided to protect the underneath of the cab and body.

2.18 One (1) Lower Compartments, (1) Each Side, Below Rear Cab Doors

UNDER CAB COMPARTMENT DESIGN AND CONSTRUCTION
All compartments shall be manufactured from 12-gauge stainless steel, aluminum or gavalsteel and shall be of sweep out design and can be of bolt or welded design. If bolt together design is used the vendor shall use stainless recessed round head bolts and stainless aircraft style "ESNA" nuts and they shall be applied with proper torque rating for each fastener.

2.18.1 HINGED DOOR CONSTRUCTION
The lower cab compartments shall be provided with hinged doors. The hinged compartment doors shall be flush style so that the entire door fits flush against the apparatus body sides. All doors shall be provided with a high quality, continuous double seal type weather stripping to prevent moisture and dust from entering the exterior compartments.

2.18.2 Each door shall be double pan design with the outer door material being the same material as used for build up. These compartment will have a 1/8" aluminum removable inner liner that shall have a natural finish to provide reflective qualities during night operations.

2.18.3 The vertically hinged doors shall have gas shocks. A polished stainless steel 1/4” piano hinge shall be provided for each door. The door latches shall be Hansen locking slam latches, with a chrome "D" ring with a 5-degree bend for easier grasping of each door handle with gloved hands. The latch shall be provided with a keyed lock. The exterior of the doors shall be painted to match the main job color.

2.18.4 LEFT (DRIVER'S SIDE) COMPARTMENT UNDER REAR CAB DOOR
There shall be a stainless steel compartment mounted beneath the crew door on the left (driver's)side of the cab. The compartment shall have dimensions of 40-1/2" wide x 16-1/2" high x 22" deep. The clear door compartment dimensions shall be 34" wide x 14" high. The compartment shall be provided with louvers with filter system to provide ventilation. The filter system shall be designed for ease of filter change. The filter shall be 100% virgin nylon fiber in an open web design that is USDA approved.
A heavy duty pullout tray shall be installed in the left compartment equipped with Grant slides and a gas shock to hold the tray in both the in and out positions and shall be made from .190” aluminum with a
maximum capacity of 250 pounds. There shall be an egg crate insert in the pull out tray to provide storage flexibility and appliance retention in the drawer.

This compartment will be painted the same as job color (Red)

2.18.5 RIGHT (OFFICER’S SIDE) COMPARTMENT UNDER REAR CAB DOOR
There shall be a stainless steel compartment mounted beneath the crew door on the right (officer's) side of the cab. The compartment shall have dimensions of 37" wide x 13" high x 22" deep. The clear door compartment dimensions shall be 31" wide x 11" high. A heavy duty pullout tray for the engines batteries shall be installed in the right compartment equipped with Grant slides and a positive mechanical lock for to hold the tray in the in position and shall be made from stainless steel. The useable compartment after the battery tray installation shall be 15" wide x 11" high x 22" deep. A compartment divider shall be installed to seal the battery compartment from the storage compartment space.

This compartment will be painted the same as job color (Red)

2.18.6 The battery and storage compartment shall both be provided with louvers to provide ventilation.

2.18.7 The compartment shall be provided with louvers with filter system to provide ventilation. The filter system shall be designed for ease of filter change. The filter shall be 100% virgin nylon fiber in an open web design that is USDA approved.

2.18.8 COMPARTMENT LIGHTING
A minimum of two (2) compartment lights shall be provided for each under cab compartment. No exceptions to this requirement. Each under compartment shall have an automatic compartment light switch. The lights shall be double side transparent type bulb to provide lighting around the exterior of the compartment when the doors are open.

2.18.9 COMPARTMENT STEPS
The top of the compartment shall be equipped with the original equipment steps from the chassis. The lower steps on the compartment shall be laser grip stainless steel steps to match the design used on the pump panel and rear body lower stepping surface. The lower original equipment steps in the driver and officer door areas shall be replaced with laser grip stainless steel steps to match the design used on the pump panel and rear body lower stepping surface.

2.19 WHEEL TRIM

2.19.1 One (1) Stainless 'Baby Moon' Caps & Nut covers
FRONT WHEEL TRIM
The front axle shall be trimmed with mirror finish, 304L grade, non-corrosive stainless steel 'baby moon' hub caps with an opening for viewing the oil seal cover, and bright finished nut covers.

2.19.2 One (1) Stainless "Lincoln Hat" Hub & Nut Covers
REAR WHEEL TRIM
The rear axle(s) shall be trimmed with mirror finish, 304L grade non-corrosive stainless steel "Lincoln Hat" hub cover and bright finished nut covers.

2.20 One (1) Ground Lights, (4) Cab Mounted, Below Each Door, Crew Cab
CAB GROUND LIGHTING
One (1) light shall be mounted beneath each door. These lights shall be designed to provide illumination
on areas under the driver, officer and each rear crew area entry/egress. All cab ground lights shall automatically activate when any cab exit door is opened and the parking brake is set. A single switch shall be provided in the cab to activate all of the apparatus ground lights manually.

2.21 MULTIPLEX WIRING INTERFACE
The apparatus shall be equipped with a Class 1 ES-Key Management System for complete control of the electrical system devices. This management system shall be capable of performing load management functions, system monitoring and reporting, and be fully programmable for control of the electrical system. The ES-Key system shall utilize a Controller Area Network (CAN) to provide multiplexed control signals for "real time" operation. The system shall consist of the following components:

2.21.1 Universal System Manager (USM) - The USM device shall be the CAN network controller and provide various functions to the apparatus such as load management. The USM shall be programmed from a network interface to a PC computer.

2.21.2 Information Display Module - For displaying text, warnings and diagnostics. The information Display Module shall allow the Fire Department to access and change load management shedding priority.

2.21.3 Power Distribution Module(s) (PDM) - The PDM shall be a solid state power distribution module with eight (8) outputs.

2.21.4 Input/Output Module - The module shall have sixteen (16) inputs to communicate with the USM and three (3) outputs for various body functions. The ES-Key system shall provide diagnostic capabilities for troubleshooting the electrical system of the apparatus. A six-position switch panel shall also be provided.

2.22 One (1) Auxiliary Engine Cooler Supplied in Commercial Chassis
AUXILIARY ENGINE COOLER
The cooling system shall have one (1) auxiliary engine cooler mounted in the radiator water piping. The apparatus shall have the fire pump water circulated to the cooler from a valve located on the apparatus pump panel.

2.23 One (1) Door Reflective Material, NFPA Required, Commercial Chassis, 4 Door REFLECTIVE MATERIAL - INTERIOR CAB DOOR
All cab doors shall have a minimum of 96 square inches of reflective material affixed to the inside of each door.

2.24 One (1) Air Inlet/Outlet Beneath Driver's Door-Commercial Chassis
AIR INLET / OUTLET
An outside air system inlet/outlet connection shall be provided and mounted in an area beneath the driver's door. A Kussmaul auto eject system will be used for this requirement. (2.25)

2.25 One (1) Air Auto Eject - Kussmaul w/Cover - Commercial Chassis
AIR AUTO-EJECT
The chassis shall be equipped with a KUSSMAUL automatic air line disconnect. The Air Eject shall be wired so that when the vehicle is started the Air Eject automatically disconnects the air line thus preventing the vehicle from being driven away with the air line connected. A Kussmaul weatherproof adapter kit shall provide a recessed mounting for the Air Eject. A self closing, yellow, weatherproof cover shall be used to provide a water-tite seal for the Air Eject. The air auto-eject shall be piped through a check valve to the "wet" air reservoir of the chassis. This connection shall maintain the apparatus air system from a shop air source.

2.25.1 One (1) Exterior Mounted - Beneath the Driver's Door – Commercial
The Auto Air Eject assembly shall be mounted on the exterior of the cab beneath the driver's door.
2.26 One (1) Electronic Siren - Federal Signal - PA640 - Type III

**ELECTRONIC SIREN**
A Federal Signal 100w electronic siren control with microphone, model PA-300, shall be provided.

2.26.1 Configuration and operation of the vehicles warning system will be discussed and decided at pre construction.

2.27 One (1) Siren Speaker - Cast Products - Recess Mounted - Left Side

**SIREN SPEAKER**
There shall be one (1) Cast Products polished aluminum 100 watt speaker provided. The speaker shall be recessed into the left (driver's) side of the front bumper immediately outboard of the chassis frame rails.

2.28 One (1) Open Compartment Light - Red Flashing - Whelen OS LED with buzzer

**COMPARTMENT OPEN LIGHT**
A Red Open Compartment Flashing Light, Whelen OS Series LED shall be mounted on the face of the overhead panel. A chrome flange is to be supplied with the light. This compartment open door light is wired with a flasher to the power panel for completion to the compartment door open circuit on the body. The compartment open light circuit shall be wired so that the light circuit is deactivated when the parking brakes of the apparatus are applied. The system will also incorporate a buzzer that will sound with the light. A label shall be applied adjacent to the light 'DOOR OPEN'.

2.29 One (1) Engine Maintenance Lights – Commercial 40-LE-1001

**ENGINE MAINTENANCE LIGHTS**
Two (2) engine maintenance lights shall be supplied beneath the hood. These lights shall illuminate automatically when the hood is tilted.

2.30 One (1) Map light - Federal Signal LF12ER

**OFFICER MAP LIGHT**
A Federal Signal LF12ER map light (mounting location will be determined at pre construction).

2.31 One (1) Radio Antenna and Antenna Wiring - Type III

**RADIO ANTENNA MOUNT WIRING**
2.31.1 Four (4) NMO mounts shall be roof mounted, on the cab in the following locations:

A) One (1) left side of the roof in line with the post between the driver's and rear doors a weather cap shall be installed on this mount - the coax from this mount is to be run to the officer's seat box.

B) One (1) right side of the roof in line with the post between the officer's and rear doors a weather cap shall be installed on this mount - the coax from this mount is to be run to the officer's seat box.

C) One (1) left side of the roof ahead of the rear of the cab a 132-512 MHz unity gain 1/4 wave antenna (MaxRad #MWB 1320) shall be installed on this mount - the coax from this mount is to be run to the officer's side seat box.

D) One (1) right side of the roof ahead of the rear of the cab a weather cap shall be installed on this mount - the coax from this mount is to be run to the officer's seat box.

2.32 One (1) 40 Amp - Battery Charger - ProTech-4 1240 - Commercial

**BATTERY CHARGER**
A PRO MARINER / ON BOARD SOLUTIONS, PRO TECH-4, 1240 or equivalent. charger/power supply with a 40 amp output shall be installed, under the driver's seat.
Since shoreline power is not always stable the charger shall be equipped with Auto-Ranging AC Input to automatically accept global voltages of 90 VAC to 270 VAC at 45-440 Hz.

Field Selectable - Use with lead/acid or gel batteries (AGM factory option). Select length of absorption charge cycle based on size of batteries.

In the 4-step charging system the charger will provide the following sequence.

**Step 1:** Fast Charge - Charger will deliver its maximum amperage rating to the connected batteries for the fastest charge (current regulation mode) until battery voltage is raised to 14.6V (lead acid factory setting). At this time, the ProTech will shift to step 2.

**Step 2:** Absorption Charge - Maximizes charge and holds voltage (voltage regulation mode) at 14.6V (lead acid factory setting) for 1 to 4 hours (selectable based on battery size), while letting the batteries determine the amount of amps they can accept. This mode creates activity in the batteries, reducing sulfate buildup, and conditions the batteries for an extended life. After the programmed 1 to 4 hours have elapsed, the ProTech will shift to step 3.

**Step 3:** Float Mode - A precision 13.3V (lead acid factory setting) finishing voltage that maintains each battery (step-down voltage regulation mode), which is perfect for short or long storage periods and will never overcharge your batteries. ProTech will deliver its full rated output for house loads including: lighting, electronics and pumps.

**Step 4:** Recycle - If there are very large loads on the battery while the charger is on, the unit will recycle to the first step, ensuring that batteries stay fully charged.

One-Year Warranty - Includes lifetime repair guarantee.

Certified to - UL Marine 1236/SA

2.32.1 One (1) Kussmaul 20 AMP - 120v - Super Auto Eject - Commercial

**SHORELINE AUTO-EJECT**

A KUSSMAUL Super Auto Eject, model 091-55-20-120, with weatherproof cover shall be mounted on the cab under the driver's door.

The Super Auto Eject is to be completely sealed to prevent internal contamination of the working components.

The internal switch arrangement of the Super Auto Eject shall be designed to close and open the 120-volt AC circuit after the mating connector is inserted and before the connector is removed. This design shall prevent arcing at the connector contacts to provide long life.

The electrical connection shall be provided as a 120-volt AC - 20 amp type using a NEMA 5-20P connector.

2.32.2 One (1) Yellow Auto-Eject Cover 45-Z0-1302

The Auto-Eject cover shall be a Kussmaul 091-55YW, yellow in color.

2.32.3 One (1) Cab Exterior Mounted - Below the Driver's Door

The Auto Eject assembly shall be mounted on the exterior of the cab below the driver's door.

**NOTE:** Electrical components connected to this assembly will be discussed at pre construction.

2.32.4 **Center console** One (1) center console will be supplied by vendor. This console will be mounted between the front seats. Various designs with drawings will be supplied by the vendor for the department to choose from.

3.0 COMPONENTS

3.1 PUMP MODULE – PUMP
3.1.1 There will be a 1000 GPM pump. The manufacture of pump will be disclosed in bid package.

3.1.2 Pump House Design Requirement
   The pump housing shall be constructed to facilitate ease of repair and access to all components. All components shall be of corrosion proof design. Plumbing shall be designed for easy removal throughout the apparatus plumbing.

3.1.3 One (1) Pump Enclosure, Side Mount, 36" Wide,
PUMP COMPARTMENT
   The pump compartment shall be separate from the hose body and compartments so that each may flex independently of the other. It shall be a fabricated assembly of stainless steel tubing, angles and channels, which does not support the fire pump and or running boards. The pump compartment shall be mounted onto the chassis through rubber biscuits in a four point pattern to allow for a chassis frame twist. Pump compartment, pump, plumbing and gauge panels shall be removable from the chassis in a single assembly and shall have an approximate width of 36". The pump compartment shall be a modular design.
   A lower stainless steel tubing framework shall provide the support for the mounting of the pump lower panels. Stainless steel structural channels shall be provided as a support behind all control push-pull handles enabling a firm foundation for operation of the valve control.
   An upper tubing framework shall encompass the crosslay hose bed and walkway area for operation of the deck gun. The floor of this section shall be a bolt-on design to provide access for major repairs and or service. A full width stainless steel channel shall provide a secure support base for the mounting of the control rod guides.

3.1.4 One (1) Running Boards, Left Side, Right Side with Laser Grip S/S Step Surface or equivalent
RUNNING BOARDS
   The running boards shall be separate from the hose body, compartments, and pump compartment so that each may flex independently of the other and to allow water to flow freely away from the running board area. Separation of the running boards and support structure from the hose body, compartments and pump compartment is desired to provide field service of the running board without major repairs to the pump compartment in the event of an accident.
   The steel running board supports shall be bolted directly to the chassis frame rails to provide proper support. The running board step surface shall be covered in Laser Grip stainless steel meeting the current revision of NFPA 1901 for step requirements.

3.1.5 One (1) Dunnage Compartment, w/Floor
DUNNAGE COMPARTMENT OVER PUMP
   There shall be a dunnage compartment furnished on top of the pump module. The floor shall be bolted in place and removable for access to the fire pump components for major service.

3.1.6 One (1) Grab Rails, (2) Access Dunnage Compartment, Mounted Left and Right Side of Compartment
DUNNAGE COMPARTMENT GRAB RAILS
   Two (2) bright anodized extruded aluminum grab rails shall be provided, one (1) each side of the pump house on the side of the dunnage compartment just below the top edge mounted horizontal to provide easy access to the dunnage compartment. Molded rubber gaskets shall be installed under the grab handles to protect the surface of the compartment.

3.1.7 One (1) Work Light, (1) Truck-Lite #40, Mounted Pump Compartment w/Switch
PUMP COMPARTMENT WORK LIGHT
The pump compartment shall have one (1) Truck Lite, model 40 clear work light to provide illumination of the pump compartment. The light shall have a weather resistant, toggle style on/off switch located inside the pump compartment adjacent to the left service door area. The power for the pump module light shall be switched thru the battery master switch.

3.1.8 One (1) Pump Service Access Requirements

**PUMP SERVICE ACCESS REQUIREMENTS**

It is the opinion that service access to the pump, valves, gauges and controls are of the utmost importance. Special consideration shall be taken when evaluating the pump module design. Pump panels that offer little to no access without the use of tools shall not be considered compliant with this requirement.

3.1.9 One (1) Control Panel

**PUMP CONTROL PANELS**

All pump controls and gauges shall be located at the left (street) side of the apparatus and properly identified. The layout of the pump control panel shall be ergonomically efficient and systematically organized. The pump operator's panel shall be removable in two (2) main sections for ease of maintenance. The pump and gauge panels shall be constructed of 12-gauge stainless steel. The gauge panel shall contain a panel for mounting of all instruments, engine monitoring system and pressure control system.

The gauge panel shall be a double panel door design to protect in the enclosed door all gauge tubing, switch, and control wiring. The gauge panel exterior shall be made of 12-gauge stainless steel. The inner pan shall bolt onto the stainless exterior panel. There shall be an access panel in the inner panel easily removable for control or gauge service or replacement.

The gauge panel door shall be designed as an opening pump house service door on the street (left) side of the pump house. This gauge panel door shall provide an opening minimum size of 30 inches wide by 14 inches in height.

The lower section of the panel shall contain all inlets, outlets and drains. All push-pull valve controls shall have quarter-turn locking control rods with chrome plated zinc tee handles. Guides for the push-pull control rods shall be chrome plated zinc castings securely mounted to the pump panel. Push-pull valve controls shall be capable of locking in any position. The control rods shall pull straight out of the panel and shall be equipped with universal joints to eliminate binding.

There shall be an opening pump house service door on the curb (right) side of the pump house. This door shall provide an opening minimum size of 30 inches wide by 14 inches in height.

3.1.10 One (1) Identification Labels - Engraved Plastic 20-15-0100

**PUMP PANEL IDENTIFICATION TAGS**

The identification tag for each valve shall be recessed in the face of the control handle. All discharges shall have color-coded plastic identification tags, with each discharge having its own unique color. Color coding shall include the labeling of the outlet and the drain for each corresponding discharge.

3.1.11 One (1) Pump Panel Finish, Brushed Stainless Steel

**PUMP PANEL FINISH**

All stainless panels used in the construction of the pump house shall have a brushed finish.

3.1.12 CONTROLS AND GAUGES

3.1.12.1 One (1) Controls & Gauges

**CONTROLS AND GAUGES**

The following shall be provided on the pump and gauge panels in a neat and orderly fashion. The gauge panel shall include the following:

3.1.12.2 One (1) Class 1 ENFO-III

**ENFO-III ENGINE MESSAGE CENTER**
The apparatus shall be equipped with the Class 1 ENFO III Engine Information Display for the pump panel. The ENFO III shall provide engine RPM, system voltage display and alarm, engine oil pressure display and alarm, and engine temperature display and alarm. The ENFO III uses the SAE J-1587 data bus for its information and does not require any additional sensors to be mounted. The message center shall provide the following:

A) Engine Oil Pressure: With visual LED message and audible warning.
B) Engine Water Temperature: With visual LED message and audible warning.
C) Voltmeter: With visual LED message and audible warning.
D) Tachometer: With visual LED message.

3.1.12.3 One (1) Class 1 Pressure Governor 20-18-1400

**CLASS 1 PRESSURE GOVERNOR - ELECTRONIC ENGINE CONTROL**

An electronic control for engine speed based upon a preselect for "RPM" or pump "Pressure". The electronic control for the engine is to operate as a pressure sensor (regulating) governor (PSG) eliminating any need for a relief valve on the discharge side of the pump. The control shall have the following controls and display:

A) Mode select button for "RPM" or pump "Pressure"
B) Green light to indicate when "RPM" mode is selected.
C) Green light to indicate when "Pressure" mode is selected.
D) Idle select button to immediately return the engine to idle, regardless of mode of operation.
E) Preset button to increase the engine speed or pump pressure to a preset condition.
F) Increase button to increase engine speed or pump pressure based upon mode selected.
G) Decrease button to decrease engine speed (RPM) or pump pressure based upon mode selected.
H) Green "Pump Engaged" light
I) Green "Okay to Pump" light
J) Green "Throttle Ready" light
K) Visual LED Message Center to provide engine speed (RPM) or pump pressure based upon mode selected.

3.1.12.4 One (1) 4-1/2" Master Pump Gauges, -30-0-400 psig – English 20-18-1500

**MASTER GAUGES (class one or equivalent)**

A) The pump master vacuum and pressure gauges shall be 4-1/2" in diameter with white dial face gauges with black lettering and markings.
B) The master vacuum gauge shall be a compound style gauge with a vacuum/pressure range of -30" - 0 - 400 psig with the dial face of the gauge labeled in black INTAKE.
C) The master pressure gauge shall be provided with a range of 0-400 psig and the dial face of the gauge labeled in black DISCHARGE.
D) The gauges shall be fluid filled with pulse and vibration dampening "Interlube" to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to -40 degrees F. The cases shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. The gauge accuracy for the gauge shall be plus or minus 1% of full scale per ANSI B40.1, Grade 1A.
E) To prevent internal freezing and to keep contaminants from entering the gauge, the stem and bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

3.1.12.5 **MASTER GAUGE TEST PORTS**

Adjacent to each gauge there shall be a pressure tap to provide simultaneous reading of the vacuum and pressure exerted on the individual gauge.
3.1.12.5 One (1) 2-1/2" Pressure Gauges, 0-400 psig – English 20-18-1550

PRESSURE GAUGES
A) Each line pressure gauge shall be mounted immediately above the control for the corresponding valve.
B) The individual line pressure gauges for the discharges shall be 2-1/2" in diameter with white dial face gauges with black lettering and markings. The gauges shall be a compound style gauge with a vacuum/pressure range of 0 - 400 psig.
C) The gauges shall be fluid filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to -40 degrees F. The cases shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. The gauge accuracy for the gauge shall be plus or minus 2% mid-scale, plus or minus 3% balance, per ANSI B40.1, Grade 1A.
D) To prevent internal freezing and to keep contaminants from entering the gauge, the stem and bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.
E) All line pressure gauges shall be mounted adjacent to the corresponding discharge control tee handles.

3.1.12.6 One (1) Pump Hour Meter
PUMP OPERATION HOUR METER
A pump hour meter shall be supplied. The hour meter shall be environmentally sealed to prevent moisture from entering the instrument. The face shall provide a display of the total cumulative hours of pump engagement. The hour meter shall be protected by being located inside the pump module.

3.1.12.7 One (1) Pump Panel LED Lighting
PUMP PANEL LIGHTING
The pump operator’s panel shall be supplied with a LED light system. LED strip lights with a stainless steel hood shall be mounted across the top of the pump panel gauges and controls.
LED strip lights with a stainless steel hood shall be provided on each side of the pump module above the side panels.
All pump module lighting shall illuminate when the parking brake is engaged.

3.1.12.8 One (1) Gauge, (1) Water Tank Level, Class 1 w/LED Display
WATER TANK LEVEL GAUGE
The apparatus shall be equipped with a Class 1 "Inteli-Tank" Tank Level Gauge for indicating water level. The tank level gauge shall indicate the liquid level on an easy to read LED display and show increments of 1/8 tank capacities. The tank level gauge system shall include a pressure transducer that shall be mounted on the outside of the tank in an easily accessible area, a super bright LED four-light display with a visual indication at nine (9) accurate levels, and a set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power.

3.1.13 PUMP

3.1.13.1 One (1) Pump, Midship, 1000 GPM PTO
NOTE: The PUMP Make & Model must be approved by purchaser.

3.1.13.2 PUMP CONSTRUCTION AND ASSEMBLY
The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance specs as outlined by the latest NFPA Pamphlet No. 1901. Pump shall be free from objectionable pulsation and vibration.
The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of
30,000 PSI. All moving parts in contact with water shall be of high quality bronze or stainless steel. Pumps utilizing castings made of lower tensile strength cast iron shall not be acceptable. Pump body shall be split on a single plane for easy removal of entire impeller assembly including wear rings and bearings from beneath the apparatus without disturbing piping or the mounting of the pump in chassis. The pump shaft is to be rigidly supported by two bearings for minimum deflection. The bearings shall be heavy-duty, roller or ball bearings in the gearbox and they shall be splash lubricated. Pump impeller shall be hard, fine grain bronze of mixed flow design; accurately machined and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower. The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel; pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

3.1.13.3 GEARBOX
The gearbox shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature. The gearbox drive and tail shafts shall be of heat-treated chrome nickel steel and be equipped with an air-shift system to select between road and pump when pump is split driveline mounted. All gears shall be precision ground and of the highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened to give an extremely accurate gear for long life, smooth operation, and higher load carrying capability. The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected. Three (3) green warning lights shall be provided to indicate to the operator when the pump has completed the shift from Road to Pump position. Two (2) green lights to be located in the truck driving compartment and one green light on pump operator's panel adjacent to the throttle control. All lights to have appropriate identification/instruction plates.

3.1.13.4 One (1) Pump Rating, Hale OR EQUIVALENT, 1000 GPM
PUMP RATING AND TEST REQUIREMENTS
The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis, and have the capacity of 1000 gallons per minute (U.S. GPM), NFPA1901 rated performance. The pump shall deliver the percentage of rated discharge at pressures indicated below:
100% of rated capacity at 150 pounds net pressure.
70% of rated capacity at 200 pounds net pressure.
50% of rated capacity at 250 pounds net pressure.
100% or rated capacity at 165 pounds net pressure.
The entire pump shall be assembled and tested at the pump manufacturer's factory. The pump shall be driven by a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable the pump to meet and exceed its rated performance.

3.1.13.5 One (1) Altitude Requirements, 0' to 2000 Feet Above Sea Level
ALTITUDE REQUIREMENTS
The apparatus shall be designed to meet the specified rating at 0 to 2000’ altitude.

3.1.13.6 One (1) Primer, Oil-less, Hale ESP
PRIMING PUMP
The priming pump shall be a positive displacement vane type, oil-less, electrically driven, and conform to standards outlined in NFPA 1901. One priming control shall both start the priming motor and open the priming valve.

3.1.13.7 One (1) Pump Shift, Pneumatic w/Label, Indicator Lights, Mounted Cab & Pump Panel
PNEUMATIC PUMP SHIFT
The pump shift shall be air operated and shall incorporate an air double action piston to shift from road to pump and back. A manual or electric operated pump shift mechanism is not acceptable. The pump shift switch shall be mounted in the cab and identified as "AIR PUMP SHIFT" and include instructions permanently inscribed on the pump shift switch plate. The in-cab operating valve uses a spring loaded
locking collar to prevent it from accidentally being moved. The pump shift control assembly shall incorporate an indicating light system, which will notify the operator when the shift has been completed to PUMP and when the chassis transmission is in correct pumping gear. The switch that activates the lights must be mounted on the pump transmission and positioned so that the pump shift arm activates the switch only when the shift arm has completed its full travel into PUMP position. An additional indicator light shall be provided adjacent to the throttle control at the pump operator's panel to indicate a completion of the pump shift.

3.1.13.8 One (1) Mechanical Seal, Inboard Side, Spring Loaded, Self Adjusting MECHANICAL SEAL
The fire pump shall be provided with a mechanical pump seal. One (1) only required on the suction, inboard, side of the pump. The mechanical seal shall be two inches in diameter and shall be spring loaded, maintenance free and self-adjusting. Mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton rubber boot, and a tungsten carbide seat with Teflon backup seal.

3.1.13.9 One (1) Anode, Water Pump ANODE SYSTEM
To reduce the effect of galvanic action the pump shall be equipped with two zinc (2) anodes. One anode is to be installed on the inlet (suction) side of the system and one anode is to be installed on the pressure (outlet) side of the system.

3.1.13.10 One (1) Thermal Relief Valve, Hale TRV-L, Automatic or Equivalent Must be same as pump manufacture. THERMAL PROTECTION
The pump shall be equipped with a device, which monitors the water temperature of the pump and relieves water when the temperature inside the pump exceeds the preset value of the relief valve (120 degrees F / 49 degrees C). The system shall automatically dump a controlled amount of water to the atmosphere or back to the tank when the pump water temperature exceeds the preset value. The valve shall automatically close when the water temperature cools to below the preset value. A chrome panel placard with a visual warning lamp and test button shall be provided on the operator’s panel. The warning light shall illuminate when the Thermal Relief Valve is open and discharging water.

3.1.13.11 One (1) Certified NFPA Pump Test, Completed Apparatus Certificate PUMP CERTIFICATION TEST
The apparatus shall be certified to the requirements of NFPA 1901 prior to delivery of the completed apparatus. The certificate shall be furnished with the apparatus on delivery.

3.1.13.12 One (1) Pump Warranty, Must be a minimum of a two year manufacture warranty. FIRE PUMP WARRANTY
The fire pump shall carry the manufacturer's two year warranty covering defective parts and workmanship. A copy of the pump manufacturer's warranty policy shall be provided with the completed apparatus.

3.1.13.13 One (1) Manuals, Pump Service and Operation PUMP MANUALS
Two (2) sets of fire pump service and operation manuals shall be provided with the completed apparatus.

3.1.14 DRAINS - SUCTIONS – INLETS - VALVES

3.1.14.1 One (1) Pressure Relief Valve, Class 1, Stainless Steel SUCTION PRESSURE RELIEF VALVE
A Class 1, 2-1/2" NPT, relief valve shall be installed on the suction side of the pump and be preset at 125 psig. The relief valve shall have a working range of 50 psig to 200 psig. The valve shall be of stainless
steel construction and include a stainless steel spring and rubber seat. The valve shall be normally closed and shall limit pressure in the pumping system. When excessive intake pressures are received, the water shall be directed below the body. The discharge side of the intake relief valve shall be plumbed to the right side below the running boards, away from but, visible to the pump operator, and shall terminate with an unthreaded pipe. The adjustment control shall be located behind the street side pump panel.

3.1.14.2 One (1) Master Drain, Class 1, Manual Mtd Pump Panel

**MASTER DRAIN**
The apparatus shall be equipped with a Class 1 Manual Master Pump Drain for draining of the lower pump cavities, volute and selected water-carrying lines and accessories. The all brass and stainless steel construction allows for operation up to 600 psi.

3.1.14.3 One (1) Drain Discharges - 90° Ports

**DRAIN DISCHARGES**
The 3/4 inch drain valves shall be equipped with 90-degree fittings to direct the discharge water beneath the pump module away from the pump operator's panel.

3.1.15 INLETS

3.1.15.1 One (1) Steamer Inlet, 6” NST Thread, L/S w/Strainer – Same as Pump Manufacture

**LEFT SIDE STEAMER INLET**
There shall be one (1) steamer inlet furnished on the left side pump panel. The suction inlet shall have 6” NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

3.1.15.2 One (1) Cap, 6” Long Handle - Class 1 – or Equivalent

**LARGE DIAMETER CAP**
A six (6) inch chrome plated cap with long handles shall be supplied. The cap shall be capable of withstanding 500 PSI.

3.1.15.3 One (1) Steamer Inlet, 6” NST Thread, R/S w/Strainer

**RIGHT SIDE STEAMER INLET**
There shall be one (1) steamer inlet furnished on the right side pump panel. The suction inlet shall have 6” NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

3.1.15.4 One (1) Cap, 6” Long Handle - Class 1 – or Equivalent

**LARGE DIAMETER CAP**
A six (6) inch chrome plated cap with long handles shall be supplied. The cap shall be capable of withstanding 500 PSI.

3.1.16 One (1) Pump Side Intake, Left Side – Rear of pump panel – This valve will be operated by a push pull locking handle located adjacent to the inlet.

**LEFT SIDE INTAKE**
There shall be an intake located on the left (street) side rear of the pump panel and shall contain:

3.1.16.1 One (1) Suction Inlet, Side 2.5” The inlet shall have a 2-1/2” quarter-turn swing-out valve. The inlet shall be provided with a 2-1/2” NST female swivel that extends through the pump panel.

3.1.16.2 One (1) Suction Valve Control, Push-Pull Type, Side, Adjusted To Valve

The inlet valve shall have a push-pull type control handle located adjacent to the valve.

3.1.16.3 One (1) Intake Plug, (Qty) 2.5” w/Cap & Chain

One (1) 2-1/2” chrome plated rocker lug plug with chain shall be supplied (ref. Class1 107666).

3.1.17 One (1) Pump Side Intake, Right Side - Rear - Side Operated
RIGHT SIDE INTAKE
There shall be an intake located on the right (curb) side rear of the pump and shall contain:

3.1.17.1 One (1) Suction Inlet, Side 2.5” - Side Operated Module
A 2-1/2” intake shall be provided. The inlet shall have a 2-1/2” quarter-turn swing-out valve. The inlet shall be provided with a 2-1/2” NST female swivel that extends through the pump panel.

3.1.17.2 One (1) Suction Valve Control, Push-Pull Type, Side, Adj To Valve
The inlet valve shall have a push-pull type control handle located adjacent to the valve.

3.1.17.3 One (1) Intake Plug, (Qty) 2.5” w/Cap & Chain
One (1) 2-1/2” chrome plated rocker lug plug with chain shall be supplied (ref. Class1 107666).

3.1.18 One (1) Direct Tank Fill, Left Rear
LEFT REAR DIRECT TANK FILL One (1) 1/4 Turn Valve - 2-1/2”
The tank fill shall be fitted with a swing out 1/4 turn 2-1/2” valve that is mounted to the tank with the valve exposed on the rear of the apparatus body. The valve shall be equipped with a 2-1/2” NST female swivel inlet with screen.

3.1.18.1 One (1) Direct Control - with Locking handle on Valve

3.1.18.2 One (1) Intake Plug, (Qty) 2.5” w/Cap & Chain
One (1) 2-1/2” chrome plated rocker lug plug with chain shall be supplied (ref. Class1 107666).

3.1.18.3 One (1) Intake Adapter - 30° Angle Elbow - 2.5” M NST x 2.5” F NST
STYLE 630 30° ANGLE ELBOW
An Akron Brass, item 06300003, 30° Angle Elbow shall be provided. The adapter shall be constructed of chrome plated brass. It shall be 2.5” NH female inlet by a 2.5” NH male outlet.

3.1.19 DISCHARGES

3.1.19.1 One (1) #1 Discharge, Left Side - Side Operated
LEFT SIDE DISCHARGE #1
The forward discharge on the left (street) side of the pump panel shall contain:

3.1.19.2 One (1) Discharge, Side, 2.5” - 30 degree Elbow - Manual Control
A 2-1/2” discharge shall be provided. The discharge outlet shall have a 2-1/2” quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2” NST male threads that extends through the pump panel.

3.1.19.3 One (1) Discharge Cap, (Qty) 2.5” Chrome Vented Rocker Lug w/Chain
DISCHARGE CAP
One (1) chrome plated, Class 1, 2-1/2” rocker lug cap with lug vent and chain shall be furnished (ref Class1 108007).

3.1.20 One (1) #2 Discharge, Left Side - Side Operated
LEFT SIDE DISCHARGE #2
The second from the forward discharge on the left (street) side of the pump panel shall contain:

3.1.20.1 One (1) Discharge, Side, 2.5” - 30 degree Elbow - Manual Control
26-03-0425
A 2-1/2” discharge shall be provided. The discharge outlet shall have a 2-1/2” quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2” NST male threads that extends through the pump panel.
3.1.20.2  One (1) Discharge Cap, (Qty) 2.5” Chrome Vented Rocker Lug w/Chain

**DISCHARGE CAP**

One (1) chrome plated, Class 1, 2-1/2” rocker lug cap with lug vent and chain shall be furnished (ref Class1 108007).

3.1.21  One (1) #3 Discharge, Right Side

**RIGHT SIDE DISCHARGE #3**

The forward discharge on the right (curb) side of the pump panel shall contain:

3.1.21.1  One (1) Discharge, Side, 2.5" - 30 degree Elbow - Manual Control

A 2-1/2” discharge shall be provided. The discharge outlet shall have a 2-1/2” quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2” NST male threads that extends through the pump panel.

3.1.21.2  One (1) Discharge Cap, (Qty) 2.5” Chrome Vented Rocker Lug w/Chain

**DISCHARGE CAP**

One (1) chrome plated, Class 1, 2-1/2” rocker lug cap with lug vent and chain shall be furnished (ref Class1 108007).

3.1.22  One (1) #4 Discharge, Right Side

**RIGHT SIDE DISCHARGE #4**

The second from the forward discharge on the right (curb) side of the pump panel shall contain:

3.1.22.1  One (1) Discharge, Side, 2.5" - 30 degree Elbow - Manual Control

A 2-1/2” discharge shall be provided. The discharge outlet shall have a 2-1/2” quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2” NST male threads that extends through the pump panel.

3.1.22.2  One (1) Discharge Cap, (Qty) 2.5” Chrome Vented Rocker Lug w/Chain

**DISCHARGE CAP**

One (1) chrome plated, Class 1, 2-1/2” rocker lug cap with lug vent and chain shall be furnished (ref Class1 108007).

3.1.23  One (1) Discharge, 2.5” R/S Rear w/1/4Trm, Swing Out Valve

**REAR PRECONNECT - RIGHT SIDE**

There shall be one (1) 2-1/2” discharge outlet located on the passenger side rear of the body below the hose bed. This discharge shall be located as close to the upper right side corner of the build up as possible. The discharge outlet shall be plumbed with 2-1/2” ID, Schedule 40 stainless steel pipe and high pressure hose and have a 2-1/2” quarter-turn, swing out valve with control on pump operator's panel. There shall be a chrome plated 2-1/2” NST adapter that extends through the rear of the body.

3.1.23.1  One (1) Discharge Cap, (Qty) 2.5” Chrome Vented Rocker Lug w/Chain

**DISCHARGE CAP**

One (1) chrome plated, Class 1, 2-1/2” rocker lug cap with lug vent and chain shall be furnished (ref Class1 108007).

3.1.24  One (1) Discharge, 2.5” L/S Rear w/1/4Trm, Swing Out Valve

**REAR PRECONNECT - LEFT SIDE**

There shall be one (1) 2-1/2” discharge outlet located on the drivers side rear of the body below the hose bed. This discharge shall be located as close to the upper left side corner of the build up as possible. The discharge outlet shall be plumbed with 2-1/2” ID, Schedule 40 stainless steel pipe and high pressure hose and have a 2-1/2” quarter-turn, swing out valve with control on pump operator's panel. There shall be a chrome plated 2-1/2” NST adapter that extends through the rear of the body.
pressure hose and have a 2-1/2" quarter-turn, swing out valve with control on pump operator's panel. There shall be a chrome plated 2-1/2" NST adapter that extends through the rear of the body.

3.1.24.1 One (1) Discharge Cap, (Qty) 2.5" Chrome Vented Rocker Lug w/Chain

**DISCHARGE CAP**
One (1) chrome plated, Class 1, 2-1/2" rocker lug cap with lug vent and chain shall be furnished (ref Class1 108007).

3.1.25 Two (2) Water Tank Sleeve, (2) 4" Rear Intake/Discharge one each side of engine

**TANK REAR INTAKE/DISCHARGE SLEEVE**
The water tank shall be provided with one (2) 4" sleeve from the front of the tank to the rear of the tank. The sleeve shall provide access for either rear intake or rear discharge piping.

3.1.26 One (1) Piping, 3" Deluge Riser, Above Pump w/ 3" 1/4Trm & S/S Pipe

**DELUGE RISER**
A) A 3" diameter deluge riser shall be installed above the pump.  
B) The deluge outlet shall be plumbed with a 3" quarter-turn, swing out valve and 3" ID, Schedule 40 stainless steel piping.
C) Deluge outlet shall have control on pump operator's panel.


**DRAIN VALVE**
A Class 1, 1/4 turn drain valve shall be installed. The valve shall be nickel plated with 3/4" NPT female inlet and outlet thread.

3.1.26.2 One (1) Fixed Riser Piping,  
The deluge piping shall terminate with an NPT male thread.

3.1.26.3 One (1) Deck Gun Control, 3" Manual Slow Close

**DECK GUN CONTROL - MANUAL VALVE**
The 3" discharge outlet shall have a 3" slow close quarter-turn swing out valve. The discharge shall be plumbed with 3" Schedule 40 stainless steel piping with 3" NPT male thread. Control of outlet shall be accomplished using a manual, locking control on pump operator's panel. Valve shall have a quick connect system to allow easy mounting of the monitor. There shall also be a cap for this quick connect system.

3.1.26.4 One (1) Deck Gun (Monitor)
There is to be one deck gun Make Akron Hi Riser Model 3433 or equivalent provided. This monitor will have a single hand wheel control for vertical travel and a single waterway capable of flows up to 1250 GPM. It shall have a full 360 degree horizontal travel and 105 degree vertical travel from the vertical position. The monitor shall be painted truck color and will be controlled from the pump panel. This monitor will be provided with three tips in the following sizes.

1.00"  
1.13"  
1.25"

3.1.26.5 One (1) deck gun mounting base
There will be a deck gun mounting base installed in the dunnage area for storage of deck gun.

3.1.26.6 One (1) deck gun ground base.  
There will be a portable mounting base supplied by the vendor. This base will have 2 - 2 ½ supply inlets. The base shall be designed to flow a maximum of 1250 GPM.
3.1.27 One (1) Crosslay, (2) Beds, 1.5" NST/ 1.5" NST - 36" Side

PUMP DUNNAGE AREA DIMENSIONS
The area behind of the crosslays shall be the dunnage area of the pump house. This area is where the
deckgun riser if so equipped protrudes above the pump module. This area shall be enclosed with
approximate dimensions of 68" wide x 19" deep x 21.25" front to back.

3.1.27.1 DOUBLE CROSSLAY HOSEBED
The crosslays shall be arranged on top of the pump module with the #1 crosslay toward the front of the
pump house and the #2 crosslay immediately behind the first.

3.1.27.2 CROSSLAY DIVIDER
A crosslay divider shall be provided between the #1 and #2 crosslay. The divider shall be constructed
from 1/4" thick abraded aluminum plate mounted on a base T-extrusion that provides lower support the
length of the divider. There shall be a hand hole on each side of the divider to assist the firefighter.

3.1.28 One (1) #1 Crosslay, Single Stack, 1-1/2" NST w/2" Piping and Valve

#1 CROSSLAY
The #1 crosslay shall be equipped with a 1-1/2" male NST outlet. The crosslay shall be plumbed with 2"
Schedule 40 stainless steel high pressure pipe. A 2" quarter turn ball valve shall be used to control water
flow. The outlet shall be equipped with a 2" polished stainless steel 90 degree swivel with 1-1/2" male
NST thread located in the hosebed.
This crosslay bed shall be capable of carrying a minimum of two hundred feet (200') of 1-3/4" double
jacketed hose. The crosslay valve control shall be mounted on the operator's panel.

3.1.28.1 One (1) Drain Valve - Manual - Class 1 - Manual 1/4 Turn

DRAIN VALVE
A Class 1, 1/4 turn drain valve shall be installed. The valve shall be nickel plated with 3/4" NPT female
inlet and outlet thread.

3.1.29. One (1) #2 Crosslay, Single Stack, 1-1/2" NST w/2" Piping and Valve

#2 CROSSLAY
The #2 crosslay shall be equipped with a 1-1/2" male NST outlet. The crosslay shall be plumbed with 2"
Schedule 40 stainless steel high pressure pipe. A 2" quarter turn ball valve shall be used to control water
flow. The outlet shall be equipped with a 2" polished stainless steel 90 degree swivel with 1-1/2" male
NST thread located in the hosebed.
This crosslay bed shall be capable of carrying a minimum of two hundred feet (200') of 1-3/4" double
jacketed hose. The crosslay valve control shall be mounted on the operator's panel.

3.1.29.1 One (1) Drain Valve - Manual - Class 1 - Manual 1/4 Turn

DRAIN VALVE
A Class 1, 1/4 turn drain valve shall be installed. The valve shall be nickel plated with 3/4" NPT female
inlet and outlet thread.

3.1.30 One (1) Crosslay Hose Guides

CROSSLAY HOSE GUIDES
Brushed stainless steel hose guides shall be provided on the left and right side of the crosslays.

3.1.31 One (1) Cover, Crosslay, Aluminum w/Vinyl Flaps

CROSSLAY HOSEBED COVER
A) A .125" polished aluminum treadplate hinged cover shall be provided over the crosslay hosebeds,
complete with full-length stainless steel piano hinge.
B) Stops shall be provided to protect cab or other adjacent body components.
C) The hinge shall be located on the forward section of the cover, closest to the chassis cab.

3.1.31.1 VINYL FLAPS
The aluminum treadplate crosslay cover shall be supplied with vinyl end flaps. Each flap shall have a means of securing the flap to prevent hose from falling of the truck.

3.1.31.2 One (1) Vinyl End Flap Color, Crosslay, Vinyl, RED in color
The vinyl crosslay end flaps shall be Red in color. Each flap shall have a means of securing the flap to prevent hose from falling of the truck.

3.1.32 One (1) Booster Reel, Hannay, - 200’ / 1”Reeltex, Mtd RR1
BOOSTER HOSE REEL
A Hannay model EF32-19-21-10.5 RT 12V DC 227 MTR booster hose reel with 1” 90° super swivel joint, 1” NPSH with a special riser per KDF0882.
   A) A horizontal bevel gear rewind with 8” pinion shaft shall be employed to power the reel.
   B) The reel shall be painted silver in color.
   C) The reel capacity shall be a minimum 200’ of 1” Reeltex booster hose.
   D) The reel shall be plumbed with wire reinforced, high pressure hose coupled with stainless steel fittings, and shall have a 1” swing out, ball valve with control on pump operator's panel.
   E) The booster hose reel shall be mounted in the RR1 rear exterior compartment with the rewind button adjacent to the reel in RR1

NOTES: give dimensions of reel
Note: Special Reel

3.1.32.1 One (1) Hose, Booster, 200’/1”, Reeltex, 600 Lb Test w/Coupling
BOOSTER HOSE
200’ of 1” Reeltex booster hose shall be provided on the specified booster reel. The hose shall be high pressure type, 600 pounds test, with couplings.

NOTES:
Note: 200’ 1” reeltex

3.1.33 One (1) Ball Valves, Hale Torrent or Equivalent
HALE TORRENT or EQUIVALENT BALL VALVES
   A) All discharge ball valves shall be full flow manual control 1/4 turn Hale Torrent stainless steel swing-out valves unless specified otherwise.
   B) The valve body and ball shall be made of 316 stainless steel for superior corrosion resistance.
   C) The ball valves shall utilize double seats and seals to prevent pressurized water from leaking around the valve ball. The seals shall require no adjustment and shall be self aligning internally lubricated impregnated seals.
   D) The valve ball shall utilize a balance hole to allow water pressure to be equalized over the entire valve allowing for easier control of high discharge pressures and flows.

3.1.34 One (1) Piping, Tank-To-Pump, 3” w/3” Air Operated Ball Valve
TANK TO PUMP
   A) The tank to pump piping shall be capable of delivering water to the pump at a rate of five hundred (500) gallons per minute.
   B) This flow shall be sustained while pumping to a minimum of 80% of the certified tank capacity with the apparatus on level ground. **No exceptions are allowed to this section.**
   C) The tank to pump line shall run straight, without elbows, from the pump to the front face of the water tank and down into the tank sump.
   D) A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing. The tank to pump line shall be plumbed with 3” Schedule 40 stainless steel
high pressure pipe.

E) A 3” ball valve shall be furnished from the tank to the pump, complete with a flexible connection and shall be enclosed in the pump compartment. The 3” valve shall be stainless steel and have an interior stainless steel ball and shall be an air operated valve with control switch located on pump operator’s panel.

F) A built-in check valve shall be provided in the tank to pump supply line to prevent the unintentional back filling of the water tank through the line.

3.1.35 One (1) Tank Refill, 1.5” Line w/ 1/4 Turn Ball Valve

**TANK REFILL**

A) A 1-1/2” tank refill line shall be provided using a quarter-turn full flow ball valve controlled from the pump operator’s panel with a manual locking handle.

B) The tank refill shall be plumbed with high pressure flexible piping and high pressure flexible piping stainless steel couplings.

3.1.36 FOAM SYSTEM

One (1) Foam System, Hale “FoamLogix” 2.1A Or Equivalent

A Hale “FoamLogix 2.1A” 2.1 GPM Or Equivalent foam system shall be supplied on the apparatus. The apparatus shall be equipped with an automatic electronically controlled, direct injection, rotary gear pump, discharge side foam proportioning system. Foam proportioning operation shall be based on direct measurement of water flow, and remain consistent within the specified flows and pressures.

3.1.36.1 SYSTEM REQUIREMENTS

The complete foam proportioning system shall include the following:

1) Foam Pump
2) Control System
3) Foam Concentrate Strainer
4) Integral Check Valve/Injector Fitting.
5) Flow meter
6) Control Cables
7) Low Tank Level Switch
8) Water Discharge Check Valves

3.1.36.2 FOAM PUMP

A) The foam proportioning system shall be compatible with Class A foam concentrates.

B) The foam proportioning system shall be capable of delivering the rated foam concentrate flow with the above mentioned foam concentrate type.

C) The foam proportioning system shall be based on an electric motor driven, rotary gear foam concentrate pump, rated at 2.1GPM (7.9 LPM) foam concentrate flow rate with maximum operating pressure of 400 PSIG (28 bar).

D) The foam pump/motor assembly shall be permanently attached to an apparatus mountable base plate. A

E) Foam concentrate flow meter shall be integral to the foam concentrate pump.

F) The foam concentrate flow meter shall provide a signal to the electronic control unit to make sure the proper amount of foam concentrate is injected into the discharge stream.

G) The entire base plate mounted assembly shall have electrical components sealed to NEMA 4X or equal for mounting in the apparatus pump compartment or any suitable location on the apparatus.

3.1.36.3 FOAM CONCENTRATE STRAINERS

A) Field serviceable foam concentrate strainers shall be provided in the foam concentrate suction line. When the strainer shall not be subject to flushing water pressure a plastic bodied in-line strainer shall be used.

B) The strainer body shall be constructed of plastic with a stainless steel mesh screen and shall be compatible with Class A foam concentrates.
C) A shutoff valve shall be provided to enable isolation of the strainer for service. The strainer shall be mounted in the pump compartment. The strainer shall be a low pressure device and shall not be subject to flush water pressure.

D) Where strainers are subject to flush water pressure, panel mounted field serviceable foam concentrate strainers rated at 500 PSIG (34 BAR) minimum shall be installed on the pump panel.

E) The strainer body shall be constructed of brass with a chrome cap and an easily removable stainless steel mesh screen for field servicing.

F) A 1-½ inch strainer with ¾ inch NPT connection ports shall be used for Class A foam concentrate.

3.1.36.4 INJECTOR FITTING AND CHECK VALVES
To prevent contamination of the foam concentrate supply, foam concentrate shall be injected into the water pump discharge stream through an integral check valve/injector fitting. The check valve/injector fitting shall be of one piece construction of brass and stainless steel. To prevent contamination of the water pump and apparatus booster tank wafer type check valves shall be installed in the water pump discharge piping prior to the foam injection point.

3.1.36.5 FLOWMETER
A paddlewheel type flow meter shall monitor water flow in foam capable discharges. The flow meter body shall be constructed of bronze and the sensor assembly shall be locked into the tee with a pin and screw on cap. The flow meter shall have a 500 PSIG (34 BAR) pressure rating per NFPA requirements. One (1) flow meter is required for proper operation of the foam proportioning system. Power for the flow meter sensor shall be provided through the electrically shielded cable set from the control unit. Flow meters having NPT threaded and Victaulic connections shall be used in the water discharge piping. The flow meter selected shall be sized to adequately monitor the minimum and maximum flow expected in the foam capable discharges.

3.1.36.6 CONTROL CABLES
The cables for connection of the control unit, distribution box, flow meter sensor, flow meter display units, pressure transducers and feedback sensor shall be 100% electrically shielded molded male by female cord sets. The cord sets shall have the ability to connect together and total length shall not exceed 40 feet (12 meters). The connections shall be keyed to prevent mis-connection and improper system operation. Shielding shall be provided by an aluminized Mylar shield within the PVC outer jacket. A drain wire shall be tied to one of the pins on each end of the cable. No externally attached ferrite beads shall be installed for the purpose of electrical shielding. Coupling nuts on the cord set ends shall be constructed of nickel coated brass. When properly connected the connections shall be sealed to NEMA 4X or equal.

3.1.36.7 LOW TANK LEVEL SWITCH
A low tank level switch shall be installed in the foam concentrate tank. The low tank level sensor shall be connected to the foam proportioning system to provide protection against dry running of the foam pump. The low tank level sensor shall be mounted on the side of the foam concentrate tank. The low tank level sensor and electrical connections shall be sealed to prevent infusion of foam concentrate into the wiring and possible short circuit of the tank level sensor.

3.1.36.8 FOAM SUPPLY
The foam proportioning system shall be supplied from a separate apparatus mounted foam concentrate storage tank. The tank shall be constructed of materials compatible with foam concentrates being used in the system. Provision shall be made for installation of low tank level sensors and routing of the wiring for the sensors. Tank capacity, venting, fill opening and foam outlet plumbing connections shall be in accordance with NFPA requirements.

3.1.36.9 DOCUMENTATION
The foam proportioning system when delivered to the end user shall include a foam concentrate compatibility list and two (2) Description, Installation and Operation Manuals. The foam proportioning system shall have a one (1) year limited manufacturer's warranty.
3.1.36.10 One (1) Class 'A' Foam Operation Only

**FOAM SYSTEM**
The foam system will operate as a Class A system.

3.1.36.11 One (1) Foam Tank Refill System

**SINGLE TANK FOAM TANK REFILL SYSTEM**
A truck mounted 12-volt foam tank refill system shall be provided and installed on the apparatus. The refill system shall provide the ability to automatically refill the foam tank from the ground without carrying foam solution up to the foam cell in the hosebed.

The refill system shall be activated by an on/off rocker switch provided on a control panel installed on the pump panel. The foam refill system will automatically shut off when the foam tank is full. The refill system quick connection shall be located beneath the pump panel running board to prevent foam from spilling onto the running board during connection operations.

**System features:**

**A)** Weather proof on/of rocker switch with integral green power on indicator light

**B)** Red refill PUMP ON indicator light

**C)** Automatic tank fill shutoff, vertical or side mount float switches

**D)** Thermally protected 12-volt motor

**E)** Relay operated motor power circuit

**F)** 5 GPM capacity @ 8 foot lift

**G)** Self priming pump, can run dry and re-prime itself automatically

**H)** Composite pump head with Buna-N diaphragm

**I)** All corrosion resistant components

**J)** Compatible with Class A or Class B foam concentrates

**K)** Quick connect inlet hose with wand

**L)** Suction inlet strainer

3.1.36.12 One (1) Foam System Outlets - Max Four outlets

**FOAM SYSTEM OUTLETS**
The foam system shall be distributed into the following discharge outlets:

**A)** One (1) Foam Outlet, front 1-1/2" Crosslay.

**B)** One (1) Foam Outlet, rear 11/2" Crosslay.

**C)** One (1) Foam Outlet, Booster Hose Reel. The booster hose reel.

**D)** One (1) Controls, Foam System, Hale - Pump Operators Panel

3.1.70.13 **FOAM SYSTEM CONTROLS**
The system shall be equipped with an electronic control unit, suitable for installation on the pump operator panel as the single point of operation for the foam proportioning system. Incorporated within the control unit shall be a microprocessor that receives input from water flow meter while receiving foam concentrate pump output information from the foam concentrate flow meter.

**A)** The microprocessor, through constant comparison of the flow signals, shall ensure the operator preset proportional amount of foam concentrate is injected into the discharge stream of the fire pump. The electronic control unit shall permit the pump operator to perform the following control and operation functions for the foam proportioning system:

**B)** Provide push-button ON/OFF control of foam proportioning system.

**C)** Provide push-button control of foam proportioning rates from 0.1% to 10.0% (1.0% on a 2.1A and 3.3 systems), in 0.1% increments.

**D)** Show real time flow rate of water or foam solution.

**E)** Show total volume of water or foam solution discharged during and after foam operations.

**F)** Show foam concentrate injection rate.

**G)** Show total amount of foam concentrate consumed.

**H)** Permit resetting of totalized values for water and foam concentrate.

**I)** Simulate water flow rates for manual operation, calibration and testing of foam system.

**J)** Enable system setup and full range system diagnostic functions.
K) Indicate on LED bar graph foam concentrate is being injected and the foam system capacity.
L) Indicate on LED bar graph when system capacity is not within design parameters.
M) Store independent default values for Class A foam concentrate injection.
N) Flash a "low concentrate" warning when the foam concentrate tank runs low.
O) Flash a "no concentrate" warning and shut the system off when the foam tank is empty.
P) Flash a "low battery" warning when battery voltage is low enough to affect system operation.
Q) Flash a "hot" warning when system is running hot due to low voltage or radiant heat.
R) A distribution box shall be attached to the base plate to provide ease of installation. The
distribution box shall be sealed to a NEMA 4X or equal rating to permit installation in the pump
compartment.
S) Foam concentrate flow feedback shall be provided to the control unit through the distribution box
by a sensor mounted in the foam pump body. Rotors in the foam discharge side of the foam
pump shall provide the targets to pulse the sensor to generate a feedback signal.
T) The distribution box shall receive 12 volt direct current power from the apparatus electrical
system as the only source of power to operate the system and power component sensors.
Control power shall be distributed to the control unit, flow meter sensor and foam concentrate
feedback sensor through a conductor in the 100% electrically shielded cable sets provided by the
foam proportioner manufacturer.
U) The microprocessor in the control unit shall process input signals from the flow meter sensor and
foam feedback sensor to determine the proper duty cycle for the electric motor to run. The
distribution box shall provide power to the electric motor, based on signals received from the
control unit, at a variable rate to ensure that the correct proportion of foam concentrate, preset by
the pump operator on the control unit, is injected into the water pump discharge stream. The
distribution box shall have a main power control switch and over current protection for the foam
proportioning system. All primary electrical wires for the foam concentrate system shall be type
SXL or GXL (SAE J1128) per NFPA requirements. Electrical connections shall be made using
heavy duty 5/16 inch diameter studs and nuts.

3.1.36.14 One (1) Heat Exchanger Line, Gated, Custom

HEAT EXCHANGER DISCHARGE
A gated discharge line shall be installed to provide water from the fire pump to the chassis supplied heat
exchanger to assist in engine cooling during pumping operations. The heat exchanger line shall be
controlled at the pump operator’s panel with a Class 1 valve. The line going to the heat exchanger shall
be a minimum of ½ "

3.2 TANK(s)

3.2.1 One (1) Water Tank Construction, Poly w/Tank Lid, Fill Tower, Overflow

WATER TANK CONSTRUCTION
A) The tank shall have a rated capacity in U.S. gallons, complete with lifetime warranty.
B) The tank manufacturer shall mark the tank and furnish notice that indicates proof of warranty. The
purpose of the notice is to inform department personnel who store or use the tank that the unit is
under warranty.
C) The tank shall be constructed of 1/2” thick Polyprene & Mac226 sheet stock. This material shall
be noncorrosive stress relieved thermoplastic, white in color and UV stabilized for maximum
protection.
D) The tank shall be of a special configuration and is so designed to be completely independent of
the body and compartments.
E) All exterior tank joints and seams shall be extrusion welded and/or contain the Bent
Edge™ and tested for maximum strength and integrity.
F) The top of the tank is fitted with removable lifting eyes designed with a 3-to-1 safety factor to
facilitate easy removal.
G) The transverse and longitudinal swash partitions shall be manufactured of Polyprene & Mac226
material.
H) All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments.
I) The partitions shall be designed to provide maximum water flow and meet NFPA rules.
J) All swash partitions interlock with one another and are welded to each other as well as to the walls and floor of the tank.

3.2.2 TANK SUMP AND CONNECTIONS
A) There shall be one (1) sump standard per tank.
B) The sump shall be constructed of white Polyprene & Mac226 and be located in the left front corner of the tank, unless specified otherwise.
C) On all tanks that require a front suction, a schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3” FNPT threaded outlet on the bottom for a drain plug. This shall be used as a combination clean out and drain.
D) All tanks shall have an anti-swirl plate located above the dip tube.
E) There will be two (2) standard tank outlets: one for tank to sump suction line, and one for a tank fill line.
F) All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1,000 GPM.
G) The addition of rear suction fittings, nurse valve fittings, dump valve fittings, and through tank sleeves to accommodate rear discharge piping must be specified.
H) All auxiliary outlets and inlets must meet N.F.P.A. 1900 guidelines in effect at the time of manufacture.

3.2.3 One (1) Water Tank Capacity, Rectangular, 720 US Gallons - TT - 1
WATER TANK CAPACITY
The water tank shall be rectangular in shape and shall have a minimum capacity of 720 US gallons.

3.2.4 One (1) Tank Fill Tower, 10” x 14”, w/4” Vent
TANK LID & FILL TOWER
The tank shall have a combination vent and fill tower. The fill tower shall be constructed of 1/2” thick Polyprene & Mac226 and shall be a minimum dimension of 10” x 14” outer perimeter. The tower shall be located in the center front of the tank unless otherwise specified by the purchaser. The tower shall have a 1/4” thick removable Polyprene & Mac226; screen and a Polyprene & Mac226 hinged-type cover. Inside the fill tower, there shall be a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 pipe with a minimum ID of 4” that is designed to run through the tank, and shall be piped behind the rear axle beneath the tank.
The tank cover shall be constructed of recessed 1/2” thick white Polyprene & Mac226, stress relieved, UV stabilized material. A minimum of two lifting dowels shall be drilled and tapped to accommodate the lifting eyes.

3.2.4.1 OVERFLOW AND VENT PIPE
The fill tower shall be fitted with an integral 4” ID, Schedule 40 PVC combination overflow/vent pipe running from the fill tower through the tank to a 4” coupling flush mounted into the bottom of the tank to allow water to overflow beneath the chassis.

3.2.5 One (1) Foam Tank, (1) 30 Gallons, Class A, Poly, External, Front Hosebed
EXTERNAL FOAM TANK
A thirty (30) gallon polypropylene foam concentrate tank shall be furnished as an external component of the booster tank. The foam tank shall have an anti-foaming fill stack and removable screen located in an accessible area. The foam tank fill tower shall be equipped with a latch, pressure/vacuum vent and have a sealed airtight cover.
The foam tank shall be plumbed to the on board “Class A” foam system. A drain valve shall be provided at the lowest point of the foam tank. The foam tank shall drain shall directly to the surface below the apparatus without contacting other body or chassis components. The following labels shall be attached to
the foam tank:
   A) "CLASS A FOAM TANK FILL"
   B) "WARNING: DO NOT MIX BRANDS AND TYPES OF FOAM"

3.2.5.1 One (1) Foam Tank Level Gauge, Class 1 w/LED Display

FOAM TANK LEVEL GAUGE
The apparatus shall be equipped with a Class 1 "Inteli-Tank" foam tank level gauge for indicating foam level. The foam tank level gauge shall indicate the foam concentrate level on an easy to read LED display and show increments of 1/8 tank capacity. The foam tank level gauge system shall include:
   A) A pressure transducer that shall be mounted on the outside of the tank in an easily accessible area.
   B) A super bright LED four-light display with a visual indication at nine accurate levels. A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power.

3.2.6 One (1) Hosebed Bulkhead, (1), Stainless Steel
HOSEBED BULKHEAD
A stainless steel bulkhead shall be installed between the water/foam towers and the hose storage area of the hosebed. The bulkhead shall be the same height and design as the hosebed side walls.
No hosebed flooring shall be provided in the space between the bulkhead and the front wall of the hosebed.

3.2.7 One (1) Tank Mounting, Cradle Mounted, 8" x 8" x 4" x .250"
TANK MOUNTING
A tank mounting cradle shall be supplied. The tank mounting cradle shall consist of a minimum of seven (7) cross members and two (2) full tank length longitudinal members. The tank shall rest on the tank mounting sub-frame, and shall be insulated from the sub-frame with a 2-1/2" wide rubber insulator. The tank shall sit cradle-mounted using four (4) corner angles of 8" x 8" x 4" x .250" welded directly to the tank sub-frame. The angles shall keep the tank from shifting left to right or front to rear. The tank is designed on the free-floating suspension principal and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure. The hosebed cross braces shall act as water tank retainers. The water tank cradle shall be designed to be completely independent of the apparatus body to eliminate torsional stress loading in the body. No exception will be permitted to the tank mounting requirements.

3.3 APPARATUS BODY – COMPARTMENTS – HOSE BEDS

3.3.1 One (1) Body Design and Construction, Pumper, Stainless Steel
PURCHASE INTENT
The apparatus being purchased is expected to have an 18 to 20 year service life. Based on this requirement, the department is extremely concerned that the apparatus remains structurally sound and the outward appearance remains in a "like new" condition, with minimal maintenance and upkeep, throughout the intended service life.
Aluminum apparatus bodies and differing construction designs will be reviewed and considered ONLY if the builder / manufacture provides in the respondent specifications adequate proof that procedures and materials employed in the design prevent corrosion over the intended service life. Burden of proof is on the bidder and final determination of acceptability will be solely determined by the department.

3.3.2 APPARATUS BODY DESIGN AND CONSTRUCTION
The apparatus body shall be built of stainless steel, aluminum or galvsteel and shall be designed exclusively for Fire Service use.
The overall body width shall be 100 inches wide and shall be constructed in accordance with current NFPA requirements. All metal work shall be free of sharp edges, objects or corners. No exceptions are allowed to this requirement.

The body design shall be fully tested with proven engineering and test techniques such as finite element analysis, stress coating, and strain gauging. Engineering and test techniques shall have been performed with special attention given to fatigue life and structural integrity of compartments and body support system.

Hose body fabrications shall be free of all internal projections which might injure personnel or fire hose.

The pump module is to be completely separate from the main body to prevent damage due to flexing.

3.3.3 MODULAR BODY REQUIREMENTS

A) The body shall be completely modular in design allowing transfer of body components to a new chassis in the event of an accident or wear.

B) Body components shall be removable from chassis without cutting or bending. The modular design shall also facilitate ease of repair or replacement of major or minor body parts. The mounting of the apparatus body shall be separate and distinct from the water tank mounting and the pump module mounting.

C) The body compartment floors, rear walls and roof areas shall be constructed of 12-gauge austenitic stainless steel, aluminum or Galvalsteel.

D) The vertical front and rear walls are designed with 14-gauge stainless steel, aluminum or galvasteel. These front and rear walls are designed as a structural beam with the inclusion of the design encompassing a front an rear design that allows for installation of telescoping lights.

E) Interior and unexposed panels shall be polished finished to eliminate the need for high maintenance painted surfaces in the compartments.

F) All exterior panels shall have polished finish

G) The entire body shall be fabricated using precision holding fixtures to ensure accurate dimensions.

H) Body front and rear vertical flanges shall be triple broken, providing a mounting area for rear hand rails.

I) Major body components shall consist of right and left body sides, and rear facing compartments.

J) The front and rear vertical corners of the apparatus body shall be recessed to provide a mounting area for vertical hand rails and telescoping light poles.

K) Two (2) handrails shall be provided at the left and right sides of the apparatus body mounted vertically. A full width handrail shall be mounted at the rear of the body below the hosebed.

3.3.4 COMPARTMENT ROOF CONSTRUCTION

Each compartment top shall have the ability to support roof loads of up to 500 pounds per square foot without permanent roof deformation. The roof sections shall attach the compartment rear wall and compartment vertical sides through a fastened joint creating a full perimeter compartment attachment of the roof section.

3.3.5 REAR FRAME EXTENSION

The rear chassis frame extension system shall consist of a interwoven dual .625" thick steel drop frame extensions with a transverse 4" x 3" x .375" thick structural channel, and dual laminated .188" thick rear compartment and tailboard support tapered angles on each side of apparatus.

The rear frame extension shall be bolted to the chassis frame utilizing Grade 8 bolts and Grade C locknutes with hardened washers. For ease in replacement of damaged components in an accident there shall be no welding of components to the chassis frame.

Two (2) tow eyes with an eye diameter of not less than 3.5" shall be attached directly to the chassis frame extensions. The tow eyes shall be fabricated of .625" thick steel.
3.3.6 BODY MOUNTING SYSTEM
The front body support system shall be an integral design with .250" thick steel deep section cross member across the top of the chassis frame. The deep section cross member shall be attached to the right side and the left side lower front compartment weldments with eight (8) grade 8, 3/8 inch diameter bolts on each side of the apparatus. The front cross member shall be attached to the chassis by means of an elastomer spring mounting system (or equivalent) with limited travel. The lower portion of this spring mounting system shall be an integral part of the pump module frame mounting system. This design allows for maximum chassis flexing without undue stress transfer to the apparatus body. The right and left side rear compartments shall be attached to a stainless steel rear body support. The stainless steel support shall be attached to the chassis frame extensions by means of an elastomer (or equivalent) spring mounting system to form a modular integral body support system. The apparatus body shall not rest upon the chassis truck rails and must be separated entirely from the steel frame of the chassis to prevent galvanic action. Loose fitting u-bolt body mounting systems are not acceptable due to the likeliness of the apparatus body shifting or becoming detached from the chassis upon rear end impact.

3.3.7 One (1) Compartment Roof - Aluminum Diamond Plate Cap - Pumper

COMPARTMENT ROOF - TRIM CAP
A bright finished aluminum diamond plate cap shall be provided on the upper body. The diamond plate cap shall wrap the outer edges of the body, with a 3" vertical lip with a "lazy bend" drip edge over the compartment door area.

3.3.8 One (1) Rear Tailboard, 12", Laser Grip Stainless Steel

REAR TAILBOARD
A rear tailboard 12" deep shall be provided at the rear from "Laser Grip" stainless steel meeting NFPA 1901 step requirements. The tailboard shall provide protection for the side body compartments and shall provided recessed mounting for the rear ICC marker lights. It shall be bolted to the rear support structure.

3.3.8.1 There will be a swing down step designed to assist in climbing onto the tailboard. This step will be mounted to the bottom of the tailboard on the left side of vehicle.

3.3.9 One (1) Frame Extension, Rear

CHASSIS FRAME EXTENSIONS
There shall be a rear chassis drop frame extension to provide frame support for the rear of the apparatus body. This extension is to be bolted to the truck chassis as an integral part of the truck frame assembly and is to include rear tow eyes, cross member and tailboard reinforcement.

3.3.10 One (1) Exterior Compartment Design and Construction, Modular, Bolted or welded.

COMPARTMENT DESIGN AND CONSTRUCTION
All compartments shall be manufactured from 12-gauge stainless steel, aluminum or galvasteel with the vertical front and rear corner walls from 14-gauge, shall be of sweep out design and shall be bolted or welded together. If bolted together the vendor will use Stainless recessed round head bolts and stainless aircraft style "ESNA" nuts shall be applied with proper torque rating for each fastener. This type of construction shall greatly enhance the strength and ease of parts replacement in the event of damage and future modifications. Wherever possible, body bolts shall be hidden from plain view for appearance and ease of apparatus cleaning.

3.3.11 One (1) Compartment Ventilation

COMPARTMENT VENTILATION
Each compartment shall be provided with a laser cut louver to provide adequate ventilation.

3.3.12 One (1) RR2, Ladder Storage Compartment, Rear - Thru Tank - Standard w/Multi Option
**LADDER STORAGE TANK COMPARTMENT**

The water tank shall have a storage opening through the tank for ladder storage inside the apparatus body. This compartment shall extend from the rear of the tank completely through the tank to allow the ladders to extend into the pump house for storage.

The compartment shall store one (1) 24’ extension ladder, one (1) 12’ roof ladder, one (1) 10’ folding ladder, up to three (3) pike poles.

3.3.12.1 The ladders will be provided by the vendor

3.3.13 One (1) RR2a, Backboard Storage Compartment, Inside Tank Compartment, Rear

**BACKBOARD COMPARTMENT**

A backboard compartment shall be provided on top of the ladder storage compartment. The backboard compartment shall measure 17" wide x 3-1/2" high and shall extend into the tank for a minimum distance of 75-1/2".

3.3.14 One (1) Hinged Door, Rear, Ladder Storage

**HINGED DOOR LADDER STORAGE - REAR**

The rear through the tank compartment shall be provided with a horizontally hinged door with gas shocks and a polished stainless steel 1/4" piano hinge. The hinged compartment door shall be flush style so that the entire door fits flush against the apparatus body rear wall. No exceptions are allowed to this requirement.

The door shall be provided with a turn latch with a chrome "D" ring door handle with a 5-degree bend for easier grasping of the door handle with gloved hands.

3.3.14.1 One (1) Thru The Tank Ladder Group - 10-Fold, 12-Roof, 24’ extension ladder

A) One (1) Ladder, 12’ Roof, Duo-Safety, Channel Rail, Aluminum

**ROOF LADDER**

One (1) 12' Duo-Safety model 775-A, aluminum channel rail roof ladder with folding roof hooks shall be provided with the apparatus.

B) One (1) Ladder, 10’ Folding Attic, Duo-Safety, Aluminum

**ATTIC LADDER**

One (1) 10’ Duo-Safety model 585A aluminum folding attic ladder shall be provided with the apparatus.

C) One (1) Ladder, 24’ Extension, Aluminum

**EXTENSION LADDER**

One (1) 24’ two-section Duo-Safety model 900-A, aluminum extension ladder shall be provided with the apparatus.

NOTE: If a two section 24’ ladder will not fit in ladder storage area a three flight 26’ can be substituted with departments approval.

D) One (1) Pike Pole, 8’ Akron, Fiberglass I-Beam Pole w/Ram Knob End

**PIKE POLE**

One (1) 8' Akron IB-8-RK pike pole with I-beam fiberglass pole, standard steel hook and ram knob end shall be provided with the apparatus.

3.3.15 **APPARATUS BODY HOSE BED**

3.3.15.1 One (1) Cubic Ft, Body 200/Hosebed 66, Hosebed Height, 63", 136" OAL

The hosebed shall be approximately 63" from the bumper.

The hosebed shall have an overall length of 136”.

3.3.16 One (1) Hosebed, w/20" Extnd Sides
Hose bed side extensions will have a overall height of 20" from the top of the build up.

### 3.3.16.1 Hose bay capacity. The hose bed will be built to carry the following minimums.

- Hose bay # 1 shall be sized for 200’ of 2.5in double jacket poly hose
- Hose bay # 2 shall be sized for 700’ of 3in double jacket poly hose
- Hose bay # 3 shall be sized for 700’ of 3in double jacket poly hose
- Hose bay # 4 shall be sized for two 1.750" X 150’ bundle packs.

### 3.3.17 Hose bed will have Removable HD Extruded Aluminum Floorboards

**APPARATUS BODY HOSEBED**

The hose bed shall be constructed in such a manner that will prevent damage to fire hose. The hosebed shall comply with the current NFPA requirements. The interior of the hosebed shall be free of projections such as nuts, sharp edges or brackets that may damage hose. The hosebed and walls shall be manufactured from stainless steel. No exceptions to this requirement are allowed. An aluminum extrusion shall be installed over the rear opening of the hosebed to protect the body from wear. The hosebed bottom shall be fitted with removable slatted, ribbed 6" heavy-duty extruded aluminum floor boards.

#### 3.3.17.1 Two (2) Dividers, (Quantity) Hosebed, Adjustable, Smooth Aluminum w/Radius Corners

**ADJUSTABLE HOSE BED DIVIDERS**

Two (2) adjustable hosebed dividers shall be provided. Each divider shall be fabricated from .250" thick smooth aluminum plate, 5052-H32 alloy. The rear end of each divider shall have a 3” radius corner and shall be sanded and deburred to prevent damage to hose. There shall be two hand hold openings provided. One (1) at the rear in a vertical position and one (1) approximately 24 inches in from the rear in a horizontal position.

#### 3.3.17.2 One (1) Hosebed Covers, Aluminum, Dual, Two-Piece, Hinged, Polished ATP

**HINGED ALUMINUM HOSEBED COVERS**

Two (2) polished aluminum treadplate hosebed covers shall be supplied and shall extend the full length and width of the main hosebed. The hosebed covers shall be constructed of .125” polished aluminum treadplate with cross bracing to provide maximum strength and rigidity to support the weight of a firefighter standing on the covers when closed. The aluminum treadplate shall meet the current revision of NFPA 1901 for step requirements. The covers shall be equipped with a full length stainless steel piano hinge and chrome plated grab handles at front and rear of each cover. The hosebed covers shall include a heavy duty stop to support them when placed in the open position.

#### 3.3.17.3 One (1) Divider, (1) Hosebed, Fixed, Smooth Alum w/Radius Corner Rr

**HOSEBED DIVIDER**

One (1) hosebed divider shall be provided in the center of the hosebed to support the aluminum hosebed cover. It shall be fabricated from .250" thick smooth aluminum plate, with a 5052-H32 alloy. The rear end of the divider shall have a 3” radius corner and shall be sanded and deburred to prevent damage to hose. There shall be two hand hold openings provided. One (1) at the rear in a vertical position and one (1) approximately 24 inches in from the rear in a horizontal position.

#### 3.3.17.4 One (1) Vinyl Flaps, Red, Mounted Each Alum Hosebed Cover

**REAR VINYL FLAPS FOR ALUMINUM COVER**

There shall be one (1) red vinyl flap mounted with secure fasteners attached to each aluminum hosebed cover. The vinyl flaps shall cover the area at the rear of the hosebed from top to bottom. The flaps shall be independent of each other. The bottom edge of each flap shall be weighted and also have an eyelet on each outer corner. The hosebed cover rear flap shall have a positive locking device to meet the requirements of NFPA.
The hose bed flaps shall be RED in color.

3.3.17.5 Hose Bed lighting requirements (4)
There will be lights mounted on the inside of the hose bed covers, one towards the front and one towards the back of each hose bed cover. These lights will come on when the hose bed covers are in the open position. These lights will mounted in a 45 degree bezel and mounted so the light projects into the hose bed. These lights will also be wired so that when the parking brake is released the lights will be off.

3.4 COMPARTMENTS

3.4.1 One (1) 62”/74”, Ext Compartments, L/S, 36”/52”/43” W x 24” D, FH/FD
LEFT SIDE COMPARTMENT DIMENSIONS
FORWARD OF WHEEL WELL
There shall be one (1) rescue style, full height, and full depth compartment ahead of the rear wheels. It shall have approximate dimensions of 36” wide x 63” high x 24” deep.

3.4.2 ABOVE WHEEL WELL
There shall be one (1) high side compartment centered over the rear wheels. It shall have approximate dimensions of 52” wide x 33” high x 24” deep.

3.4.3 REAR OF WHEEL WELL
There shall be one (1) rescue style, full height, and full depth compartment behind the rear wheels. It shall have approximate dimensions of 43” wide x 63” high x 24” deep.

3.4.4 One (1) Roll Up Doors, L/S, Satin Anodized Finish -
ROLLUP DOOR CONSTRUCTION - LEFT SIDE
All left side compartments shall be provided with Gortite roll up doors. The roll up doors shall be constructed of double sided aluminum extrusions connected with a ball and socket joint. The extrusions shall be 1-3/8” wide x 3/8” thick with satin anodized finishing. A flexible EDPM extrusion shall be provided between each slat to insure a weather tight seal. Aluminum extrusions shall be individually replaceable without disassembling the entire door by removing push out clips on each end. Side channels for each door to ride in shall be provided with santoprene seals to prevent dirt and moisture from entering the exterior compartment. A single piece top drip rail shall be provided with a santoprene seal to prevent dirt and moisture from entering the compartment when the door is fully closed. The bottom of each door shall also be provided with a santoprene seal. All nonmetallic parts shall be glass filled nylon.

NOTE: The vendor will also supply pricing for swing type doors.

3.4.5 One (1) Door Latches, L/S, Non-Locking Lift Bar w/Door Ajar Switch
The left side door latches shall be non-locking stainless steel lift bars and shall be provided with a magnetic door ajar switch system.

3.4.6 One (1) Wheel Area, Single Axle, (4) Rr SCBA Tubes - FFS
FENDER SIDE SKIRTS
There shall be stainless steel fender side skirts located in the area of the rear wheels. The design of the fender sides shall be a minimal length to provide maximum compartment space in the apparatus.

3.4.7 One (1) Fenderettes and Wheel Well Liners - Stainless
BODY FENDERS - POLISHED
The apparatus body fenders shall be made from 16 gauge polished stainless steel and shall be rolled, die stamped and fully removable. The stainless steel fenders and stainless fender liners shall be fastened with stainless bolts and ESNA nuts to the outer fender panel.
3.4.8 One (1) Mud Flaps, Rear

REAR AXLE MUD FLAPS
Two (2) black, anti-sail, mud flaps shall be mounted behind the rear wheels.

3.4.9 One (1) SCBA Tubes, (4) Rear Wheel well, (2) L/S - (2) R/S, Single Axle

SCBA BOTTLE COMPARTMENTS
Four (4) SCBA bottle tube compartments shall be provided, two (2) in each side rear wheel well area. One (1) shall be located forward and one (1) located rearward of each single axle tire. Each compartment shall be constructed of molded plastic tubing and shall be provided with a hinged, cast aluminum door with a brushed finish.

3.4.10 One (1) 62"/74", Exterior Compartments, R/S, 36"/52"/43" W x 24" D, FH/FD

RIGHT SIDE COMPARTMENT DIMENSIONS

3.4.10.1 FORWARD OF WHEEL WELL
There shall be one (1) rescue style, full height, and full depth compartment ahead of the rear wheels. It shall have approximate dimensions of 36" wide x 63" high x 24" deep.

3.4.10.2 ABOVE WHEEL WELL
There shall be one (1) high side compartment centered over the rear wheels. It shall have approximate dimensions of 52" wide x 33" high x 24" deep.

3.4.10.3 REAR OF WHEEL WELL
There shall be one (1) rescue style, full height, and full depth compartment behind the rear wheels. It shall have approximate dimensions of 43" wide x 63" high x 24" deep.

3.4.10.4 One (1) Roll Up Doors, R/S, Satin Anodized Finish

ROLLUP DOOR CONSTRUCTION - RIGHT SIDE
All right side compartments shall be provided with Gortite roll up doors. The roll up doors shall be constructed of double sided aluminum extrusions connected with a ball and socket joint. The extrusions shall be 1-3/8" wide x 3/8" thick with satin anodized finishing. A flexible EDPM extrusion shall be provided between each slab to insure a weather tight seal. Aluminum extrusions shall be individually replaceable without disassembling the entire door by removing push out clips on each end. Side channels for each door to ride in shall be provided with santoprene seals to prevent dirt and moisture from entering the exterior compartment. A single piece top drip rail shall be provided with a santoprene seal to prevent dirt and moisture from entering the compartment when the door is fully closed. The bottom of each door shall also be provided with a santoprene seal. All nonmetallic parts shall be glass filled nylon.

NOTE: The vendor will also supply pricing for swing type doors

3.4.10.5 One (1) Door Latches, R/S, Non-Locking Lift Bar w/Door Ajar Switch
The right side door latches shall be non-locking stainless steel lift bars and shall be provided with a magnetic door ajar switch system.

3.4.11 One (1) RR1, Ext Compartments Rear, 29" H x 48" W x 22" D, Half Height

REAR COMPARTMENT DIMENSIONS
There shall be one (1) half height compartment at the rear of the body. It shall have approximate dimensions of 48" wide x 29" high x 22" deep.

3.4.11.1 One (1) Roll Up Door, Rear, Satin Anodized Finish, Half Height

ROLLUP DOOR CONSTRUCTION - REAR
The rear compartment shall be provided with a Gortite roll up door that shall be constructed of double sided aluminum extrusions connected with a ball and socket joint. The extrusions shall be 1-3/8" wide x
3/8" thick with satin anodized finishing. A flexible EDPM extrusion shall be provided between each slat to insure a weather tight seal. Aluminum extrusions shall be individually replaceable without disassembling the entire door by removing push out clips on each end. Side channels for the rear door to ride in shall be provided with santoprene seals to prevent dirt and moisture from entering the exterior compartment. A single piece top drip rail shall be provided with a santoprene seal to prevent dirt and moisture from entering the compartment when the door is fully closed. The bottom of the door shall also be provided with a santoprene seal. All nonmetallic parts shall be glass filled nylon.

NOTE: The vendor will also supply pricing for swing type doors.

3.4.11.2 One (1) Door Latch, Rear, Non-Locking Lift Bar w/Door Ajar Switch
The rear door latch shall be a non-locking stainless steel lift bar and shall be provided with a magnetic door ajar switch system.

3.4.12 One (1) Body, Rear Aluminum Diamond Plate - Upper HH Door - Ladders Thru

**EXTERIOR REAR BODY**
The exterior inset portion of the body above the intermediate step including the ladder storage door shall be covered with bright finished aluminum diamond plate.

3.4.12.1 One (1) Body, Rear Aluminum Diamond Plate - Lower HH Door - Ladders Thru
The exterior inset portion of the body below the intermediate step on each side of the RR1 door shall be covered with bright finished aluminum diamond plate.

3.4.13 One (1) -Interface (I-Zone) Brackets, Mounted Rear Body -

**INTERFACE BRACKETS**
Two (2) 24" extruded aluminum handrail sections shall be provided, with brackets built onto the rear bulkheads of the compartments. Brackets shall hold the handrails and allow them to rotate down into position for use to lace hose between when moving from house to house during structure fire protection operations.

3.4.14 One (1) Rubrail, Body, Polished Stainless -

**BODY RUBRAIL - POLISHED STAINLESS STEEL**
The apparatus body shall have a bolt on extruded, polished stainless steel rub rail affixed to the side beneath each door area. The rub rail shall provide additional strength and protection and shall be constructed of 3/8" x 1-1/2" stainless steel fastened with stainless steel fasteners. Each rub rail shall be attached to the apparatus body with standoff spacers made from 1" diameter UHMW Polyethylene bar stock.

3.4.15 One (1) Painted Apparatus Body - Pumper

**STAINLESS STEEL APPARATUS BODY PAINTED**
The following apparatus body components shall be painted job color.

3.4.15.1 One (1) Painted Apparatus Body, Wheel Well Fender Panels
The rear wheel fender panels

3.4.15.2 One (1) Painted Hosebed / Coffin Compartment Exterior Side Walls
The exterior surface of the hosebed side walls / coffin compartment

3.4.16 One (1) 5 Year Apparatus Body Paint Warranty

**5 YEAR BODY APPARATUS BODY PAINT LIMITED WARRANTY**
The bidder, shall warrant only to the original purchaser and the first purchaser who places the motor vehicle in service that the painted apparatus body manufactured by the bidder (the "body"), shall under normal use and with normal maintenance remain free from paint defects for a period of five (5) years from
the date that the motor vehicle was first placed in service. A painted body shall be considered to have "paint defects" if it is found by the bidder to have any loss of gloss, color retention, cracking, blistering, bubbling or flaking under normal use and with normal maintenance. The warranty shall provide for repair or replacement, at the vendors option, any claim in accordance with the following terms and conditions.

WHAT IS COVERED
Warranty Applies - This warranty is for all new fire and rescue bodies manufactured by __________ Inc. and is extended only to the original user-purchaser. The warranty registration will be addressed and completed by the selected vendor within 30-days of the in-service date for the warranty to apply.
Repairs Covered - The warranty covers repair or replacement, at the vendors option. Repairs shall be made at the vendors factory or a vendors approved service facility at the vendors option.
Obtaining Repairs - The original user-purchaser must notify the vendor in writing within 30 days after any claimed defect has appeared. Transportation costs to and from the service center shall be the responsibility of the user-purchaser. In the case of warranty claim, repair of all non-warranty blemishes shall be negotiated prior to the warranty refinish or repair. Transportation of the vehicle to the factory authorized repair center shall be the responsibility of the owner.
Warranty Period - The warranty period shall begin 30 days after delivery of unit. If for reasons beyond the departments control the unit cannot be placed into service within this 30 day time frame a written request to extend the warranty start date will be furnished from the department.
The following percentages apply:
Top Coat and Appearance
Gloss, Color Retention, Cracking
Coating System, Adhesion, Flaking, Blistering, Bubbling
0 to 60 months 100% 0 to 36 Months 100%
37 to 60 Months 50%
WHAT IS NOT COVERED
• Damage caused by fire, misuse, negligence or accident.
• Damage caused by theft, vandalism, riot or explosion.
• Damage caused by lightening, earthquake, windstorm, hail, flood or use in acidic environment.
• Any repairs, modifications, alterations, or after market parts added after manufacture without the authorization of the vendor.
• Damage from lack of or poor maintenance and cleaning.
• Gold leaf or striping except that which is affected by repair. (Gold leaf or striping must have been installed during manufacture to be covered under this limited warranty.)
• Loss of time, loss of use of the product, inconvenience, lodging, food or other consequential or incidental loss that may result from failure.
• UV Paint Fade
• Components not painted by the vendor such as rollup doors which are covered by their manufacturers warranty.

3.4.17 LIGHTING
3.4.17.1 One (1) Lights, Compartments, (2) Each w/Auto Switch, Door Ajar Indicator
COMPARTMENT LIGHTING
A minimum of two (2) compartment lights shall be provided for each body compartment. No exceptions to this requirement. Each body door shall have an automatic compartment light switch.

3.4.17.2 One (1) Lights, Rear Body, Two (2) Recess Mount, Activate w/Parking Brake
REAR WORK LIGHTS
A) Two (2) recess mounted area work lamps shall be provided above the tailboard, one (1) each side on the inner face of the beavetail.
B) The lights shall be shall be switched on when the parking brake is set and the apparatus is running with the master battery switch in the "ON" position.

3.4.17.3 One (1) Lights, Underbody, Six (6) Model 40/60, Activate w/Parking Brake
UNDERBODY LIGHTING
Underbody ground lights shall be provided under the apparatus body as required by current NFPA 1901.
A) Four (4) Truck-Lite model #60 ground lights shall be provided at the rear of the apparatus body, two (2) each side, to illuminate under the rear compartments.
B) There shall also be two (2) model #40 ground lights provided at the outer front corners of the apparatus body, one (1) each side, to illuminate the area under the forward compartments and pump panel areas.
C) All underbody ground lights shall be switched on when the parking brake is set and the apparatus is running with the master battery switch in the "ON" position.

3.4.18 One (1) Steps, Folding, Mounted Front / Rear of Body, Per NFPA
FOLDING STEPS
Folding steps shall be provided on the front and rear of the apparatus body. Steps shall be provided and in installed per NFPA requirements.

3.4.19 One (1) Step, Intermediate, (1) Upper, Laser Grip, 8" Deep x Full Width
INTERMEDIATE REAR STEP - UPPER FULL WIDTH
An NFPA #1901 compliant "Laser Grip" rear step shall be located just above the rear compartment and span the width of the hosebed. It shall be no less than 8" in depth and fabricated of stainless steel.

3.4.20 One (1) Steps, Intermediate, (2) Lower, Laser Grip, 8" Deep
INTERMEDIATE REAR STEPS - LOWER
Two (2) rear corner steps, one (1) each side, shall be located adjacent to the rear compartment and shall be no less than 8" in depth and fabricated of "Laser Grip" stainless steel to meet NFPA #1901 step requirements.

3.4.21 One (1) Handrails, (3) Rear, (2) 24" Vertical/(1) 69" Horizontal
REAR HANDRAILS
Three (3) ribbed, solid stock 1-1/4" diameter, aluminum handrails with chrome plated stanchions shall be supplied and installed at rear of the apparatus body. There shall be two (2) 24" long vertical handrails installed, one (1) each side on the inside of the rear area of the body and one (1) 69" long handrail installed horizontally along the upper edge of the beavertail area.

3.4.22 One (1) Tray, (1) 10' Suction, L/S, Above Compartments - High Side
HARD SUCTION TRAY - LEFT SIDE
A) One (1) RED powder coated aluminum hard suction tray shall be installed on the left side of the apparatus. The tray shall be designed to accommodate from three to six inch hard suction hose in a ten foot length and employ a design without fasteners or clamps to hold the suction hose in place in the tray. The suction hose shall be able to be removed by one person from the rear of the apparatus. The tray shall be mounted on top of the high side compartment.

NOTES:
Note: Hard suction trays to be painted job color

3.4.23 One (1) Tray, (1) 10' Suction, R/S, Above Compartments - High Side
HARD SUCTION TRAY - RIGHT SIDE
A) One (1) RED powder coated aluminum hard suction tray shall be installed on the right side of the apparatus. The tray shall be designed to accommodate from three to six inch hard suction hose in a ten foot length and employ a design without fasteners or clamps to hold the suction hose in place in the tray. The suction hose shall be able to be removed by one person from the rear of the apparatus. The tray shall be mounted on top of the high side compartment.
3.5 SHELVING – TRAYS – PULLOUTS- TOOL BOARDS

3.5.1 Eight (8) Shelves, Deep (Qty) Adjustable w/1.5" Flange, .190" Alum
DEEP ALUMINUM SHELVES - ADJUSTABLE
Eight (8) adjustable aluminum shelves shall be installed and shall have a flange 1-1/2" deep and a
minimum material thickness of .190" up to 30" in length. Each shelf shall be adjustable in height and held
in place by four (4) extruded uprights.

3.5.1.1 Eight (8) Shelves Location, Specify Exterior Compartments
Each adjustable shelf shall be installed as follows:
3.5.1.2 One (1) each in exterior compartment L-2
3.5.1.3 One (1) each in exterior compartment R-2
3.5.1.4 Two (2) each in exterior compartment L-1
3.5.1.5 Two (2) each in exterior compartment L-3
3.5.1.6 Two (2) each in exterior compartment R-1

3.5.2 One (1) Trays, (Qty), Pullout w/Slides & Gas Shock, .190" Alum 250#
ALUMINUM TRAYS - PULL OUT
One (1) heavy duty pullout trays shall be installed and shall be equipped with Grant slides and a gas
shock to hold the tray in both the in and out positions and shall be made from .190" aluminum with a
maximum capacity of 250 pounds.

3.5.2.1 One (1) Pullout Trays, Locations, Specify Ext Compartments
Each heavy duty pullout tray shall be installed as follows: One (1) in compartment bottom of L-3.

3.5.3 One (1) Vertical Tool Board, FULL Height Pull Out centered in compartment
FULL HEIGHT PULL OUT VERTICAL TOOL BOARD
One (1) full height vertical pull out tool board(s) shall be installed in an exterior body compartment.
Each board shall be equipped with Grant slides and a gas shock to hold the board in both the in and out
positions.
The tool board shall be made from .25" aluminum and be fully adjustable across the width of the
compartment.

NOTE: will require Fox Track or equivalent installed in R-3 compartment. Configuration will be
determined at pre construction.

3.5.3.1 One (1) Vertical Tool board Location, Specify Ext Compartments
Each vertical tool mounting board shall be installed in the compartments as follows: One (1) in exterior
compartment R-3.

3.5.4 Two (2) Vertical Tool Board, 30" Pull Out
30" HEIGHT PULL OUT VERTICAL TOOL BOARD
Two (2) 30" height vertical pull out tool board(s) shall be installed in an exterior body compartment.
Each board shall be equipped with Grant slides and a gas shock to hold the board in both the in and out
positions.
The tool board shall be made from .25" aluminum and be fully adjustable across the width of the
compartment.
The top of the toolboard shall be fastened to the bottom of the second shelf.

3.5.4.1 Two (2) - Vertical Toolboard Location, Specify Ext Compartment
Each vertical tool mounting board shall be installed in the compartments as follows:
4.0 EXTERIOR LIGHTING AND / ELECTRICAL

4.1 One (1) Body Side Scene Lights Required - Pumper / Rescue

**BODY SIDE SCENE LIGHTS**
There shall be body side scene lights installed as high as possible and spread out as far as possible on both sides of the apparatus body.

4.1.1 Four (4) Scene Lights, Federal GHSCENE - 40 Watt w/Chrome Trim
The lighting position(s) shall have four (4) Federal Signal GHScene, dual lamp, 40 watt total per head scene lights with adjustable lamps and a Federal Signal chrome trim.

4.1.1.1 One (1) Driver's Scene Light Switch
The scene lights shall be operated by a switch located in the driver's area of the cab.

4.2 One (1) Body Rear Scene Lights Required

**BODY REAR SCENE LIGHTS**
There shall be rear scene lights installed as high as possible on both sides of the rear of the apparatus body.

4.2.1 Two (2) Scene Lights, Federal GHSCENE - 40 Watt w/Chrome Trim
The lighting position(s) shall have two (2) Federal Signal GHScene, dual lamp, 40 watt total per head scene lights with adjustable lamps and a Federal Signal chrome trim.

4.2.1.1 One (1) Rear Scene Lt. Switch w/Parking Brake Over-Ride & Cab & Reverse
The rear scene lights shall be operated by a switch located beneath the left rear step. If the scene light is left in the 'ON' position the lights shall automatically turn off when the truck is parking brake is released. There shall also be a switch in the driver's area to turn on the rear scene lights. Additionally, the rear scene lights shall come on to supplement the back-up lights when the transmission is placed into reverse.

4.3 One (1) FRC – Left Front Corner - High Side

**LEFT FRONT QUARTZ LIGHT**
The following light shall be provided mounted on the left front corner of the body:

4.3.1 One (1) FRC, Focus, 150W, 12VDC
Fire Research Focus model FCA100-D15 lamp head shall be provided. The lamp head mounting arm shall terminate in 3/4" NPT threads. Wiring shall extend from the lamp head mounting arm bottom. The lamp head shall have one (1) quartz halogen 150 watt 12 volt bulb. The bulb will draw 12.5 amps and generate 2600 lumens. The bulb shall be accessible through the front. The lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head shall incorporate heat-dissipating fins and be no more than 5" deep by 3 3/8" high by 10" wide. Lamp head and mounting arm shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

4.3.1.1 One (1) Lamphead ON / OFF Switch
Fire Research -ON option switch shall be installed on the lamp head. The weatherproof on-off toggle switch shall be mounted on the lamp head.
4.3.1.2 One (1) FRC, Bottom Raise Pole - 530
The light head shall be mounted on a side mount push up telescopic pole. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 3 1/2" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

4.4 One (1) FRC – Right Front Corner - High Side
RIGHT FRONT QUARTZ LIGHT
The following light shall be provided mounted on the right front corner of the body:

4.4.1 One (1) FRC, Focus, 150W, 12VDC
Fire Research Focus model FCA100-D15 lamp head shall be provided. The lamp head mounting arm shall terminate in 3/4" NPT threads. Wiring shall extend from the lamp head mounting arm bottom. The lamp head shall have one (1) quartz halogen 150 watt 12 volt bulb. The bulb will draw 12.5 amps and generate 2600 lumens. The bulb shall be accessible through the front. The lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head shall incorporate heat-dissipating fins and be no more than 5" deep by 3 3/8" high by 10" wide. Lamp head and mounting arm shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

4.4.1.1 One (1) Lamphead ON / OFF Switch
Fire Research -ON option switch shall be installed on the lamp head. The weatherproof on-off toggle switch shall be mounted on the lamp head.

4.4.1.2 One (1) FRC, Bottom Raise Pole - 530
The light head shall be mounted on a side mount push up telescopic pole. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 3 1/2" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

4.5 One (1) Electrical System, 12V, Body, Multiplexed w/Circuit Breaker Panel
APPARATUS BODY ELECTRICAL SYSTEM
All body electrical shall conform to NFPA 1901 latest edition standards. The apparatus shall be equipped with a heavy-duty 12-volt negative ground system. All 12-volt apparatus wiring shall pass through a heavy duty power disconnect solenoid. The 12-volt control of the power disconnect switch is to be triggered by the Master Battery Disconnect. The apparatus shall be equipped with a Class1 Es-Key Management System for complete control of the electrical system devices. The right rear compartment shall house a relay based Power Distribution Module (PDM). The PDM shall contain 12 standard automotive relays. Each relay's output shall be monitored by the Es-Key system to provide true on/off feedback. Each output shall be capable of handling up to 30 amps and be protected by an automatic circuit breaker. The PDM shall be mounted on a removable panel in the left rear compartment with sufficient harness length to allow a technician the ability to remove the PDM and place it on a compartment shelf for diagnostics and service. All wiring shall be color-coded and function coded to assist the technician in servicing the electrical system. All circuits shall be divided and balanced for proper load distribution. Where possible, wiring shall be routed in looms as a single harness. Heat resistant convoluted loom shall be used. Only solderless, insulated crimp automotive electrical connectors shall be used.

4.6 One (1) -Generator, Gas, Honda, 2000 Watt w/Tank, Recoil Start
GAS GENERATOR
a) A Honda #EU2000i, 2000 watt, 120/12-volt generator shall be provided on the apparatus. The unit shall have an air cooled, 2.5 horsepower gasoline engine equipped with a low oil pressure shutdown.
b) EU2000i Specifications
c) Engine GX100 Displacement 98.5 cc AC Output 120V
d) 2000W max. (16.7A)
e) 1600W rated (13.3A)
f) Receptacles: 20A 125V Duplex
g) NEMA Plug Number: 5-20P
h) DC Output 12V, 96W (8A)
i) Starting System Recoil
j) Fuel Tank Capacity 1.1 gallons
k) Run Time on One Tank full 4 hrs. @ rated load 15 hrs. @ 1/4 load
l) Dimensions (L x W x H) 20.1" x 11.4" x 16.7"
m) Noise Level 59 dB @ rated load - 53 dB @ 1/4 load
n) Dry Weight 46.3 lbs.

4.6.1 One (1) -Light, 500 Watt, Generator Mount
An Akron Brass, Extenda-Lite, item HK2-500-LKI, 500 watt light kit shall be provided. The light kit shall be equipped with a 500 watt Stonco light head and quartz-halogen lamp. The lamp shall operate at 120 volts and draw no more than 4.5 amperes and have an output of 16,850 lumens using the highly polished Specular Hammertone reflector. The light head shall tilt up and down with a heavy-duty handle and shall be mounted on to the generator mounting bracket with a ¾” housing arm assembly. The light head and mounting brackets shall be heavy duty, cast aluminum and powder painted white. The mounting bracket shall be made specifically for the Honda EU2000i generator. Each light kit shall be equipped with a pigtail and a 5-15 household plug.

4.7 One (1) Body - LED - ICC Lighting with Body Side Clearance LED

APPARATUS ICC MARKER LIGHTING
Two (2) amber Whelen OS Series LED side clearance lights shall be supplied, one (1) each side mounted ahead of the forward body compartment. These lights are to be mounted in a chrome flange.

4.7.1 Five (5) red LED clearance lights shall be supplied, mounted in the rear of the apparatus.
4.7.2 Two (2) red LED clearance lights shall be supplied, mounted facing the side of the apparatus. ICC lighting utilized and lighting positions shall be in conformance with FMVSS 108.

4.8 One (1) Rear Stop/Tail/Turn/Backup - ALL LED – Federal Signal QuadraFlare

REAR STOP/TAIL/TURN/BACKUP LIGHTS
A) The rear of the apparatus shall be equipped with Federal Signal QuadraFlare 6”x4” lights. The top light in the assembly shall be a red LED stop/tail light, Federal Signal model QL64Z-BTT.
B) The middle light set shall be an amber LED lamp with a populated arrow shape, Federal Signal model QL64Z-ARROW and the lower lights shall be clear LED backup lights, Federal Signal model QL64Z-Backup.
C) A one-piece polished aluminum trim casting shall be mounted around the rear stop/tail/turn and backup lights on each side of the apparatus.

4.9 One (1) Back Up Alarm

BACK-UP ALARM
A solid state electronic backup alarm 102 dBA shall be installed on the rear of the apparatus and wired to the backup light circuit.

4.10 One (1) License Plate Bracket w/Light

One (1) license plate mounting bracket and incandescent light shall be provided. The light and bracket shall be located on the rear of the apparatus.
4.11 One (1) Lightbar, Front, Code 3 - 2100 - LED - Type III

**ROOF MOUNTED LIGHT BAR**

A Code 3 LED-X 2100 model 2158ALRC-116-LED, 58” light bar system shall be supplied and permanently mounted on the cab roof, as low and as far forward as possible.

This light bar system shall be supplied with all clear lower all red upper lenses, and the following LED modules described from the inboard position out:

- **4.11.1** - two (2) red steady burn LED-X - forward facing, one (1) per side
- **4.11.2** - two (2) white flashing LED-X - forward facing, one (1) per side
- **4.11.3** - four (4) red flashing LED-X - forward facing, two (2) per side
- **4.11.4** - four (4) red flashing Optix - side facing, two (2) per side
- **4.11.5** - two (2) amber flashing LED-X - rear facing, one (1) per side
  
  A) This light system fulfills the requirements for Upper Zone A and in combination with the upper rear warning devices fulfills the requirements for Upper Zones B, C, and D. Any clear warning light(s) in the light bar shall be disabled automatically for the “Blocking Right of Way” mode.
  
  B) Additionally, this lightbar provides the California requirement for red steady burn forward facing lights.

**NOTES:**

Note: Program to meet CALIFORNIA VEHICLE CODE

4.12 One (1) Grille, Frt, PowerArc - LED210 - LED

**LOW LEVEL WARNING LIGHTS**

- **A** Two (2) PowerArc LED warning lights, model LED210, shall be mounted on the front of the chassis.
  
  - **B** These two (2) lights fulfill the requirements for Lower Zones A, B & D lower level warning devices.

4.12.1 One (1) Lens Color - Both Red

Both warning light lenses shall be red in color.

4.13 One (1) High Beam Alternating Headlights

**ALTERNATING HEADLIGHT WARNING**

- **A** The headlights shall be provided with an alternating headlight feature. When the High Beam is selected the headlights shall become a standard high beam.
  
  - **B** Any clear warning light(s) shall be disabled automatically for the “Blocking Right of Way” mode.
  
  - **C** A cut off switch shall be supplied to turn off the alternating headlight function.

4.14 One (1) Upper Rear, PowerArc - LED210 - LED

**REAR UPPER LEVEL WARNING LIGHTS**

- **A** Two (2) PowerArc LED warning lights, model LED210, shall be mounted on the rear of the apparatus above the taillights at the upper outermost corners in vertical position.
  
  - **B** These two (2) lights fulfill the requirements for Upper Zones B, C & D upper level warning devices.

4.14.1 One (1) Lens Color - Driver's Amber / Officer's Red

The driver's side lens shall be amber in color and the officer's red in color.

4.15 One (1) Lower Rear, PowerArc - LED210 - LED

**REAR LOWER LEVEL WARNING LIGHTS**

- **A** Two (2) PowerArc LED warning lights, model LED210, shall be mounted on the rear of the apparatus below the taillights at the lower outermost corners in vertical position.
  
  - **B** These two (2) lights fulfill the requirements for Upper Zones B, C & D lower level warning devices.

4.15.1 One (1) Lens Color - Both Red
Both warning light lenses shall be red in color.

4.16 One (1) Whelen - LED - Traffic Advisor

**LED TRAFFIC ADVISOR**

A) One (1) amber LED Whelen traffic advisor, TAM83, with cable, shall be mounted on the upper rear of the apparatus.

B) Traffic advisor will be flush mounted.

C) The 30" long device shall consist of eight independent TIR3 LED heads.

D) The switch control box is to be mounted in the cab allowing for easy operation by the driver.

5.0 IDENTIFICATION AND SAFETY LABELS

5.1 One (1) Labels, Identification & Safety, Mounted Driver's Compartment/Pump Panel

**IDENTIFICATION AND SAFETY LABELS**

A permanent plate shall be installed in the driver's compartment to specify the quantity and type of the following fluids in the vehicle:

1. Engine oil.
2. Engine coolant.
3. Transmission fluid.
5. Pump Primer Fluid (If applicable).
6. Drive Axle Lubrication Fluid.
7. Air-conditioning refrigerant.
8. Air-conditioning lubrication oil.
10. Transfer case fluid.
11. Equipment rack fluid.
12. Air compressor system lubricant.
13. Generator system lubricant.

A permanent plate with pump performance data and serial numbers shall be installed on the pump panel. A permanent plate shall be installed in the driver's compartment specifying the maximum number of personnel the vehicle is designed to carry per NFPA standards. It shall be located in an area visible to the driver.

An accident prevention sign stating "DANGER PERSONNEL MUST BE SEATED AND SEAT BELTS MUST BE FASTENED WHILE VEHICLE IS IN MOTION OR DEATH OR SERIOUS INJURY MAY RESULT" shall be placed so it is visible from all seating positions.

An accident prevention sign stating "DANGER DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION, DEATH OR SERIOUS INJURY MAY RESULT" shall be placed so it is visible from the rear step of the vehicle.

If an inlet located at the pump operators position is valved, it shall be provided with a permanent label with language per NFPA-1901, current edition.

6.0 EQUIPMENT

6.1 One (1) Wheel Chocks, (2) Each Worden HWGY7, Yellow

**WHEEL CHOCKS**

One (1) pair of heavy duty, high tensile molded aluminum wheel chocks measuring 7.75" high x 8.5 wide x 15" long shall be provided with the apparatus. The wheel chocks shall have a bright yellow powder coat finish for high visibility, safety and corrosion resistance. No exception shall be allowed to these requirements.

**NOTES**

Note: Wheel chocks to be shipped loose.
6.2 Four (4) SCBA Brackets, (Qty) Zico, Mounted Ext Compartments

**SCBA BRACKETS**

Four (4) Zico SCBA mounting brackets with a positive holding strap shall be provided in apparatus body exterior compartments.

6.2.1 Four (4) Specify SCBA Bracket Location

The SCBA brackets shall be installed on each side of the L1 and R1 compartment slide boards.

6.3 One (1) Hard Suction, TFT, 10’ x 6”, Lightweight PVC w/NH Coupling

**HARD SUCTION HOSE**

One (1) 10’ long x 6” diameter TFT lightweight PVC flexible suction hose shall be provided. It shall be first quality, non-collapsible type and designed for having a low friction loss which will not collapse under a vacuum of 23”. The hard suction hose shall be equipped with a long handle female end and rocker lug male end couplings.

6.3.1 One (1) Hard Suction, TFT, 10’ x 6”, Lightweight PVC w/NH Coupling

**HARD SUCTION HOSE**

One (1) 10’ long x 6” diameter TFT lightweight PVC flexible suction hose shall be provided. It shall be first quality, non-collapsible type and designed for having a low friction loss which will not collapse under a vacuum of 23”. The hard suction hose shall be equipped with a long handle female end and rocker lug male end couplings.

6.3.2 One (1) Strainer, (1) 6” Kochek, Barrel Type, Chrome Plated, 6” NST

**BARREL TYPE SUCTION STRAINER**

One (1) Kochek model BS60C, 6” NST chrome plated, barrel type suction hose strainer shall be provided with the apparatus.

6.4 LADDERS

6.4.1 One (1) Ladder, 24’ Extension,

One (1) 24’ extension, aluminum extension ladder shall be provided with the apparatus.

**NOTE:** If a two section 24’ ladder will not fit in ladder storage area a three flight 26’ can be substituted with departments approval.

6.4.2 One (1) 12’ Roof,

One (1) 12’ duo safety model 775-A aluminum channel rail roof ladder with folding roof hooks shall be provided with the apparatus.

6.4.3 One (1) 10’ Attic

One (1) 10’ duo safety model 585-A aluminum folding attic ladder shall be provided with the apparatus.

6.5 PIKE POLE

One (1) 8’ Akron IB-8-RK pike pole with l-beam fiberglass pole, standard steel hook and ram knob end shall be provided with apparatus.

6.6 One (1) Generator, Gas, Honda, 2000 Watt w/Tank, Recoil Start

**GAS GENERATOR**

- A Honda #EU2000i, 2000 watt, 120/12-volt generator shall be provided on the apparatus. The unit shall have an air cooled, 2.5 horsepower gasoline engine equipped with a low oil pressure shutdown.
- EU2000i Specifications
- Engine GX100 Displacement 98.5 cc AC Output 120V
- 2000W max. (16.7A)
- 1600W rated (13.3A)
t) Receptacles: 20A 125V Duplex
u) NEMA Plug Number: 5-20P
v) DC Output 12V, 96W (8A)
w) Starting System Recoil
x) Fuel Tank Capacity 1.1 gallons
y) Run Time on One Tank full 4 hrs. @ rated load 15 hrs. @ 1/4 load
z) Dimensions (L x W x H) 20.1" x 11.4" x 16.7"
   aa) Noise Level 59 dB @ rated load - 53 dB @ 1/4 load
   bb) Dry Weight 46.3 lbs.

6.6.1 One (1) -Light, 500 Watt, Generator Mount
An Akron Brass, Extenda-Lite, item HK2-500-LKI, 500 watt light kit shall be provided. The light kit shall be equipped with a 500 watt Stonco light head and quartz-halogen lamp. The lamp shall operate at 120 volts and draw no more than 4.5 amperes and have an output of 16,850 lumens using the highly polished Specular Hammertone reflector. The light head shall tilt up and down with a heavy-duty handle and shall be mounted on to the generator mounting bracket with a ½ ” housing arm assembly. The light head and mounting brackets shall be heavy duty, cast aluminum and powder painted white. The mounting bracket shall be made specifically for the Honda EU2000i generator. Each light kit shall be equipped with a pigtail and a 5-15 household plug.

6.7 One (1) Deck Gun (Monitor)
There is to be one deck gun Make Akron Hi Riser Model 3433 or equivalent provided. This monitor will have a single hand wheel control for vertical travel and a single waterway capable of flows up to 1250 GPM. It shall have a full 360 degree horizontal travel and 105 degree vertical travel from the vertical position. The monitor shall be painted truck color and will be controlled from the pump panel. This monitor will be provided with three tips in the following sizes.
   1.00”
   1.13”
   1.25”

6.7.1 One (1) deck gun mounting base
There will be a deck gun mounting base installed in the dunnage area for storage of deck gun.

6.7.2 One (1) deck gun ground base.
There will be a portable mounting base supplied by the vendor. This base will have 2 2 ½” supply inlets. The base shall be designed to flow a maximum of 1250 GPM.

7.0 LETTERING – DECALS - STRIPING

7.1 One (1) Striping, 6” Scotchlite, Reflective, Vehicle Perimeter

REFLECTIVE SAFETY STRIPE
A 6” wide 3M brand Scotchlite reflective stripe shall be affixed to the perimeter of the vehicle. The striping shall be placed up to 60” above ground level and shall conform to NFPA reflectivity requirements. At least 60% of the perimeter length of each side and width of the rear and at least 25% of the perimeter width of the front of the vehicle shall have reflective stripe.

7.1.1 One (1) Base Stripe Color, White Reflective

REFLECTIVE STRIPE COLOR
The apparatus body striping shall be white reflective.

7.2 INSTALL CUSTOMER SUPPLIED EMBLEMS
One (1) Install Customer Supplied Emblems/Logos (2)
Installation of two (2) customer supplied door emblems shall be provided by the apparatus manufacturer.
7.3 One (1) Lettering, Driver’s and Officer’s Front Doors
LETTERING, DRIVER’S AND OFFICER’S FRONT DOORS
The letters selected shall be installed on the doors as follows:

7.3.1 One (1) Lettering, Line 1 - Top Arch Style Lettering
In an arch with the center high, line 1 reads:
AS PER PURCHASERS SPECIFICATION

7.3.2 One (1) Lettering, Line 2 - Straight Line Lettering
In a straight line, line 2 reads:

7.3.3 One (1) Lettering, Line 3 - Straight Line Lettering
In a straight line, line 3 reads:

7.3.4 One (1) Lettering, Line 4 - Straight Line Lettering
In a straight line, line 4 reads:

7.4 Sixty Two (62)
84-12-1502 Quantity Of Letters Required For This Option

7.5 One (1) Lettering Font - Baskerville Bold
LETTERING FONT
The apparatus lettering shall use a Baskerville Bold font.

7.5.1 One (1) Lettering Size - 2” Height
The lettering shall be 2” in height.
NOTES
Note: White in color

7.5.2 One (1) Lettering Size - 4” Height
The lettering shall be 4” in height.

NOTES
Note: Gold in color

7.5.3 One (1) Lettering Color, White Reflective
REFLECTIVE LETTERING COLOR
The apparatus lettering shall be white reflective.
NOTES
Note: For the 2” lettering

7.5.4 One (1) Lettering Shade, Black
REFLECTIVE LETTERING TRIM
The lettering shall have a left lower shade in black.

7.5.5 One (1) Lettering Color, Gold Reflective
REFLECTIVE LETTERING COLOR
The apparatus lettering shall be gold reflective.
NOTES
Note: For the 4” lettering

7.5.6 One (1) Lettering Shade, Black
REFLECTIVE LETTERING TRIM
The lettering shall have a left lower shade in black.
7.6 One (1) Lettering, Crew Area Doors
LETTERING, CREW AREA DOORS
The one (1) letters selected shall be installed on the doors as follows:

7.6.1 One (1) Lettering, Line 1 - Straight Line Lettering
In a straight line, line 1 reads:
Numbers or letters

7.6.2 One (1) Lettering, Line 2 - Straight Line Lettering
In a straight line, line 2 reads:

7.6.3 One (1) Lettering, Line 3 - Straight Line Lettering
In a straight line, line 3 reads:

7.6.4 One (1) Lettering, Line 4 - Straight Line Lettering
In a straight line, line 4 reads:

7.7 Six (6) Quantity of Letters Required For This Option

7.7.1 One (1) Lettering Font - Baskerville Bold
LETTERING FONT
The apparatus lettering shall use a Baskerville Bold font.

7.7.2 One (1) Lettering Size - 4" Height
The lettering shall be 4" in height.

7.7.3 One (1) Lettering Color, White Reflective
REFLECTIVE LETTERING COLOR
The apparatus lettering shall be white reflective.

7.7.4 One (1) Lettering Shade, Black
REFLECTIVE LETTERING TRIM
The lettering shall have a left lower shade in black.

7.8 ALL LETTERING AND STRIPPING WILL BE DISCUSSED AT PRE CONSTRUCTION.

8.0 WARRANTY

8.1 One (1) Water & Foam Tank Warranty - Service Life
WATER TANK WARRANTY
The water tank is to be free from defects in material and workmanship for the normal service life of the apparatus in which the water tank is installed.
If a tank has a defect in material or workmanship covered by the warranty, the tank manufacturer shall repair at their cost, by authorized personnel or authorized third parties. The tank manufacturer shall make an effort to effectuate repair within 48 hours following initial notification of a covered defect. The tank manufacturer shall make a reasonable effort to repair tank at most convenient location to end user.
The tank manufacturer shall reimburse all reasonable costs associated with rendering the tank accessible for repair, including, but not limited to, removal and reassembly of the hose bed floor.

8.2 One (1) 10 Year Apparatus Body Structural Warranty
10 YEAR BODY STRUCTURAL LIMITED WARRANTY
The bidder, shall warrant only to the original purchaser and the first purchaser who places the motor vehicle in service that the apparatus body manufactured by the bidder (the "body"), under normal use and with normal maintenance, will remain free from structural defects for a period of ten (10) years from the date that the motor vehicle was first placed in service.
8.3 One (1) 10 Year Apparatus Body Corrosion Warranty
10 YEAR BODY CORROSION LIMITED WARRANTY
The bidder, shall warrant only to the original purchaser and the first purchaser who places the motor vehicle in service that the apparatus body manufactured by the bidder (the "body"), under normal use and with normal maintenance, will remain free from corrosion for a period of ten (10) years from the date that the motor vehicle was first placed in service. A body shall be considered to have "corrosion defects" if it is found by the bidder to have perforation caused by corrosion under normal use and with normal maintenance.

8.4 One (1) 10 Year Stainless Piping Warranty
STAINLESS PIPING WARRANTY
The bidder shall warrant that all stainless steel plumbing components used in the construction of the fire apparatus water/foam plumbing systems against defects and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original user-purchaser for a period of ten (10) years from the date of delivery to the original user-purchaser, whichever occurs first.
Exhibit ‘C’

OPTIONAL PRICING

9.0 OPTIONAL NFPA RECOMMENDATIONS

The following items are being listed for optional pricing and are not listed in the above proposal.

9.1 Stability Control System.

Stability Enhancement System - A Meritor/Wabco Roll Stability Control (RSC) System OR EQUIVALENT shall be provided on the apparatus chassis. The RSC shall assist in managing road conditions that may result in a vehicle rollover. The RSC shall intervene to regulate the vehicle’s deceleration functions by automatically reducing engine torque, engage the vehicle retarder (engine brake) and apply pressure to the brakes. Electronic Stability Control (ESC) shall be included building upon the established RSC system by sensing the tendency of the vehicle to spin around and automatically applying the brake to reduce that risk. This system shall conform to the requirements of NFPA-1901 4.13.1.2 – If the apparatus is equipped with a stability control system, the system shall have, at a minimum, a steering wheel position sensor, a vehicle yaw sensor, a lateral accelerometer, and individual wheel brake controls.

9.2 Vehicle Data Recorder and Seat Belt Warning System

Apparatus shall be equipped with a Class 1 OR EQUIVALENT “Vehicle Data Recorder and Seat Belt Warning System” (VDR/SBW) that is connected to the power train CAN (Controlled Area Network) bus consisting of transmission (TCM), engine control (ECM) and antilock brake (ABS) modules mounted on the apparatus. The VDR/SBW will function per NFPA 1901-2009 sections 4.11 (Vehicle Data Recorder) utilizing the power train’s J1939 data and 14.1.3.10 (Seat Belt Warning) using the Class 1 “Seat Belt Input Module” for seat occupied and belt status information. The VDR data shall be downloadable by USB cable to a computer using either Microsoft or Apple Operating Systems using Class 1/O.E.M supplied reporting software.

Apparatus shall be equipped with a Class 1 “Vehicle Data Recorder and Seat Belt Warning System” (VDR/SBW) that is connected to the power train CAN (Controlled Area Network) bus consisting of transmission (TCM), engine control (ECM) and antilock brake (ABS) modules mounted on the apparatus. The VDR/SBW will function per NFPA 1901-2009 sections 4.11 (Vehicle Data Recorder) utilizing the power train’s J1939 data and 14.1.3.10 (Seat Belt Warning) using the Class 1 “Seat Belt Input Module” for seat occupied and belt status information.

The VDR data shall be downloadable by USB cable to a computer using either Microsoft or Apple Operating Systems using Class 1/O.E.M supplied reporting software.
SEAT BELT WARNING SYSTEM

There shall be a seat belt indicator system supplied in the cab. The indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released. A display panel shall be supplied in the dash area. The panel shall have an audible indicators and a red light display to indicate that a seat belt has not been fastened.

SEAT BELT WARNING SYSTEM MONITOR PANEL

Mounted in the overhead console in the driver’s area the indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

9.3 Tire Pressure Monitoring Device – 2 – Axle

TIRE PRESSURE MONITORING DEVICE

Each tire installed on the apparatus shall be equipped with a tire pressure monitoring device. The device shall consist of a valve stem cap with red and green color bands to indicate tire pressure conditions. IF THE CAP IS ALL GREEN THE TIRE IS PROPERLY INFLATED. If the cap is half green/half red the tire is approximately 10% under inflated. If the cap is all red the tire is 20% or more under inflated.
Exhibit ‘D’

SHASTA COUNTY FIRE DEPARTMENT

TYPE I FIRE APPARATUS

Pricing Sheet

VENDOR NAME ___________________________________________________________

ADDRESS ______________________________________________________________

________________________________________________________________________

PHONE NUMBER ______-_______-__________

REPRESENTATIVE NAME & TITLE_________________________________________________________________________________

DELIVERY SHALL BE MADE WITHIN _______ DAYS FROM RECEIPT OF ORDER, EXCEPT AS INDICATED.

CONTRACTOR BID PRICE $_________________

CALIFORNIA SALES TAX (8.25%) $_________________

TOTAL $_________________

__________________________________________

SIGNATURE

______________________________

November 2010
VENDOR LIST

1. BOISE MOBILE EQUIPMENT
   7438 CALDER AVENUE
   SEBASTOPOL, CA 95472
   ATTEN: JOHN EDER
   707-696-4309

2. FERRARA FIRE APPARATUS
   4110 CITRUS AVE. #1
   ROCKLIN, CA 95677
   ATTEN: TOM BEILBY
   530-870-6607

3. GOLDEN STATE FIRE APPARATUS
   1237 DOKER DRIVE
   MODESTO, CA 95351-2868
   ATTEN: DAN COLLINS
   530-432-5743

4. HI-TECH FIRE TRUCKS
   444 W. GREGER STREET
   OAKDALE, CA 95361-1616
   ATTEN: BLAIRE PORTER
   530-846-0789
5. HME ARRONS FOX
   741 EAST STREET #373
   WOODLAND, CA 95776
   ATTEN: Scott Holmquist
   530-605-5080

6. ROSENBAUER AMERICA
   1624 3RD STREET SOUTH
   NAMPA, ID 83651
   ATTEN: BOB BECK
   208-442-8030