Board of Supervisors
COUNTY OF TEHAMA

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District 2 – Tom Walker
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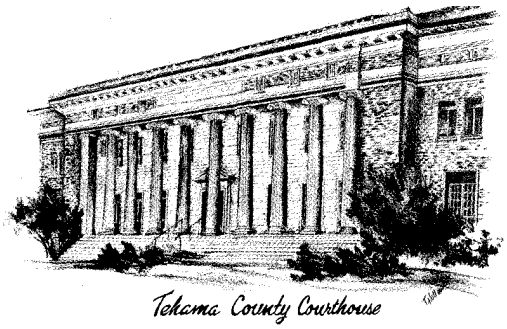
District 4 – Matt Hansen
District 5 – Greg Jones



Gabriel Hydrick
Chief Administrator

TEHAMA COUNTY LEGAL NOTICE
ADVERTISEMENT FOR BID

NOTICE IS HEREBY GIVEN THAT bids shall be received until 3:00 p.m., January 5, 2027, in the Administration Office, 727 Oak Street, Red Bluff, CA, 96080 for the purchase of one new fire engine for the Tehama County Fire Department.

All bids must be in the custody of the Purchasing Department at the designated time. In addition to mailed bid submittals, email submittals may be sent to dschmidt@tehama.gov. Bids shall be submitted on the form provided ONLY.

Specifications are available by contacting the Purchasing Department at the above address, or by calling (530) 527-4655.

The Board of Supervisors reserves the right to waive informalities and irregularities in any bids received.

Debbie Schmidt

Digitally signed by Debbie Schmidt
Date: 2026.11.24 10:16:43 -08'00'

Debbie Schmidt, Deputy Purchasing Agent

Publish in the Daily News on November 24, 2026. Send Proof of publication to Tehama County Purchasing Dept., 727 Oak Street, Red Bluff, CA 96080

BIDS MUST BE SUMITTED ON THIS FORM

TEHAMA COUNTY FIRE DEPARTMENT

Bids to be received on or before 3:00 p.m. on January 5, 2027

One New Water Tender Bid Form

Price for One New Water Tender per Bid Specifications:	$_____
Documentation Fee:	$_____
8.50% CA Sales Tax:	$_____
Tire Disposal Fee:	$_____
Delivery/Shipping Charge:	$_____
604 Antelope Blvd. Red Bluff, California 96080	
Pre-delivery/Final inspection visit by TCFD Staff:	$_____
Total Bid for One New Type 1 Water Tender:	$_____

FIRE ENGINE TO BE QUOTED AS PER SPECIFICATIONS

BID SHALL INCLUDE THE COST OF ALL EQUIPMENT MEETING OR EXCEEDING THE REQUIRED SPECIFICATIONS. **Bid submittal must be completed on these forms.**

Any additional fees associated with this bid submittal, including State Department of General Services and or CMAS Contract Fees assessed for contract usage, must be clearly stated, and included in the total bid price. Unstated fees will become the responsibility of the bidder. No additional fees will be paid by the County.

The bid, if awarded, will be awarded on the basis of the combined total cost for all items, including options and accessories. The Tehama County Board of Supervisors reserves the right to reject any or all bids and the County assumes no obligation to purchase until awarded and execution of a Purchase Order has been made. Any changes, omissions or variations in the specifications or conditions will be considered sufficient cause for rejection.

It shall be mandatory to attach **comprehensive specification** sheets outlining all apparatus information to this form. Any specifications exceptions must be explained in detail and attached to this sheet. Printed literature and complete specification information must be submitted with the bid. Failure to include complete information will exclude your bid from an award.

*Each submittal must be completed on this form.

*Bids can be returned using any of the following:

Email to: dschmidt@tehama.gov

Mail to: Attn: Fire Department Water Tender Bid
Tehama County Purchasing
727 Oak Street
Red Bluff, CA 96080

SPECIFICATION SHEETS MUST BE INCLUDED WITH THIS SUBMITTAL

*Prices are good for _____ days. Delivery can be expected in _____ days following receipt of Purchase Order.

Vendor _____

Address _____

Submitted by: _____Title_____

Signature: _____

Taxpayer ID #_____

Phone No _____FAX _____

E-Mail_____

Additional Bid Requirements:

The completed apparatus shall be delivered by the vendor within 365 calendar days from the date of notice of award, with all equipment specified to:

Tehama County Fire Department
604 Antelope Boulevard
Red Bluff, CA 96080

Contact: Please contact Fire Chief Monty Smith, Tehama County Fire Department with any questions regarding these specifications or bid forms.

Office: 530-528-5199

Email: Monty.Smith@fire.ca.gov

IMPORTANT:
ANY EXCEPTIONS TO THE SPECIFICATION MUST BE EXPLAINED IN WRITTEN DETAIL AND INCLUDED WITH BID PROPOSAL

TEHAMA COUNTY FIRE DEPARTMENT

SPECIFICATIONS FOR ONE NEW WATER TENDER

GENERAL SPECIFICATIONS: This apparatus must be new. The apparatus furnished under this specification shall be designed and constructed in accordance with the specifications therein. The fire apparatus must come complete with all necessary operating accessories customarily furnished, whether stipulated herein or not, with such modifications and attachments as may be necessary to enable the apparatus to function reliably and efficiently in sustained operation. All parts, equipment, and accessories shall be completely installed, assembled, and or/adjusted as required and shall conform in strength, quality of materials and workmanship to recognized industry standards. Additionally, the apparatus furnished shall comply with the most current Federal Vehicle Standards, California Air Resources Pollution Control requirements, the requirements of the California Department of Transportation, ICC, and California Motor Vehicle Code, including axle and load limits. The apparatus shall also meet the requirements of the current National Fire Protection Association (NFPA) 1901 standards.

The apparatus will be used primarily as a firefighting apparatus within the Wildland Urban Interface (WUI). The apparatus will travel on unimproved mountainous roads, which will cause abnormal stress, vibration, and other operational hazards to the apparatus. The elevation in Tehama County ranges from 250 feet to a 5,000-foot elevation. Winter temperatures are below freezing, and the summer temperatures are over 110 degrees Fahrenheit. The apparatus will be expected to operate at these elevations and extreme conditions. Quality workmanship is required throughout to assure life expectancy. All parts of the apparatus shall be strong enough to withstand general services under full load. The construction shall be very rugged, and ample safety factors shall be provided to carry the loads specified to meet road and speed conditions.

The apparatus shall be so designed and constructed that the various parts are readily accessible for lubrication, inspection, adjustment, and repair. Ease of operation (including pump operation, driving, and engine operation/maintenance) shall be of paramount consideration during design and construction.

Additional Bid Requirements:

The completed apparatus shall be delivered by the vendor within 365 calendar days from the date of notice of award, with all equipment specified to:

Tehama County Fire Department
604 Antelope Boulevard
Red Bluff, CA 96080

Contact: Please contact Fire Chief Monty Smith, Tehama County Fire Department with any questions regarding these specifications.

Office: 530-528-5199
Email: monty.smith@fire.ca.gov

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ANY EXCEPTIONS TO THE SPECIFICATION MUST BE EXPLAINED IN WRITTEN DETAIL AND INCLUDED WITH BID PROPOSAL

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PAINT AND FINISH (EXTERIOR CLEAR COATED) LIMITED WARRANTY……Yes☐ or No☐ 89
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PREREQUISITE BIDDING REQUIREMENTS

Any manufacturer submitting a proposal or bid to these specifications shall meet the following conditions:

- The manufacturer of the apparatus herein specified, shall be wholly owned (100%) and managed by a Company, Corporation, and/or Parent Company that is wholly based and permanently resides in the United States of America.
- The Company, Corporation, and/or Parent Company, and all assets belonging to such, shall be wholly owned and managed (100%) by the entities specified above.

Any proposal, bid, or response to these specifications by any foreign based, owned, or managed (in part or in whole) Company, Corporation, and/or Parent Company shall be cause for immediate rejection. Any proposal, bid, or response to these specifications by any Company, Corporation, and/or Parent Company, which is owned, operated, managed, or held in contract, in part or wholly by a partnership or other agreement, shall be cause for immediate rejection.

Exceptions to these conditions will not be allowed under any circumstances.

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the purchaser of a complete apparatus equipped as herein specified. With a view to obtaining the best results and the most acceptable apparatus for service in the fire department, these specifications cover the general requirements as to the type of construction, together with certain details as to finish, equipment, and appliances with which the successful bidder must conform. Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features.

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction.

Each bidder shall furnish satisfactory evidence of his ability to construct the specified apparatus. The bidder shall also show that they can render prompt service and furnish replacement parts for said apparatus.

CONTRACTOR'S SPECIFICATIONS

Each bid shall be accompanied by a set of "Contractor's Specifications" consisting of a detailed description of the apparatus and equipment proposed and to which the apparatus furnished under contract shall conform.

These specifications shall indicate size, type, model, and make of all component parts and equipment.

TIMELY PROPOSALS

It is the bidder's responsibility to see that their proposals arrive on time. Late proposals, facsimiles, emails, telegram, or telephone bids shall not be considered.

DRAWINGS

All bid drawings shall be stamped PROPOSAL.

- A total of six (6) drawings shall be supplied. The drawings provided can be printed on any paper size, but the scale will only be valid when printed to the paper size listed in the title block

- Drawings shall show five (5) views: left (driver's), right (passenger's), front, rear, and top
- OAL (overall length) in feet and inches. The estimated length shall be rounded up to the nearest inch

- OAH (overall height) in feet and inches. The estimated height shall be rounded up to the nearest inch
- The wheelbase shown in inches
- Pump house width in inches
- Front of the body to the centerline of the rear axle in inches
- Front and rear overhang in inches
- Angle of Approach and Departure
- Compartment doors will be shown in the closed position
- Compartment dimensions shall be shown in a table on the drawing. The table shall display:
    - Clear door opening – The width/height of the clear door opening
    - Interior dimensions – The interior compartment dimensions excluding any accessories or pockets (i.e. roll up door drums, hard suction hose pans, suspension pockets, etc.)
    - Divide heights – The measurement where the compartment changes from full depth to shallow depth
- Ground ladders shall be labeled with a letter designation referring to the table for an explanation of the ladder
- No pump panel or instrument panel controls, discharges or inlets shall be shown. The panel space is to be left blank and labeled "Pump Panel".
- Rear plumbing, such as 2-1/2" discharges, rear steamers, and direct tank fills, shall be shown
- Water tank outline
- Fill towers
- Generator outline
- Warning lights
- D.O.T. lights
- Text Block Items
- Chassis make/model
- Fire pump make/model
- Water tank capacity
- Body material
- Hose bed capacity in cubic feet
- Total compartment cubic feet
- Utilize a unique bid number
- Drawings shall be printed on white paper with black ink

PURCHASER'S OBLIGATIONS

The purchaser reserves the right to accept or reject any or all bids on such basis as the purchaser deems to be in its best interest. All bidders should be advised that the purchaser is not bound in any manner to automatically accept the lowest bid. The purchaser shall only be obligated to purchase the lowest bid that meets these detailed specifications as closely as possible.

SAFETY REQUIREMENTS

It is required that the bidder shall meet all State and Federal safety standards and laws that are in effect on the date of the bid for the item(s) that are being specified and the particular use for which they are meant.

ACQUAINTANCE WITH SPECIFICATIONS

It is the responsibility of the bidder to review all the bidding requirements. Failure of a bidder to be acquainted with this information shall not relieve them of any obligations of the bid requirements.

QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices. Experimental designs and methods shall not be acceptable.

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 that require periodic maintenance, ease of operation (including both pumping and driving), and symmetrical proportions.

GENERAL CONSTRUCTION

The complete apparatus, assemblies, subassemblies, component parts, and so on, shall be designed and constructed with due consideration to the nature and distribution of the load to be sustained and to the general character of the service to which the apparatus is to be subjected when placed in service.

All parts of the apparatus shall be strong enough to withstand the general service under full load. The apparatus shall be so designed that the various parts are readily accessible for lubrication, inspection, adjustment and repair.

The apparatus shall be designed and constructed, and the equipment so mounted, with due consideration to distribution of the load between the front and rear axles, and side to side loading that all specified equipment, including a full complement of specified ground ladders, full water tank, loose equipment, and firefighters; shall be carried without overloading or damaging the apparatus as per requirements defined in NFPA 1901.

LIABILITY

The bidder, if their bid is accepted, shall defend all suits and assume all liability for the use of any patented process, device or article forming a part of the apparatus or any appliance furnished under the contract.

WARRANTY COPIES

A copy of the warranties for the chassis, pump, body, paint, and water tank shall be furnished with each bidder's proposal.

BID FORMS / SPECIFICATIONS

All bid forms shall be submitted on the attached bid form. The bid form and/or these specifications shall be filled out by checking either the “YES” or “NO” column for each section/paragraph. Failure to use this form and/or these specifications shall be cause for immediate rejection of any bid.

EXCEPTION TO SPECIFICATIONS

The following chassis, pump, and body specifications shall be strictly adhered to. Exceptions shall be allowed if they are equal to or superior to that specified (as judged by the customer), and provided they are listed and fully explained on a separate page entitled “EXCEPTIONS TO SPECIFICATIONS”. Exception lists shall refer to the specification page number. Each check in the “NO” column shall be listed and fully explained. Where no check is made in a particular paragraph with either “YES” or “NO”, it shall be assumed the bidder is taking exception to that paragraph. If a paragraph contains an empty column, where the bidder neglected to check the proper “YES” or “NO” column, it is assumed the bidder is not conforming to the requirements of this paragraph. If no explanation is given in the “EXCEPTIONS TO SPECIFICATIONS” document, the bid is subject to immediate rejection.

PROPOSALS TAKING TOTAL EXCEPTION TO THESE SPECIFICATIONS WILL BE IMMEDIATELY REJECTED.

The buyer is aware that all bidders shall have to take some exceptions, therefore; BIDDERS THAT TAKE NO EXCEPTIONS shall BE REQUIRED TO MEET EVERY PARAGRAPH TO THE FULLEST EXTENT SHOULD THEIR BID BE ACCEPTED. It is the intent of the purchaser to receive bids that do not require telephone calls or other communications to ascertain what a bidder is intending to supply.

Upon delivery, the apparatus shall be inspected against THESE specifications and not those supplied by the bidder with their proposal. Deviations shall not be acceptable unless they were noted as exceptions at the time of bid and the apparatus shall be rejected until said deviations are corrected to the satisfaction of the buyer.

Decisions regarding equal to or better than, shall be the sole responsibility of the recipient of the bids rather than those companies submitting bids. All deviations, regardless of significance must be explained in the “EXCEPTIONS TO SPECIFICATIONS” section of the bid.

When exceptions are not taken but inconsistencies are noted in the submitted detailed specifications, the bid may be subject to rejection.

ROADABILITY

The apparatus, when fully equipped and loaded, shall be capable of the following performance while on dry paved roads that are in good condition.

- Accelerating from 0 to 35 mph within 25 seconds on a 0 percent grade
- Attaining a speed of 50 mph on 0 percent grade
- Maintaining a speed of at least 20 mph on any grade up to and including 6 percent
- The maximum top speed of the apparatus shall not exceed the tire manufacturer's maximum speed rating for the tires installed on the apparatus.

FAILURE TO MEET TESTS

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 as required to conform to any clause of the specifications within 30 days after notice is given to the bidder of such changes, shall be cause for rejection of the apparatus.

Permission to keep or store the apparatus in any building owned or occupied by the Department during the specified period, with the permission of the bidder, shall not constitute acceptance. No Exceptions.

PROPOSAL SEQUENCE

Bid specifications shall be submitted in the same sequence as these specifications for ease of checking compliance. There shall be no exceptions allowed to this requirement. The apparatus committee intends to be thorough during the evaluation of bids process. To maximize efficiency and minimize the time it takes to thoroughly evaluate all received bids this requirement must be strictly adhered to.

AWARD OF CONTRACT

All bids submitted shall be good for a minimum of 60 days during which time bid securities submitted with the proposals shall be held by the purchaser. Criteria for the award shall include, but not be limited to, the following:

- Apparatus Performance and Safety Levels / Considerations

- Completeness of proposal
- Accuracy of accompanying data
- Past performance of bidder
- Compliance with the detailed specifications
- Compliance with purchasers request(s) for personnel qualifications or certifications
- Exceptions and clarifications
- Financial stability of bidder
- Local representation of the manufacturer
- Serviceability of the proposed apparatus
- Service capabilities of the bidder's local representative
- Compliance with NFPA 1901
- Any other factor the purchaser deems relevant

After the evaluation and award process is complete, all bidders shall be notified of the results and securities shall be returned.

NFPA 1901

The National Fire Protection Association “Standard for Automotive Fire Apparatus” is hereby adopted and made a part of these specifications, the same as if it were written out in full detail, apart from the section dealing with “Equipment Recommended for Various Types of Apparatus”. Bidders shall provide the equipment requested herein and the buyer shall supply the rest before the apparatus is put into service. It is the intent of the purchaser to purchase an apparatus that meets 100% of the minimum standards defined and outlined in NFPA 1901. There are to be no exceptions to this requirement.

INSPECTION CERTIFICATE – NFPA 1901 COMPLIANCE

An OEM inspection certificate for the apparatus shall be furnished upon delivery. The purpose of this NFPA 1901 compliance inspection shall be to serve as proof to the customer that all applicable standards have been met or exceeded by the responsible manufacturer.

The following objectives shall be achieved as a result (this listing shall not be construed as being all inclusive):

- Ensure that understanding of all parties’ respective responsibilities have been addressed by the actual referencing of NFPA 1901 and the amendments in these specifications and the purchase contract and documentation.
- Ensure that only structural materials complying with appropriate standards and codes are used for construction.
- Ensure the applicable standards of design and manufacturing have been met or exceeded.
- Ensure that safety factors have been met or exceeded where required.
- Ensure that applicable standards for testing and inspection have been met or exceeded by personnel with the appropriate qualifications, experience, and certifications.
- Ensure that where applicable components, equipment, and loose equipment carry the appropriate characteristics, classifications, and/or certifications.
- Ensure that in general and all applicable requirements set forth in NFPA 1901, and those codes, standards, and specifications referenced by said parties are met, exceeded, and/or addressed.

CONSTRUCTION DOCUMENTATION

The contractor shall supply, at the time of delivery, at least one (1) copy of the following documents:

1. The manufacturer's record of apparatus construction details, including the following information:
    - Owner’s name and address
    - Apparatus manufacturer, model, and serial number

- Chassis make, model, and serial number
- GAWR of front and rear axles
- Front tire size and total rated capacity in pounds
- Rear tire size and total rated capacity in pounds
- Chassis weight distribution in pounds with water and manufacturer mounted equipment (front and rear)
- Engine make, model, serial number, rated horsepower, related speed, and governed speed
- Type of fuel and fuel tank capacity
- Electrical system voltage and alternator output in amps
- Battery make, model, and capacity in cold cranking amps (CCA)
- Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
- If applicable, the pump make, model, rated capacity in gallons or liters per minute, and serial number
- Pump transmission make, model, serial number, and gear ratio, if unit is equipped with a pump
- Water tank certified capacity in gallons
- Paint manufacturer and paint number(s)
- Company name and signature of responsible company representative

2. Certification of slip resistance of all stepping, standing, and walking surfaces
3. A copy of the following shall be provided: pump manufacturers certification of suction capability, apparatus manufacturers approval for stationary pumping applications, engine manufacturers certified brake horsepower curve showing the maximum governed speed, pump manufacturers certification of the hydrostatic test, and the certification of inspection and test for the fire pump
4. If the apparatus has a fixed line voltage power source, the certification of the test for the fixed power source
5. Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus (with the water tank full but without personnel, equipment, and hose)
6. Written load analysis and results of the electrical system performance tests
7. Certification of water tank capacity

OPERATION AND SERVICE DOCUMENTATION

The contractor shall supply at the time of delivery, at least two (2) sets of complete operation and service documentation covering the completed apparatus as delivered and accepted. The documentation shall address at least the inspection, service, and operations of the fire apparatus and all major components thereof. The contractor shall also provide documentation of the following items for the entire apparatus and each major operating system or major component of the apparatus:

- Manufacturers name and address
- Country of manufacturer
- Source of service and technical information
- Parts and replacement information
- Descriptions, specifications, and ratings of the chassis, pump, and device
- Wiring diagrams for low voltage and line voltage systems to include the following information: representations of circuit logic for all electrical components and wiring, circuit identification, connector pin identification, zone location of electrical components, safety interlocks, alternator battery power distribution circuits, and input/ output assignment sheets or equivalent circuit logic implemented in multiplexing systems
- Lubrication charts
- Operating instructions for the chassis, any major components such as a pump or device, and any auxiliary systems
- Precautions related to multiple configurations of devices, if applicable

- Instructions regarding the frequency and procedure for recommended maintenance
- Overall apparatus operating instructions
- Safety considerations
- Limitations of use
- Inspection procedures
- Recommended service procedures
- Troubleshooting guide
- Apparatus body, chassis, and other component manufacturers warranties
- Special data required by this standard
- Copies of required manufacturer test data or reports, manufacturer certifications, and independent third-party certifications of test results
- A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus
- One (1) copy of the FAMA Safety Guide

The contractor shall deliver with the apparatus all manufacturers' operations and service documents supplied with components and equipment that are installed or supplied by the contractor.

STATEMENT OF EXCEPTIONS

The proposed apparatus as described in this specification document and all related material with the bid package shall meet or exceed all applicable sections for the category of apparatus as defined by NFPA 1901 unless specifically noted within this specification or other official documents associated with this bid.

Should any area, section or portion of the apparatus not meet the intent and applicable requirements, a clearly defined listing or explanation of what and why compliance was not achieved shall be provided to the purchaser at the time of delivery.

OWNER'S MANUAL

An owner's manual containing the construction, operation, and service documentation shall be provided on a USB Drive. One (1) copy of the USB shall be provided with the apparatus.

ELECTRICAL MANUAL

A complete electrical manual for the apparatus shall also be provided on the USB Drive. This manual shall be specifically prepared for this individual unit rather than a generic schematic manual designed to accommodate all apparatus. The electrical manual shall also include electrical schematics, harness layouts, V-MUX specifications (including Node Input/output Spreadsheet and Node Relationship Spreadsheet), and Master Wire Listing. A contact letter shall also be provided by the electrical engineer, who built the manual, with instructions on using the manual and contact information for assistance with electrical manual questions.

ELECTRICAL SCHEMATICS

A section of the electrical manual shall include schematics of the electrical system and components on the apparatus. These schematics shall be specifically prepared for this individual unit rather than a generic schematic designed to accommodate all apparatus.

PUMP PLUMBING SCHEMATICS

A section of the electrical manual shall include a schematic of the pump plumbing. This schematic shall be specifically prepared for this individual unit rather than a generic schematic designed to accommodate all apparatus.

FIRE APPARATUS SAFETY GUIDE

One (1) printed copy of the FAMA Fire Apparatus Safety Guide shall be provided with the apparatus. This guide provides safety instructions for operations of the fire apparatus.

MISCELLANEOUS EQUIPMENT ALLOWANCE

The Gross Axle Weight Rating (GAWR) and the Gross Combined Weight Rating (GCWR) or Gross Vehicle Weight Rating (GVWR) of the chassis shall be adequate to carry the weight of the unequipped apparatus with the water tank and other tanks full, specified hose load, unequipped personnel weight, ground ladders, and miscellaneous equipment allowance of 2,000 pounds.

VEHICLE STABILITY

The apparatus shall comply in accordance with NFPA 1901, current edition requirements as it applies to vehicle stability. The apparatus as described in the specification provided within the bid package shall be classified into one of the following categories:

- The apparatus shall go through actual tilt table testing which shall be determined by the apparatus manufacturer.
- The apparatus shall be equipped with a rollover stability control system as defined in section 4.13.1.2 of NFPA 1901.
- The apparatus shall be deemed a similar apparatus and meeting the intent of section 4.13.1.1.2 of NFPA 1901.

INDEPENDENT THIRD-PARTY PUMP CERTIFICATION

The fire pump shall be tested and certified by an independent third-party testing company. Tests shall be conducted so that the pump performs as listed 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% of rated capacity at 165 pounds net pressure

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 spots as outlined in accordance with NFPA 1901, current edition. The pump shall be free from objectionable pulsation and vibration.

PUMP CERTIFICATION

The pump shall be certified in U.S. gallons per minute (GPM).

ONLINE CUSTOMER INTERACTION

The fire department shall be able to view digital photos of their apparatus in the specified phases of construction.

The following phases will be captured and displayed:

- Chassis arrival to the OEM
- Fabrication
- Pump and Plumbing
- Paint
- Assembly

- Completion of production

The photos shall be uploaded to a secure website, only accessible to the customer and representatives of the OEM.

PRE-CONSTRUCTION MEETING

A pre-construction meeting shall be required and shall be held online. The pre-construction meeting is the most important meeting during the after-sale production process. The purpose of this meeting is to finalize all aspects of the specifications, discuss and clarify all design details of the apparatus and to share or provide all information so all parties agree on the apparatus being constructed. The goal of the pre-construction meeting is for the purchaser and dealer representative(s) to discuss and clarify all aspects of the proposed apparatus and to provide all necessary information to the apparatus manufacturer that shall ensure the apparatus is built to the satisfaction of all parties involved.

The apparatus manufacturer shall create and forward to the dealer a “Pre-construction” document containing the following items:

- Complete specifications of the apparatus including the chassis
- Detailed amp draw report
- Listing of clarifications or questions from the manufacturer that require attention (shelf locations, lettering details, etc.)
- A preconstruction drawing shall be provided that encompasses all views on a single page

During this preconstruction meeting, any changes or clarifications must be documented on a manufacturer issued change order. The change order shall be signed by the customer and dealership and ultimately by the apparatus manufacturer. The change order becomes an extension of the contract with the official signatures of all three parties. All change order items resulting from the preconstruction meeting shall be implemented into the official shop order document.

FINAL INSPECTION

The department/dealer representative will inspect the final apparatus prior to it leaving the apparatus body manufacturer's facility. This will allow any changes that may be required to be made in a timely manner. After leaving the facility, all repairs or alterations will be performed by either the dealer or an OEM-approved service center.

VEHICLE

CAB AND CHASSIS

The cab and chassis shall be a two (2) door chassis. It shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time. The cab shall be capable of seating up to two (2) firefighters and consist of a conventional chassis.

CAB AND CHASSIS LABELING LANGUAGE

The cab and chassis shall include the applicable caution, warning, and safety notice labels with text to be written in English. All applicable caution, warning, and safety notice labels shall be Innovative Controls brand. Where applicable to the location within the specific layout and label package of the cab and chassis, the labels shall include decorative chrome bezels. Designs shall include bezels that fit individual labels or packaged configurations of labels in certain common locations.

The following labels shall be Innovative Controls brand, each including a decorative chrome bezel

(where applicable):

- Shoreline
- Air Conditioner
- Air Compressor Breaker
- Battery Conditioner Breaker
- Helmet Caution
- Horn Tag
- Q2B Tag
- Load Center Plate
- Not a Step Label
- Occupancy Tag
- Do Not Move
- Occupants Must Be Seated
- Do Not Stand
- Danger Do Not Weld
- DEF Fill Access
- Battery Direct
- Kneeling
- IFS Air Fault
- Engine Brake
- Retarder
- LR 100 Amp Node
- 300 Amp EPU
- 100 Amp Front O/R Node
- 100 Amp T/T Node
- 100 Amp RR O/R Node
- 10 Amp EPU
- Master Power
- 12-volt Power
- Pump In Drive
- Windshield Washer Fluid

COUNTRY OF SERVICE

The chassis shall be put in service in the country of United States of America (USA).

The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis.

APPARATUS TYPE

The apparatus shall be a rescue vehicle designed for emergency service use which shall include the functions of a multipurpose vehicle which primarily provides support services at emergency scenes.

VEHICLE TYPE

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

MAXIMUM OVERALL HEIGHT

The overall height of the apparatus shall not exceed 132” (11’) from the ground. This measurement shall be taken with the tires properly inflated and with the apparatus in unloaded condition to ensure a maximum overall height. To provide the maximum overall height, proposed units using calculated weight to achieve a lower overall height shall not be accepted. The measurement shall be taken at the highest point of the apparatus.

MAXIMUM OVERALL LENGTH

The overall length of the apparatus shall not exceed 443” (36’ 11”).

WHEELBASE

The wheelbase of the apparatus shall not exceed 265” (22’ 1”).

ANGLE OF APPROACH

The angle of approach of the apparatus shall be a minimum of 8.00 degrees.

ANGLE OF DEPARTURE

The angle of departure of the apparatus shall be a minimum of 8.00 degrees.

AXLE CONFIGURATION

The chassis shall feature a 6 x 2 axle configuration consisting of two rear drive axles and a single front steer axle.

GROSS VEHICLE WEIGHT RATING

The gross vehicle weight rating (GVWR) of the chassis shall not exceed 72,000 pounds.

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall exceed 20,000 pounds.

This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

GROSS AXLE WEIGHT RATINGS REAR

The rear gross axle weight rating (GAWR) of the chassis shall exceed 52,000 pounds.

This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

PUMP PROVISION

The chassis shall include provisions to mount a drive line pump in the middle of the chassis, behind the cab, more commonly known as the midship location. The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis. The entire pump shall be assembled and tested at the pump manufacturer's factory. The pump shall be driven by a drive line from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance. The fire pump and related plumbing on the specified apparatus shall be installed in accordance with applicable NFPA 1901 guidelines at the time the contract was placed.

Chassis driveline pump provisions shall include an interlock feature for automatic setting of the park brake when the vehicle is shifted into pump mode while the transmission is in neutral, and the transmission output speed translates to less than 1 mph. When the conditions are met the driver’s side parking brake valve shall activate. Once shifted to road mode the condition for electric automatic brake engagement is no longer present and the driver’s parking brake control valve shall function normally.

WATER CAPACITY

The chassis shall include a carrying capacity of 3,000 U.S. gallons. The water tank shall be supplied and installed by the apparatus manufacturer.

CAB

CAB STYLE

The cab shall be a two (2) door commercial cab.

OCCUPANT PROTECTION

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

The system components shall include:

- Driver steering wheel airbag
- Large driver, passenger, and crew area side curtain airbags
- APS advanced seat belt system - retractor pre-tensioners tighten the seat belts around the occupants, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries
- Heavy truck Restraints Control Module (RCM) - receives inputs from the outboard sensors, selectively deploys APS systems, and records sensory inputs immediately before and during a detected qualifying event
- Integrated outboard crash sensors mounted at the perimeter of the vehicle - detects a qualifying front or side impact event and monitors and communicates vehicle status and real time diagnostics of all critical subsystems to the RCM
- Fault-indicating Supplemental Restraint System (SRS) light on the driver's instrument panel

Frontal impact protection shall be provided by the outboard sensors and the RCM. In a qualifying front impact event, the outboard sensors provide inputs to the RCM. The RCM activates the steering wheel airbag, and advanced seat belts for each occupant in the cab.

Rollover, side impact, and ejection mitigation shall be provided by the outboard sensors and the RCM. In qualifying rollover or side impact events the outboard sensors provide inputs to the RCM. The RCM activates the side curtain airbags and advanced seat belts for each occupant in the cab. The RCM measures roll angle, lateral acceleration, and roll rate to determine if a rollover event or side impact event is imminent or occurring.

In the event of a qualifying offset or other non-frontal impact, the RCM shall determine and intelligently deploy the front impact protection system, the side impact protection system, or both front and side impact protection systems based on the inputs received from the outboard crash sensors.

CAB PAINT EXTERIOR

The cab exterior shall be painted a single color - as specified in "Cab Paint Primary Color".

CAB PAINT PROCESS/MANUFACTURER

The cab shall be painted with Sikkens paint prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces. All metal surfaces on the cab shall be mechanically etched by sanding disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once all imperfections on the exterior surfaces are removed and sanded smooth, body fillers shall be applied to the cab on all surfaces that require a critically aesthetic finish and sanded smooth.

The entire cab shall then be coated with a high-quality base primer that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be sanding the cab to a smooth finish followed by sealing the seams with an automotive seam sealer. The minimum thickness of the primer coat after sanding shall be 2.50 mils with a maximum thickness of 5.00 mils.

The cab shall then be painted the specific color(s) designated by Tehama County Fire Department with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric

chemicals found on an emergency scene. The paint shall have a minimum thickness of 1.00 mils with a maximum of 4 mils, followed by a clear topcoat with a minimum of 2.5 mils and a maximum of 3.5 mils. The entire cab shall then be baked to speed the curing process of the coatings.

CAB PAINT PRIMARY COLOR

The paint color shall be Sikkens FLNA 32545 Red, or a very similar matched red color.

CAB PAINT WARRANTY

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase or in service or the first 100,000 actual miles, whichever occurs first.

The warranty details can be found in the chassis warranty document.

CAB INSULATION

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

UNDER CAB INSULATION

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

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

CAB STRUCTURAL WARRANTY

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

ELECTRICAL POWER DISTRIBUTION

ELECTRICAL SYSTEM

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

OEM WIRING

The wiring system shall include a prewire for ECM park brake input and engine ground return circuits located behind the switch panel. The circuits shall include an extra 2.00 feet of wire and shall be labeled "ECM Park Brake Input".

MULTIPLEX DISPLAY

The multiplex electrical system shall include a full color LCD display screen and shall be recess mounted in the cab dash. The LCD display screen shall include a message bar displaying the time of day and important messages requiring acknowledgement by the user which shall all be displayed on the top of the screen in the order they are received. The display screen shall be video ready for a back-up camera. The LCD display should offer varying fonts and background colors. The display should be fully programmable to the needs of the Tehama County Fire Department and should offer virtually infinite flexibility for screen configuration options.

LOAD MANAGEMENT SYSTEM

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

DATA RECORDING SYSTEM

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

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status
- Seat Belt Status
- Master Optical Warning Device Switch Position
- Time
- Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system. The laptop connection shall be a panel mounted female type B USB connection point, remotely mounted in the left side foot well.

ACCESSORY POWER

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

AUXILIARY ACCESSORY POWER

An auxiliary set of power and ground studs shall be provided and installed behind the electrical center cover with a 40-amp breaker. The studs shall be 0.38-inch diameter and capable of carrying up to a 40-amp load switched with the master power switch.

EXTERIOR ELECTRICAL TERMINAL COATING

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

ENGINE

ENGINE

The chassis engine shall be a Cummins four-cycle diesel-powered engine. The engine shall offer a minimum rating of 565 horsepower. The torque rating shall feature a minimum of 1650-foot pounds of torque.

The engine shall feature a VGT™ Turbocharger, a high-pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the current emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.

The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand Citgard 500, or equivalent SAE 15W40 CK-4 low ash engine oil which shall be utilized for proper engine lubrication.

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

DIESEL PARTICULATE FILTER CONTROLS

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

ENGINE PROGRAMMING HIGH IDLE SPEED

The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with a manual and automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate at approximately 1250 RPM, to increase alternator output. This device shall operate only when the engine is running, and the transmission is in neutral with the parking brake set. The device shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually or automatically re-engage when the brake is released, or when the transmission is placed in neutral. There shall be an indicator for the high idle speed control.

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

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

AUXILIARY ENGINE BRAKE

A compression brake, for the six (6) cylinder engine shall be provided. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine compression brake shall activate upon 0% accelerator when in operation mode and actuate the vehicle’s brake lights.

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

AUXILIARY ENGINE BRAKE CONTROL

An engine compression brake control device shall be included. The electronic control device shall

monitor various conditions and shall activate the engine brake only if all the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

The compression brake shall be controlled via an off/low/medium/high switch. The multiplex system shall remember and default to the last engine brake control setting when the vehicle is shut off and re-started.

ELECTRONIC ENGINE OIL LEVEL INDICATOR

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

ENGINE DRAIN PLUG

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

ENGINE WARRANTY

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

REMOTE THROTTLE HARNESS

An apparatus interface wiring harness for the engine and transmission pump interlocks shall be supplied with the chassis. The harness shall include a connector for connection to a chassis pump panel harness supplied by the body builder and shall terminate in the left frame rail behind the cab for connection by the body builder. The harness shall include circuits deemed for a pump panel and shall contain circuits for a hand throttle, and a multiplexed gauge. Separate circuits shall also be included for a pump control switch, “Pump Engaged” and “OK to Pump” indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, clean power, customer ignition, air horn solenoid switch, high idle switch and high idle indicator light.

The harness shall contain interlocks that will prevent shifting to road or pump mode unless the transmission output speed translates to less than 1 mph and the transmission is in neutral. The shift to pump mode shall also require the park brake be set.

ENGINE PROGRAMMING REMOTE THROTTLE

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

ENGINE PROGRAMMING IDLE SPEED

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

ENGINE AIR INTAKE

The engine air intake system shall include an ember separator. This ember separator shall be designed to protect the downstream air filter from embers using a combination of unique flat and crimped metal

screens packaged in a heavy-duty galvanized steel frame. This multilayered screen shall trap embers and allow them to burn out before passing through the pack.

The engine air intake system shall also include an air cleaner mounted above the radiator. This air cleaner shall utilize a replaceable dry type filter element designed to prevent dust and debris from being ingested into the engine. A service cover shall be provided on the housing, reducing the chance of contaminating the air intake system during air filter service.

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

COOLING

ENGINE FAN DRIVE

The engine cooling system fan shall incorporate a thermostatically controlled, Horton fully variable type fan drive with SmartClutch J-1939 CAN controller. The clutch fan shall override the thermostatic variable speed and function as full on automatically in pump mode.

The variable speed fan clutch only engages at the amount needed for proper cooling to facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail-safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure. The fan speed shall include a J-1939 CAN clutch controller to receive signal from the engine control module to activate at variable rates of speed. Variable speeds shall be set through thermostatic and engine speed signals to run as efficiently and quietly as required to maintain temperature.

ENGINE COOLING SYSTEM

The engine's cooling system shall maintain a temperature in the engine at or below the engine manufacturer's maximum temperature rating under all conditions for which the apparatus is designed under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements.

Readily accessible drain valves shall be installed at the lowest point of the cooling system and at such other points as are necessary to permit complete removal of the coolant from the system. Drain valves shall be designed or positioned such that they will not open accidentally. The radiator shall be mounted to prevent the development of leaks caused by twisting or straining where the apparatus operates over uneven ground.

ELECTRONIC COOLANT LEVEL INDICATOR

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

COOLANT HOSES

The cooling systems hose shall be formed silicone hose and formed aluminized steel tubing and include stainless steel constant torque band clamps.

ENGINE COOLANT OVERFLOW BOTTLE

A remote engine coolant overflow expansion bottle shall be provided in the case of over filling the coolant system. The overflow bottle shall capture the expansion fluid or overfill rather than allow the fluid to drain on the ground.

EXHAUST

ENGINE EXHAUST SYSTEM

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

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

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

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

DIESEL EXHAUST FLUID TANK

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

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

ENGINE EXHAUST ACCESSORIES

An exhaust temperature mitigation device shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation device shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.

ENGINE EXHAUST WRAP

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

The exhaust flex joint shall not include the thermal exhaust wrap.

EMISSIONS SYSTEMS WARRANTY

Purchaser shall receive a Regulated Emissions Systems Five (5) Years, or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0140. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

TRANSMISSION

TRANSMISSION

The drive train shall include an Allison Model EV 4500 torque converting, automatic transmission which shall include electronic controls.

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

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will select the fifth speed operation without the need to press the mode button.

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

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

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

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

TRANSMISSION COOLING SYSTEM

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling.

TRANSMISSION DRAIN PLUG

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

TRANSMISSION WARRANTY

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

POWER TAKE OFF (PTO)

The transmission shall have a power take off mounting location for the apparatus fire pump.

MIDSHIP PUMP / GEARBOX

A temporary jackshaft driveline shall be installed by the chassis manufacturer to accommodate the midship split shaft pump as specified by the apparatus manufacturer. Holes shall be provided in the frame as specified by the OEM for mounting the pump module.

MIDSHIP PUMP / GEARBOX MODEL

The midship pump/gearbox provisions shall be for a Hale QMAX single staged side mount pump.

PUMP SHIFT CONTROLS

One (1) pump shift control panel shall be mounted on the driver’s dash panel. The following shall be provided on the panel: a three (3) position locking toggle switch; an engraved PUMP ENGAGED identification light; and an engraved OK TO PUMP identification light. The pump shift control panel shall be black with a yellow border outline. One (1) label indicating pump instructions and the transmission

shift selector position used for pumping shall be provided and located so it can be read from the driver's position per NFPA 16.10.1.3. The road mode shall be selected when the switch is in the up position and pump mode shall be selected when the switch is in the down position.

The center switch position shall exhaust air from both pump and roadsides of the pump gear box shift cylinder.

PUMP SHIFT CONTROL PLUMBING

Air connections shall be provided from the air supply tank to the pump shift control valve and from the pump shift control valve to the frame mounted bracket. The frame mounted bracket shall include labeling identifying the pump and road connection points with threaded 0.25-inch NPT fittings on the solenoid for attaching the installed pump. The air supply shall be pressure protected from service brake system.

FUEL SYSTEMS

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a fuel filter/water separator. The fuel filter/water separator shall have a drain valve. A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

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

FUEL LINES

The fuel system supply and return lines installed from the fuel tank to the engine shall be black textile braided lines which are reinforced with braided high tensile steel wire. The fuel lines shall be connected with reusable steel fittings.

FUEL COOLER

An aluminum cross flow air to fuel cooler shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel cooler shall be located above the rear axle.

FUEL TANK

The fuel tank shall have a minimum capacity of sixty (60) gallons and shall be baffled. The baffled tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

FUEL TANK SERVICEABILTY PROVISIONS

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

FUEL TANK DRAIN PLUG

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

FRONT AXLE

FRONT AXLE

The front axle shall be an easy steer non-drive front axle. The axle shall include a conventional style

hub with a standard knuckle. The weight capacity for the axle shall be rated to 20,000 pounds.

FRONT AXLE WARRANTY

The front axle shall be warranted for five (5) years with unlimited miles under the general service application. Details of the warranty shall be provided on a PDF document.

FRONT WHEEL BEARING LUBRICATION

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

FRONT SUSPENSION

FRONT SHOCK ABSORBERS

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

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

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

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

FRONT SUSPENSION

The front suspension shall include leaf spring pack with the spring capacity shall be rated at 20,000 pounds.

STEERING

STEERING AND POWER STEERING

Power-steering or power-assisted steering shall be provided. The steering mechanism shall be capable of turning the front wheels to an angle of at least 30-degrees to either the right or the left.

STEERING COLUMN/ WHEEL

The cab shall include a steering column which has position tilt, telescopic adjustment. A steering wheel shall be located at the driver’s position. The steering wheel shall be covered with black polyurethane foam padding. The steering column shall also contain a horn button, self-canceling turn signal switch, four-way hazard switch, and headlamp dimmer switch.

CHASSIS ALIGNMENT

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

REAR AXLES

REAR AXLES

There shall be two (2) rear drive axles. The axles shall include precision forged, single reduction differential gearing, and shall have a rated capacity of 52,000 pounds.

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

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

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR AXLE WARRANTY

The rear axle shall be warranted by Meritor for five (5) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

REAR AXLE DIFFERENTIAL CONTROL

A driver controlled differential lock shall be installed on the rear axle. This feature shall allow the main differential to be locked and unlocked when encountering poor road or highway conditions, where maximum traction is needed, for use at speeds no greater than 25 MPH. The differential lock shall be controlled by a locking rocker switch on the switch panel. The light on the switch shall illuminate with positive engagement of the differential control.

VEHICLE TOP SPEED

The rear axle shall be geared for a top speed of 60 MPH at engine governed RPM to comply with NFPA-1901, 2016 Edition - 4.15.3.

REAR SUSPENSION

REAR SUSPENSION

The rear suspension shall feature capacity be rated to meet or exceed 52,000 pounds.

TIRES

TIRE INTERMITTENT SERVICE RATING

The chassis shall be rated using Intermittent Service ratings provided to the emergency vehicle market by the tire manufacturers as the basis for determining the maximum vehicle load and speed.

FRONT TIRES

The front tires of the fire apparatus shall not carry a weight in excess of the recommended load for the operation of truck tires of the size used, or as recommended by the tire manufacturer when the apparatus is loaded to its GVWR. The front tires shall be tubeless radial with all weather service tread. The front tires shall be stamped with the load capacity per tire and the speed rating.

REAR TIRES

The rear tires of the fire apparatus shall not carry a weight in excess of the recommended load for the operation of truck tires of the size used, or as recommended by the tire manufacturer when the apparatus is loaded to its GVWR. The front tires shall be tubeless radial with all weather service tread. The front tires shall be stamped with the load capacity per tire and the speed rating.

TIRE PRESSURE INDICATOR

There shall be electronic chrome LED valve caps shipped loose for installation by the OEM which shall illuminate with a red LED when tire pressure drops 8 PSI provided. The valve caps are self-calibrating and set to the pressure of the tire upon installation.

WHEELS

FRONT WHEEL

The front wheels of the fire apparatus shall not carry a weight in excess of the recommended load for the operation of truck tires of the size used, or as recommended by the tire manufacturer when the apparatus is loaded to its GVWR.

The front wheels shall be Alcoa hub piloted aluminum wheels, featuring a mirror polish on the outer face. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

REAR WHEEL

The rear wheels of the fire apparatus shall not carry a weight in excess of the recommended load for the operation of truck tires of the size used, or as recommended by the tire manufacturer when the apparatus is loaded to its GVWR.

The rear wheels shall be Alcoa hub piloted aluminum wheels, featuring a mirror polish on the outer face. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

BALANCE WHEELS AND TIRES

All of the wheels and tires, including any spare wheels and tire assemblies, shall be dynamically balanced.

WHEEL TRIM

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

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

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

WHEEL GUARDS

The rear dual wheels shall include a plastic isolator approximately 0.04 thick installed between the inner and outer wheel to help prevent corrosion caused by metal-to-metal contact.

BRAKES

BRAKE SYSTEM

The braking system shall be capable of stopping the vehicle when the apparatus is loaded to its GVWR. All brakes shall be readily accessible for adjustment and shall include an automatic moisture ejector and an air dryer. The braking system shall also have a pressure protection valve to prevent all air-operated accessories from drawing air from the air brake system when the air system's pressure drops below 80 PSI. Additionally, a quick buildup section in the air reservoir system arranged so that if the apparatus has a completely discharged air system, it is able to move within 60 seconds of startup.

An inversion valve shall be installed to provide a controlled service brake application during an unlikely event including primary air supply loss. All air reservoirs provided on the chassis shall be labeled for identification. The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.

A four (4) sensor, four (4) modulator Anti-lock Braking System (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

PARK BRAKE

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

PARK BRAKE CONTROL

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted in the center switch panel.

REAR BRAKE SLACK ADJUSTERS

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

AIR DRYER

The brake system shall include an air dryer with an integral heater with a sealed connector. The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air

dryer purge valve during the compressor “unload” cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be mounted behind the battery box on the left-hand side.

AIR SUPPLY SYSTEMS

AIR GOVERNOR

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

AUXILIARY AIR COMPRESSOR

A Kussmaul 12-volt air compressor shall be supplied. The compressor system shall be designed to maintain the air pressure in the air system while not in use. A pressure switch shall sense air pressure drop and engage the compressor which shall run until the pressure is restored.

AUXILIARY AIR COMPRESSOR LOCATION

The auxiliary air compressor shall be located inside the pump module.

MOISTURE EJECTORS

Manual pet-cock type drain valves shall be installed on all reservoirs of the air supply system.

AIR SUPPLY LINES

The air system on the chassis shall be plumbed with color coded reinforced nylon tubing air lines. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

AIR INLET CONNECTION

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

AIR INLET LOCATION

The air inlet shall be installed in the left-hand side of the apparatus.

AIR OUTLET CONNECTION

A quick release air outlet female connector shall be installed under the cab on the driver’s side rear corner for the use of auxiliary air tools.

PLUMBING AIR OUTLET CONNECTION

The cab mounted air outlet connection shall be plumbed to the chassis auxiliary air system reservoir.

FRAME

WHEELBASE

The chassis wheelbase shall be no greater than 265.00 inches.

FRAME

The frame shall consist of single rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a “C” channel. Each rail shall be constructed of 110,000 PSI minimum yield high strength low alloy steel.

FRAME PAINT

The frame rails shall be powder coated black prior to assembly and attachment of any components. The components that shall be powder coated black shall include the main frame “C” channel or channels.

The frame parts shall be powder coated black prior to any attachment of components. Parts which shall be powder coated shall include but are not limited to:

- Steering gear bracket
- Front splayed rails and fish plates
- Bumper extensions
- Cross members
- Cross member gussets
- Fuel tank mounting brackets
- Fuel tank straps
- Air tanks
- Air tank mounting brackets
- Exhaust mounting brackets
- Air cleaner skid plate
- Radiator skid plate
- Battery supports, battery trays and battery covers

Other under carriage components which are received from the suppliers with coatings already applied shall include but are not limited to:

- Suspension components
- Front and rear axles

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

The chassis under carriage consisting of frame, axles, driveline running gear, air tanks and other assorted chassis mounted components shall then be painted the primary lower cab color. Paint shall be applied prior to airline and electrical wiring installation.

FRAME WARRANTY

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

BUMPER

FRONT BUMPER

The chassis shall include a chrome front bumper that will accommodate a Federal Q2B siren and a Federal Signal model ES 100 siren speaker.

FRONT BUMPER FINISH

The front bumper shall be chrome.

MECHANICAL SIREN

The front bumper shall include an electromechanical Federal Q2B™ siren, which shall be streamlined, chrome-plated and shall produce 123 decibels of sound at 10.00 feet. The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances. The siren shall include mounting hardware for a flush mount in the front bumper.

MECHANICAL SIREN LOCATION

The siren shall be flush mounted on the passenger side of the front fascia of the bumper, in the extreme outboard position.

AIR HORN

The apparatus shall include one (1) Grover Model 1510 Stuttertone Air Horn or equivalent. The air horn shall be trumpet-style with a chrome finish on the exterior and a painted finish deep inside the trumpet and shall be controlled by a chassis manufacturer supplied lanyard.

AIR HORN LOCATIONS

The air horn shall be mounted on the passenger exterior sides of the engine compartment hood.

AIR HORN RESERVOIR

One (1) air reservoir, with a 1,200 cubic inch capacity, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

ELECTRONIC SIREN SPEAKER

There shall be one (1) Federal Signal Inc. Dynamax, model ES100C, 100-watt speaker provided. The speaker shall measure 5.90 inches tall X 5.50 inches wide X 2.30 inches deep. The speaker shall include a Federal Signal “Electric F” style grille which shall measure 6.61 inches tall X 6.78 inches wide.

ELECTRONIC SIREN SPEAKER LOCATION

The siren speaker shall be flush mounted on the driver’s side of the front fascia of the bumper, in the extreme outboard position.

FRONT BUMPER TOW EYES

The bumper shall include two tow eyes that shall be accessible through the front bumper.

CAB INTERIOR

CLIMATE CONTROL

A combination defroster and cabin heating and air conditioning system shall be included with the apparatus.

INTERIOR TRIM

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

POWER POINT DASH MOUNT

The cab shall also include two (2) dual universal serial bus (USB) charging receptacles in the cab dash switch panel to provide a power source for USB chargeable electrical equipment. The receptacles shall be wired battery direct.

CENTER CONSOLE

A center console box shall be installed between the driver and passenger seats. The top of the center console shall be hinged to open to allow access for electronics installation. The top face of the console shall be designed as the switch panel for all emergency light switches/siren controller and allow for installation of a Bendix King M-150 two-way radio.

AUXILIARY POWER POINT – CENTER CONSOLE

The cab interior shall include two (2) 12-volt USB type receptacles to provide a power source for 12-volt electrical equipment. The receptacles shall be connected directly to the batteries. The receptacle shall be prewired to the center console box with two (2) feet of additional length of wire.

RECHARGEABLE FLASHLIGHT POWER LEADS

Two (2) power leads shall be wired directly to the chassis batteries, for flashlights. The leads shall be installed on the front of the center counsel.

12V POWER LEAD DROP #1

One (1) 12-volt power lead drop with a 12-position Blue Sea Systems ST Blade ATO style fuse block with cover shall be provided. The power lead drop shall consist of one (1) hot and one (1) ground wire run to the ignition. The power lead drop shall be activated by the chassis ignition switch and have a minimum of a 30-amp fuse provided with the power circuit. The distribution panel shall be designed with a grounding pad and compact, lightweight construction. The distribution panel shall be capable of using ATC/ATO blade fuses or ATC style DC circuit breakers.

The outlet shall be located inside the center counsel inside chassis cab, behind the driver’s seat on the side of the engine tunnel.

CAB DOOR TRIM REFLECTIVE

The interior of each door shall include high visibility reflective tape. A white reflective tape shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes and the apparatus manufacture’s logo. The chevron tape shall measure 6.00 inches in height.

INTERIOR GRAB HANDLE FRONT DOORS

Each cab door shall include one (1) ergonomically contoured handle to assist personnel entering and exiting the cab.

INTERIOR TRIM SUNVISOR

The header shall include two (2) sun visors, one each side forward of the driver and passenger seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded vinyl trim.

CAB SEATS

SEAT BELT WARNING

A seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The warning system shall consist of an audible warning device that can be heard at all seating positions designed to be occupied while the vehicle is in motion and a visual display visible to the driver showing the condition of each seating position. The warning system shall activate when any seat is occupied with a minimum of 60 pounds. Once activated, the visual indicators and applicable audible alarm shall remain active until all occupied seats have the seat belts fastened.

SEAT MATERIAL

The seats shall include military grade high strength, wear resistant fabric made of durable material. The material for the seats shall resistant from UV ray damage and from being saturated or contaminated by fluids. The fabric shall include the integration of an antimicrobial agent, designed to resist toxicity and contaminants.

SEAT COLOR

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

DRIVER'S SEAT

The driver's seat shall be equipped with air suspension. The four-way seat shall feature vertical travel air suspension and manual fore and aft adjustment. The suspension control shall be located on the seat below the front of the cushion. The seat shall also feature integral springs to isolate shock.

The seat shall feature an All-Belts-to-Seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

SEAT BACK - DRIVER

The driver's seat shall include a standard seat back incorporating All-Belts-to-Seat feature (ABTS) as described above. The seat back shall have the ability to recline.

OCCUPANT PROTECTION - DRIVER

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

The driver's seating area APS shall include:

- Advanced seat belt system - retractor pre-tensioner tightens the seat belt around the driver, securing the occupant in the seat and the load limiter plays out some of the seat belt webbing to

reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.

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

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

PASSENGER SEAT

The passenger seat shall be equipped with a manual fore and aft adjustment. The seat shall feature an All-Belts-to-Seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver's position within easy reach of the occupant.

SEAT BACK – PASSENGER

The passenger seat shall include a standard seat back incorporating All-Belts-to-Seat feature (ABTS) as described above. The seat back shall have the ability to recline.

OCCUPANT PROTECTION - PASSENGER

The passenger position shall be equipped with an advanced protection system (APS). The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

The passenger seating area APS shall include:

- Advanced seat belt system - retractor pre-tensioner tightens the seat belt around the passenger, securing the occupant in the seat and the load limiter plays out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.
- Large side curtain airbag - protects the passenger's head, neck, and upper body from dangerous cab side surfaces and contact points with intrusive surfaces as a result of a collision as well as provides ejection mitigation protection to the passenger in a qualifying event by covering the window and the upper portion of the door.

CAB EXTERIOR

WINDSHIELD WIPER SYSTEM

The cab shall include a triple arm linkage wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers; each shall be affixed to a radial arm. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

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

message.

CAB DOOR HARDWARE

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of aluminum with a chrome plated finish. The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel. All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout. The exterior pull handles shall include a scuff plate behind the handle constructed of polished stainless steel to help protect the cab finish.

DOOR LOCKS

The cab entry doors shall include power door locks that are also manually actuated from the inside of the cab on the respective door.

CAB GRAB HANDLES

The cab shall include two (2) stainless-steel grab handles with a bright finish attached vertically to cab behind each cab door.

REARVIEW MIRRORS

Bus style mirrors shall be provided. The mirror heads shall be injection molded chrome plated ABS plastic. The mirrors shall be mounted one (1) on each the driver and passenger doors of the cab.

The mirrors shall feature an upper heated remote-controlled flat glass and a lower heated manually adjustable convex glass. The mirror control switches shall be located within easy reach of the driver. The mirrors shall be manufactured using the finest quality non-glare glass and shall feature a rigid mounting thereby reducing vibration. The mirrors shall be corrosion free under all weather conditions.

REARVIEW MIRROR HEAT SWITCH

The heat for the rearview mirrors shall be controlled through a switch.

EXTERIOR TRIM REAR CORNER

There shall be mirror finish stainless steel scuff plates on the outside corners at the back of the cab. The stainless-steel plate shall be affixed to the cab using two-sided adhesive tape.

ELECTRICAL SYSTEM

ELECTRICAL SYSTEM

Wiring harnesses shall be the automotive type, engineered specifically for the builder’s apparatus, and shall meet the following criteria. Under no circumstances shall diodes, resistors, or fusible links be located within the wiring harness. All such components shall be located in an easy to access wiring junction box or the main circuit breaker area. All wire shall meet white book, baseline advanced design transit coach specification and Society of Automotive Engineers recommended practices. It shall be stranded copper wire core with crosslinked polyethylene insulation complying with SAE specification J1128. Each wire shall be hot stamp function coded every three (3) inches starting one inch from the end and continuing throughout the entire harness. In addition to function coding, each wire shall be numbered, colored, and gauge coded.

Wire harnesses shall be protected by 275 degree Fahrenheit minimum high temperature flame retardant loom. All nodes and sealed Deutsch connectors shall be waterproof.

Harnesses shall be modular in design; main harness system subdivided into several smaller sub-

harnesses. The harness subsections shall be connected using Deutsch branded, heavy duty, environmentally sealed, connectors with silicone seals and a rear insertion/removal contact system. For isolation of electrical "zones" the harness subsections shall consist of a main harness, a pump harness with a separate pump gauge panel harness, a left body harness with a separate left compartment harness, a right body harness with a separate right compartment harness, and a rear body harness with two separate rear compartment harnesses.

The main harness and three body harnesses shall interconnect at a central, easy to reach location and their connectors shall not be obstructed by other harnesses or fuel/air lines. In addition, the main and body harness connectors shall be color-coded for ease of identification with their respective colors noted on the accompanying electrical diagrams.

Where connectors are not provided by the electrical component manufacturer, all 12-volt lights and other electrical components (excluding rocker and toggle switches) shall connect to the harnesses using Deutsch brand connectors; butt connectors are considered unacceptable.

All Deutsch connectors shall meet the following criteria:

- All connectors shall be rated for three feet submersion in water.
- Temperature range from -67 degree Fahrenheit to 257 degree Fahrenheit continuous at rated current.
- All contacts shall be soldered unless a crimping tool or machine is used that gives an even and precise pressure for the terminal being used.
- All contacts shall be pull-tested to ensure their integrity.

WEATHERPROOF DOOR SWITCHES

Because of the harsh environment and susceptibility to moisture on the fire ground, the fire apparatus compartment doors shall utilize weatherproof switches. No Exceptions.

The switches shall be used for activation of the compartment lights and to provide a signal to the door open circuit in the cab.

V-MUX ELECTRICAL MANAGEMENT SYSTEM

The apparatus shall be equipped with a V-MUX Multiplex System (V-MUX). There are several key benefits to multiplexing, one is to reduce the amount of connections in a vehicle's electrical system, because of this it is important to limit the number of modules that control certain functions of the vehicle.

V-MUX Outputs:

The outputs shall perform all the following items without added modules to perform any of the tasks:

- **Load Shedding:** The System shall have the capability to Load Shed with 8 levels of any output. This means you can specify which outputs (barring NFPA restrictions) you would like Load Shed. Level 1 – 12.9V, Level 2 – 12.5V, Level 3 – 12.1V, Level 4 – 11.7V, Level 5 – 11.3V, Level 6 –10.9V, Level 7 – 10.5V, Level – 10.1V. Unlike conventional load shedding devices, you can assign a level to any or all outputs. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- **Load Sequencing:** The System shall be able to sequence from 0 8 levels any output. With 0 being no delay and 1 being a 1-second delay, 2 being a 2-second delay and so on. Sequencing reduces the amount of voltage spikes and drops on your vehicle and can help limit damage to your charging system. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- **Output Device:** The System shall have solid-state output devices. Each solid-state output shall be a MOS-FET (Metal Oxide Semiconductor Field - Effect Transistors) ; MOS-FETs are solid-

state devices with no moving parts to wear out. A typical relay, when loaded to spec, has a life of 100,000 cycles. The life of a FET is more than 100 times that of a relay. No add-on modules shall be acceptable; the module with the outputs must perform this function.

- **Flashing Outputs:** The System shall be able to flash any output in either A or B phase, and logic is used to shut down needed outputs in park or any one of several combined interlocks. The flash rate can be selected at either 80 or 160 FPM. This means any light can be specified with a multiplex truck with no need to add flashers. Flashing outputs can also be used to warn of problems. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- **PWM:** The modules shall have the ability to PWM at some outputs so that a Headlight PWM module is not needed. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- **Diagnostics:** An output shall be able to detect either a short or open circuit.

V-MUX Inputs:

The inputs shall have the ability to be switched by a ground or battery signal. The inputs shall be filtered for noise suppression via hardware and software so that RF or dirty power will not trick an input into changing its status.

System Network:

The Multiplex system shall contain a Peer-to-Peer network. A Master-Slave Type network is not suitable for the Fire/Rescue industry. A Peer-to-Peer network means that all the modules are equal on the network; a Master is not needed to tell other nodes when to talk.

System Reliability:

The Multiplex system shall be able to perform in extreme temperature conditions, from -40° to +85° C (-40° to +185° F.) The system shall be sealed against the environment, moisture, humidity, salt or fluids such as diesel fuel, motor oil or brake fluid. The enclosures shall be rugged to withstand being mounted in various locations or compartments around the vehicle. The modules shall be protected from over voltage and reverse polarity. There shall be an override button for the backup alarm in the V-MUX.

12-VOLT SYSTEMS TEST

After completion of the unit, the 12-volt electrical system shall undergo a battery of tests as listed in NFPA 1901. These tests shall include, but not be limited to:

- Reserve capacity test
- Alternator performance test at idle
- Alternator performance test at full load
- Low voltage alarm test

Certification of the results shall be supplied with the apparatus at the time of delivery.

START / CHARGING SYSTEMS

IGNITION

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a one-quarter turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches.

Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the “ON” position.

The starter button shall only operate when both the master battery and ignition switches are in the “ON” position.

BATTERY CABLE

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

BATTERY JUMPER STUD

The starting system shall include battery jumper studs to allow the vehicle to be jump started or charged. These studs shall be located/mounted in an area to allow hassle free connection of jumper cables. A label stating “12V Jumper Studs” will be provided above the battery jump studs.

ALTERNATOR

The charging system shall include a 12-volt alternator. The alternator shall include a self-exciting integral regulator.

LINE VOLTAGE ELECTRICAL POWER DISTRIBUTION

BATTERY CONDITIONER

A Kussmaul Chief 6012 battery conditioner shall be supplied. The battery conditioner shall provide a 40-amp output for the chassis batteries and a 15-amp output circuit for accessory loads. The battery charger shall be located in the toolbox located below the driver's seat in the cab.

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted above the Kussmaul plug.

ELECTRICAL INLET

A Kussmaul 20-amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

A single item or an addition of multiple items must not exceed the rating of the electric inlet that it’s connected to.

ELECTRICAL INLET LOCATION

An electrical inlet shall be installed on the driver’s side pump panel, in a lower position.

ELECTRICAL INLET CONNECTION

The electrical inlet shall be connected to the battery conditioner.

ELECTRICAL INLET COLOR

The electrical inlet connection shall include a yellow cover.

LIGHTING

HEADLIGHTS

The front fascia shall include LED headlamps with separate high and low beams mounted in the front fenders. Each lamp shall include a heating system that de-ices the headlight.

FRONT TURN SIGNALS

The front fascia shall include two amber LED turn signals which shall be included in the headlight housing.

TAILLIGHTS

A Whelen M6 series LED taillight assembly with clear lenses shall be installed on each side of the rear of the apparatus. Each assembly shall include the following:

- One (1) red LED stop/tail combination light
- One (1) amber LED turn light with arrow
- One (1) clear LED backup light

The lights shall be mounted in a chrome plated four (4) light composite housing in a vertical position. The remaining slot in the housing shall be populated with a warning light specified in the warning light section.

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include two (2) clear lens LED side marker lights which shall be grommet mounted just behind the front fender radius corners.

MIDSHIP TURN SIGNALS

Two (2) TruckLite model 21 LED midship auxiliary/turn signal lights shall be installed in the rub rail, one (1) on each side of the body.

MARKER AND ICC LIGHTS

In accordance with FMVSS, there shall be five (5) clear lens LED cab marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level. The lights shall be amber in color, shall have clear lenses with chrome bezels.

CLEARANCE LIGHTS

Rectangular Truck-Lite red LED clearance lights shall be installed in the outside corners of the body and standard Grote LED red lights shall be installed in the center face of the rear tailboard. Clearance reflectors shall be placed on the apparatus where needed to keep the unit in full compliance with applicable ICC and DOT codes and regulations.

HEADLIGHT AND MARKER LIGHT ACTIVATION

The headlights and marker lights shall be activated upon engine startup.

LIGHTBAR SWITCH

The light bar shall be controlled through a switch located on the center console.

INTERIOR OVERHEAD LIGHTS

The cab shall include an LED dome lamp located over each door. The dome lamps shall be rectangular and activated by opening the respective door. The dome lights shall also be activated by individual push lenses on each lamp.

LIGHTBAR PROVISION

There shall be one (1) light bar installed on the cab roof. The light bar shall be provided and installed by

the chassis manufacturer. The light bar installation shall include mounting and wiring to a control switch on the cab dash.

CAB FRONT LIGHTBAR

The lightbar provisions shall be for one (1) Whelen Freedom IV Series, model F4N72 lightbar mounted centered on the front of the cab roof. The lightbar shall be 56.00 inches in length. The lightbar shall feature ten (10) red LED lights and two (2) clear LED lights. The center two red LED lights shall be steady burn. The clear lights shall be disabled with park brake engaged. The cable shall exit the lightbar on the right side of the cab.

SIDE SCENE LIGHTS

Eash side of the apparatus shall include two (2) Whelen M9 EZ Series LED scene lights, for a total of four (4) lights, which shall be surface mounted with a chrome bezel.

SIDE SCENE LIGHT LOCATION

The scene lighting located on the left and right sides of the apparatus shall be mounted in the upper portion of the apparatus water tank/hose bed, one mounted in the forward portion and one mounted in the rear portion of the apparatus body. The lights shall be mounted next to the side warning lights in the inboard position.

REAR SCENE LIGHTS

The rear of the apparatus shall include two (2) Whelen M9 EZ Series LED scene lights which shall be surface mounted with a chrome bezel.

REAR SCENE LIGHT LOCATION

The rear scene lighting shall be located on the upper left and upper right sides of the apparatus, mounted in the upper portion of the apparatus water tank/hose bed.

SCENE LIGHT ACTIVATION

Three (3) rocker switches with indicators shall be provided to activate the 12-volt scene light(s). The left-hand side lights, right hand side lights, and the rear lights shall each be individually switched. The switches shall be located on the cab control console.

PERIMETER GROUND LIGHTING

Whelen LED NFPA compliant ground lights shall be installed beneath the apparatus in areas where personnel may be expected to climb on and off the apparatus. The lights shall illuminate the ground within 30 inchesof the apparatus to provide visibility of any obstructions or hazards. These areas shall include, but not be limited to, side running boards, and the rear step area. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life. The lights shall be activated when the parking brake is set.

CAB GROUND LIGHTS

Each door shall include a LED ground light mounted to the underside of the cab step below each door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life. The cab ground lighting shall be activated when the parking brake is set.

PUMP PANNEL GROUND LIGHTS

There shall be a LED ground light mounted to the underside of the pump panel step on each side of the apparatus. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life. The cab ground lighting shall be activated when the parking brake is set.

UNDER BUMPER LIGHTS

There shall be a minimum of two (2) Whelen LED NFPA compliant ground lights mounted under the rear bumper. The lights shall include a polycarbonate lens, a housing which is vibration welded, and LEDs which shall be shock mounted for extended life. The under bumper ground lighting shall be activated with the ground lights.

ENGINE COMPARTMENT LIGHT

There shall be a LED NFPA compliant light mounted under the engine hood for area work lighting on the engine. The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock-mounted for extended life. The light shall activate automatically when the engine hood is tilted.

OPTICAL WARNTING DEVICES

DO NOT MOVE APPARATUS LIGHT

The front headliner of the cab shall include a flashing red Whelen Ion LED light clearly labeled “Do Not Move Apparatus”. In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated. The flashing red light shall be located centered left to right for greatest visibility. The light and alarm shall be interlocked for activation when either a cab door is not firmly closed or an apparatus compartment door is not closed, and the parking brake is released.

MASTER WARNING SWITCH

A master switch shall be included, which shall be labeled “E Master” for identification. The button shall feature control over all devices wired through it. Any warning device switches left in the “ON” position when the master switch is activated shall automatically power up.

HEADLIGHT FLASHER

An alternating high beam headlight flashing system shall be installed into the high beam headlight circuit which shall allow the high beams to flash alternately from left to right. Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per NFPA, these clear flashing lights will also be disabled” On Scene” when the park brake is applied.

HEADLIGHT FLASHER SWITCH

The flashing headlights shall be activated through a switch.

FRONT WARNING LIGHTS

The engine hood grill shall include two (2) Whelen M9 EZ Series LED front warning lights, with clear lenses, mounted within a chrome bezel. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted in the lower outside corners of the engine hood grill.

FRONT WARNING LIGHTS COLOR

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

FRONT WARNING SWITCH

The front warning lights shall be controlled through a switch. This switch shall be clearly labeled for identification.

INTERSECTION WARNING LIGHTS

The chassis shall include two (2) Whelen M9 EZ Series LED intersection warning lights, with clear lenses, one (1) each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted on either side of the engine, near the front, and above the front wheel well.

INTERSECTION WARNING LIGHT COLOR

The intersection lights shall be red, with clear lenses.

SIDE WARNING LIGHTS

Eash side of the apparatus shall include two (2) Whelen M9 LED warning lights, for a total of four (4) lights. The side warning lights shall be red, with clear lenses. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the sides of the apparatus within a chrome bezel.

SIDE WARNING LIGHT LOCATION

The side warning lights shall be located on the left and right sides of the apparatus and shall be mounted in the upper portion of the apparatus water tank/hose bed, one mounted in the forward portion and one mounted in the rear portion of the apparatus body. The lights shall be mounted next to the side warning lights in the outboard position.

LOWER ZONE SIDE WARNING LIGHT PACKAGE

Each side of the apparatus shall include two (2) (total of four) M6 Series Super-LED lights with chrome plated flanges shall be installed in the lower zone of the apparatus to be in accordance with NFPA 1901, current edition compliance. The lower zone warning lights shall all have red LED’s and clear lenses.

REAR-UPPER WARNING LIGHTS

The lower rear of the apparatus shall include two (2) Whelen M9 LED warning lights. The warning lights shall be red, with clear lenses. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted in the top position in the chrome plated four (4) light composite taillight housing.

REAR-LOWER WARNING LIGHTS

The upper rear of the apparatus shall include two (2) Whelen M6 LED warning lights. The warning lights shall be red, with clear lenses. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted in the top position to the sides of the apparatus within a chrome bezel.

REAR-UPPER WARNING LIGHT LOCATION

The upper rear warning lights shall be installed on each side of the rear of the apparatus and shall be mounted below the hose bed and above the rear scene lights.

SIDE, REAR, AND INTERSECTION WARNING SWITCH

All side, rear, and intersection warning lights shall be controlled through the master warning switch.

WATER TANK LEVEL GAUGE – PUMP PANEL

One (1) Innovative Controls Inc. SOFT-GLO™ Series water tank level gauge shall be provided on the pump operator's control panel.

The gauge shall be divided into four distinct sections that show the volume of water in the tank using multi-color RGB superbright LEDs. The color of the LED lights shall be green, blue, amber, and red. The display shall use a two-dimensional, two element lens to refract the light from the LEDs to provide full 180 degreevisibility for the level indication. The gauge shall start to flash when the tank volume is at 1/4 tank to alert the pump operator when the tank is almost empty.

WATER TANK LEVEL DISPLAYS – APPARATUS BODY

Three (3) Innovative Controls Inc. SOFT-GLO™ Mini Monster Series LED water level displays shall be provided, one (1) mounted on the driver's side on the upper-front portion of the hose bed, and one (1) mounted on the passenger side on the upper-front portion of the hose bed. The third tank level light shall be mounted on the rear of the apparatus, centered, and between the full-length rear step and the full-length grab bar.

The gauge shall be divided into four distinct sections that show the volume of water in the tank using multi-color RGB superbright LEDs. The color of the LED lights shall be green, blue, amber, and red. The display shall use a two-dimensional, two element lens to refract the light from the LEDs to provide full 180° visibility for the level indication. The gauge shall start to flash when the tank volume is at 1/4 tank to alert the pump operator when the tank is almost empty.

TANK LEVEL LIGHTS ACTIVATION

The tank level lights shall be activated when the apparatus pump is engaged.

INTERIOR DOOR OPEN WARNING LIGHTS

The interior of each door shall include one (1) red 4-inch diameter Truck-Lite LED warning light located on the door panel. Each light shall activate with a flashing pattern when the door is in the open position to serve as a warning to oncoming traffic.

AUDIBLE WARNING DEVICES

SIREN CONTROL HEAD

A Whelen Carbide Electronic Siren Control Head with remote dual amplifier shall be provided and flush mounted on the top of the center console. The siren shall feature 200-watt output, radio broadcast, public address, wail, yelp, or piercer tones and hands-free operation which shall allow the operator to turn the siren on and off from the horn ring if a horn/siren selector switch option is also selected.

STEERING WHEEL HORN BUTTON SELECTOR SWITCH

A switch shall be provided to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

AUDIBLE WARNING LEFT HAND FOOT SWITCH

A foot switch wired to actuate the mechanical siren(s) shall be supplied for installation in the front section of the cab for driver actuation.

MECHANICAL SIREN FOOT SWITCH LH

The mechanical siren foot switch shall be a Linemaster Model 491-S.

MECHANICAL SIREN FOOT SWITCH LEFT HAND LOCATION

The mechanical siren foot switch shall be located on the left-hand side accessible to the driver between the steering column and the door.

AUDIBLE WARNING LEFT HAND FOOT SWITCH BRACKET

A 30.00-degree angled foot switch bracket, wide enough to accommodate one foot switch, shall be installed outboard of the steering column for specified driver accessible foot switch activations.

AUDIBLE WARNING RIGHT HAND FOOT SWITCH

A foot switch wired to actuate the mechanical siren(s) shall be supplied for installation in the front section of the cab for passenger actuation.

MECHANICAL SIREN FOOT SWITCH RIGHT HAND

The mechanical siren foot switch shall be a Linemaster Model 491-S.

MECHANICAL SIREN FOOT SWITCH RIGHT HAND LOCATION

The mechanical siren foot switch shall be temporarily tied up with a coiled wire drop at the firewall inboard for installation by Tehama County Fire Department on the right-hand side accessible to the passenger.

AIR HORN IGNITION CONTROL

To eliminate inadvertent operation the chassis air horns shall be operable only when the battery selector and ignition switch are in the “ON” position.

AIR HORN ACTIVATION/CONTROL SWITCHES

One (1) air horn button shall be provided on the driver’s side pump panel. The button shall be red in color and include a label reading “AIR HORN”.

One (1) air horn button shall be provided on the left-side of the center console. The button shall be black in color and include a label reading “AIR HORN”.

AIR HORN AUXILIARY ACTIVATION

The air horn activation shall be accomplished by a black momentary push button on the switch panel. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

MECHANICAL SIREN BRAKE/AUXILIARY ACTIVATION

The mechanical siren shall be actuated by a red push button in the switch panel on the dash. A red momentary siren brake rocker switch shall be provided in the switch panel on the dash.

MECHANICAL SIREN INTERLOCK

The siren shall only be active when master warning switch is on to prevent accidental engagement.

BACK-UP ALARM

A backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

INSTRUMENTATION

INSTRUMENTATION

An ergonomically designed instrument panel shall be provided. Each gauge shall be backlit with LED lamps. Stepper motor movements shall drive all gauges. The instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring.

A twenty-eight (28) icon lightbar message center with integral LCD odometer/trip odometer shall be included. The odometer shall display up to 999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD message center screen shall be capable of custom configuration by the users for displaying certain vehicle status and diagnostic functions.

The instrument panel shall contain the following gauges:

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

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

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, voltmeter, and transmission temperature shall be included. The scale on the engine oil pressure gauge shall read from 0 to 100 pounds PSI with a red line zone indicating critical levels of oil pressure. A red indicator light in the gauge and audible alarm shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (°F) with a red line zone indicating critical coolant temperatures. A red indicator light in the gauge and audible alarm shall indicate high coolant temperature. The scale on the voltmeter shall read from 9 to 18 volts with a red line zone indicating critical levels of battery voltage. A red indicator light in the gauge and an audible alarm shall indicate high or low system voltage. The low voltage alarm shall indicate when the system voltage has dropped below 11.8 volts for more than 120 seconds in accordance with the requirements of NFPA 1901. The scale on the transmission temperature gauge shall read from 100 degrees Fahrenheit to 300 degrees Fahrenheit with a red line zone indicating critical temperatures. A red indicator light in the gauge and an audible alarm shall indicate a high transmission temperature.

The light bar portion of the message center shall include twenty-eight (28) LED backlit indicators. The lightbar shall be split with fourteen (14) indicators on each side of the LCD message screen. The lightbar shall contain the following indicators and produce the following audible alarms when supplied in conjunction with applicable configurations:

RED INDICATORS

- Stop Engine - indicates critical engine fault
- Air Filter Restricted - indicates excessive engine air intake restriction

- Park Brake - indicates parking brake is set
- Seat Belt - indicates a seat is occupied and corresponding seat belt remains unfastened
- Low Coolant - indicates critically low engine coolant

AMBER INDICATORS

- Malfunction Indicator Lamp (MIL) - indicates an engine emission control system fault
- Check Engine - indicates engine fault
- Check Transmission - indicates transmission fault
- Anti-Lock Brake System (ABS) - indicates anti-lock brake system fault
- High Exhaust System Temperature – indicates elevated exhaust temperatures
- Water in Fuel - indicates presence of water in fuel filter
- Wait to Start - indicates active engine air preheat cycle
- Windshield Washer Fluid – indicates washer fluid is low
- DPF Restriction - indicates a restriction of the diesel particulate filter
- Regen Inhibit-indicates regeneration of the DPF has been inhibited by the operator
- Range Inhibit - indicates a transmission operation is prevented and requested shift request may not occur.
- SRS - indicates a problem in the supplemental restraint system
- Check Message - indicates a vehicle status or diagnostic message on the LCD display requiring attention.

GREEN INDICATORS

- Left and Right turn signal indicators
- ATC - indicates low wheel traction for automatic traction control equipped vehicles, also indicates
- Mud/snow mode is active for ATC system
- High Idle - indicates engine high idle is active.
- Cruise Control - indicates cruise control is enabled
- OK to Pump - indicates the pump is engaged and conditions have been met for pump operations
- Pump Engaged - indicates the pump transmission is currently in pump gear
- Auxiliary Brake - indicates secondary braking device is active

BLUE INDICATORS

- High Beam indicator

AUDIBLE ALARMS

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

BACKLIGHTING COLOR

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

COMMUNICATIONS SYSTEMS

RADIO

A Jensen radio with weather band, AM/FM stereo receiver, and four (4) speakers shall be installed in the cab. The radio shall include rear RCA input pigtail connector, satellite radio capability, and a covered front auxiliary mini stereo input with iPod ready front and rear USB inputs. The radio shall be installed in the right-hand overhead position. The speakers shall be installed inside the cab with two (2) speakers recessed overhead in the front portion of the cab rearward of the windshields and two (2) speakers on the upper rear wall of the cab.

AM/FM ANTENNA

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

WEATHERPROOF CAP

One (1) NMO mount black weatherproof cab shall be provided (Ref: Antenex p/n QWRCB).

ANTENNA

One (1) Antenex 1/4 wave Hi Band radio antenna shall be supplied.

RADIO ANTENNA MOUNT WIRING – PASSENGER SIDE

One (1) NMO mount shall be roof mounted, on the passenger side of the cab in a position not to interfere with installation of the lightbar and in line with the driver's side radio antenna mounting. The unterminated coax cable is to be routed in the cab to the radio power circuit termination in the center console between the cab seats.

RADIO ANTENNA MOUNT WIRING – DRIVER'S SIDE

One (1) NMO mount shall be roof mounted, on the driver's side of the cab in a position not to interfere with installation of the lightbar and in line with the passenger side radio antenna mounting. The unterminated coax cable is to be routed in the cab to the radio power circuit termination in the center console between the cab seats.

REAR VISION SYSTEM

One (1) complete backup camera system shall be provided to allow the driver to visually see the rear of the apparatus while in the cab. The system shall include a high resolution 7.00"touch screen with LED backlight and anti-glare system with an auto dimmer. The system shall include audio transmission from the camera. The rear vision camera shall be wired to automatically activate when the chassis transmission is placed in reverse.

CAMERA REAR

One (1) HD camera shall be included and shall be installed in the body to afford the driver a clear view to the rear of the vehicle.

CAMERA LOCATION

The camera shall be installed on the rear center upper portion of the apparatus. The rear-view camera on the back of the body shall be recess mounted below the full-length step.

CAMERA DISPLAY

The camera system shall be wired to the display located on the driver's side dash. The camera system display shall also be activated through the display panel.

CAMERA SPEAKER

The rear camera shall be wired to speaker(s) in the cab and shall audible to the driver and passenger. There shall be a switch to deactivate the speaker(s).

WATER TANK

WATER TANK

The apparatus shall be equipped with a 3,000 U.S. gallon water tank. Certification of the tank capacity shall be recorded on the manufacturer's record of construction and shall be provided to Tehama County Fire Department upon delivery of the apparats. All water tanks shall be constructed of noncorrosive material or other materials that are protected against corrosion and deterioration. Any portions of the water tank that is exposed to sunlight shall be opaque to prevent light from entering.

WATER TANK MOUNTING

The water tank shall be cradled, cushioned, spring-mounted, or otherwise protected from undue stress resulting from travel on uneven terrain, in accordance with the tank manufacturer's requirements. If the water tank is independent of the body and compartments, it shall be equipped with a method for removing the tank(s) from the chassis.

TANK BAFFLES

The water tank shall be provided with baffles or swash partitions to form containment cells or dynamic water movement control in accordance with 2016 NFPA-1901, Chapter 18.2.6.

TANK SUMP

There shall be one (1) sump in the bottom of the water tank. A means of access 3-inch diameter or larger shall be furnished for each sump to facilitate cleaning. The tank sump shall be used as a combination cleanout and drain and if it is used for the tank-to-pump line connection, the design shall prevent sludge or debris in the sump from entering the pump. The tank shall have an anti-swirl plate located approximately 2above the sump to prevent air from being entrained in the water while pumping.

TANK FILL CONNECTION

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank and shall be capable of withstanding sustained fill rates of up to 1,000 GPM.

WATER TANK FILL TOWER

The tank shall have a combination vent and manual fill tower, marked "Water Fill", located in the forward position of the tank. The fill tower shall be a minimum dimension of 12.00" x 12.00" at the outer perimeter. The tower shall have a 1/4" thick removable polypropylene screen and a polypropylene hinged-type cover.

4” WATER TANK OVERFLOW

The tank shall be equipped with a minimum of a 4” schedule 40 polypropylene overflow/air vent pipe installed in the fill tower extending through the tank and dumping behind the rear axle.

HOSE BED

HOSE BED

The hose bed shall be located above the water tank. Hose shall be accessible from the rear, and the opening shall be free of obstructions that might interfere with the deployment and loading of hose. A 1” aluminum treadplate trim piece shall be at the rear-bottom of the hose bed, to protect the chevron striping when deploying hose.

The bottom shall be constructed to prevent the accumulation of water and allow ventilation to aid in drying hose. The interior shall be smooth and free from all projections, such as nuts, sharp angles, or brackets, that might cause damage to the hose.

HOSE BED COVER

The apparatus shall be equipped with a red in color, 18 oz. vinyl hose bed cover with a rear flap and a hook and bungee fastening system at front and sides. The rear flap shall be fastened with three (3)

2.00side release plastic buckle assemblies. The vinyl material shall be treated for protection against UV rays and mildew.

APPARATUS BODY

ALUMINUM BODY CONSTRUCTION

The apparatus body shall be fabricated from heavy duty aluminum sheeting. The total outside width of the apparatus body shall not exceed 96 inches. The width measurement of the sidewalls shall be made from the outside wall of the two opposite sides of the body. The body shall be designed for a tandem axle chassis.

The complete apparatus body shall be fabricated utilizing the break and bend techniques in order to form a strong, yet flexible, unibody structure where possible. The body shall be constructed with holding fixtures to ensure proper dimensioning.

The main body compartments on each side shall contain a sweep-out floor design. Each compartment shall be made to the most practical dimensions in order to provide maximum storage capacity for the fire department’s equipment. The door opening threshold shall be positioned lower than the compartment floor permitting easy cleaning of the compartments.

Continuous, solid welded seams shall be located at the upper front and upper rear corners of the apparatus body. The flooring of all lower, main body compartmentation shall also have solid weld seams. All door jambs, on both the top and the bottom, shall be solid welded as well. Each main door jamb shall consist of a double jam design; this is comparable to a double struck frame design, which provides superior strength and durability. All double door jams are to be welded together utilizing the plug weld technique. All remaining compartment walls shall be stitch welded.

The body design shall include a “false wall” design in the lower portion of each lower, rear compartment. This “false wall” is required in order to allow for easy accessibility to the rear electrical components found in the rear taillight cluster area.

On the upper area of the apparatus body, directly above the side compartment door openings, a header

is to be fabricated from smooth, aluminum sheet. This area shall be free of any body seams and shall be painted the same color as the apparatus body. The height of the header may vary depending on the following factors: apparatus design, lettering requirements, scene lights and warning light requirements as well as various other options. A “J” channel shall be incorporated into the body design in order to provide a rain gutter to further assist in preventing excessive moisture from getting into the compartments.

FOLDING TANK STORAGE – RH SIDE

There shall be space to store an appropriate size dump tank on the right-hand side of the apparatus body. The area shall be completely enclosed to protect the dump tank from the elements. The area shall have a mechanical means to lock the dump tank in place while the apparatus is in motion. The storage shall have the capacity for one (1) 3,000 US Gallon portable tank with an aluminum frame.

GROUND LADDER STORAGE – LH SIDE

There shall space for ground ladders be stored on the right-hand side of the apparatus body. The area shall have a mechanical means to secure all ladders in place while the apparatus is in motion. A quick release shall allow personnel to loosen and unhook the retaining strap in order to remove the ladders; a ratchet style mechanism shall securely and easily fasten the ladders back into place. The bracket shall allow a sectional ladder to still be clamped into position when the roof ladder has been removed.

The ground ladder storage shall have the capacity for one (1) DuoSafety, model 900A, 24’ aluminum two-section extension ladder, one (1) DuoSafety, model 775-A, 14’ aluminum roof ladder with folding roof hooks, and one (1) DuoSafety, model 585-A, 10’ aluminum folding ladder.

PIKE POLE STORAGE

Two (2) aluminum tubes for the storage of pike poles shall be installed on the driver’s side beneath the ladder storage racks. These pike pole tubes on the ladder rack shall be attached as far rearward as possible.

HARD SUCTION STORAGE

There shall be hard suction storage trays with the capacity for two (2) 10.00' sections of hard suction hose included with the apparatus. In order to provide a comfortable and safe level of access to the hard suction hose, the storage trays shall be easily accessible without risk of falling. The hard suction hose trays shall have a mechanical means to secure the hose in place while the apparatus is in motion.

REAR DUMP VALVE

One (1) NEWTON 10.00” Model 1050-34 Stainless Steel dump valve shall be installed. It shall be located at the rear center of the apparatus.
One (1) manual operated lever control shall be used to open and close the dump valve, the lever shall be located on the top of the valve.

TELESCOPIC EXTENSION CHUTE

One (1) Newton, model 4036-8X12-34, manual stainless steel telescoping extension chute shall be installed on the swivel. The extension chute shall be capable of extending 36.00” past the dump valve.

SWIVEL DUMP SYSTEM

A Newton stainless steel swivel dump chute extension shall be mounted on the rear dump valve. The unit shall be able to rotate 180 degrees and lock in place while the apparatus is in motion. With the swivel attached, the chute shall be capable of flowing 2,777 GPM.

GRAB HANDLE – LH SIDE

One (1) 18.00-inch knurled aluminum anti-slip exterior grab handle shall be mounted vertically on the leading edge of the hose bed in the furthest outboard position on the driver's side.

GRAB HANDLE – RH SIDE

One (1) 18.00-inch knurled aluminum anti-slip exterior grab handle shall be mounted vertically on the leading edge of the hose bed in the furthest outboard position on the passenger side.

FULL-LENGTH REAR GRAB HANDLES

Two (2) full-width knurled aluminum anti-slip exterior grab handles shall be mounted vertically on the rear of the apparatus near the outer edges. The grab bars shall extend from the top edge of the hose bed walls to the bottom of the tank.

FULL-WIDTH HOSE BED GRAB HANDLE

One (1) full-width knurled aluminum anti-slip exterior grab handle shall be mounted horizontally just below the bottom of the hose bed.

SIDE BODY COMPARTMENTS

SIDE BODY COMPARTMENT DOORS

All lower compartment doors shall be equipped with AMDOR brand roll-up doors. The slats shall be 1.00" double wall aluminum with continuous ball and socket hinge joints designed to prevent water ingression and weather tight recessed dual durometer seals. The interior door curtains shall be smooth to prevent equipment hang-ups. The door tracks and side frames shall each be one-piece aluminum. Each side seal shall be recessed, and non-marring with UV stabilizers to prevent warping. The bottom panel flange shall have cut-outs for ease of access with gloved hands. The door strikers shall provide support beneath the lift bar to prevent door curtain bounce and potential false door ajar indications.

SIDE BODY COMPARTMENT LIGHTING

One (1) 12.00" bar-style LED strip light shall be installed inside the compartment of each body side compartment. A total of four (4) compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

COMPARTMENT COATING

The interior of the body compartments shall be coated with a durable material to withstand the everyday wear and tear of equipment removal and shifting.

COMPARTMENT AIR RELEASE

Each compartment shall be vented to help remove trapped air when closing the compartment door. The vent shall be a rubber gasket in the area of the outboard corners of the compartment. Wiring may also be run through these areas.

COMPARTMENT DRAIN HOLES

Each body compartment shall be equipped with drain holes to allow standing water to exit underneath the apparatus.

LEFT-SIDE COMPARTMENT IN FRONT OF REAR WHEELS

A minimum of one (1) compartment shall be supplied on the left-hand side of the truck in front of the rear wheels. The compartment dimensions shall maximize available body space for storage, between the rear wheels and the pump panel. The compartment(s) shall have roll up door(s) and shall have a satin finish.

LEFT-SIDE COMPARTMENT BEHIND REAR WHEELS

One (1) compartment shall be supplied on the left-hand side of the truck behind the rear wheels. The compartment dimensions shall maximize available body space for storage, between the rear wheels and the rear of the apparatus. The compartment shall have a roll up door and shall have a satin finish.

RIGHT-SIDE COMPARTMENT IN FRONT OF REAR WHEELS

A minimum of one (1) compartment shall be supplied on the right-hand side of the truck in front of the rear wheels. The compartment dimensions shall maximize available body space for storage, between the rear wheels and the pump panel. The compartment(s) shall have roll up door(s) and shall have a satin finish.

RIGHT-SIDE COMPARTMENT BEHIND REAR WHEELS

One (1) compartment shall be supplied on the right-hand side of the truck behind the rear wheels. The compartment dimensions shall maximize available body space for storage, between the rear wheels and the rear of the apparatus. The compartment shall have a roll up door and shall have a satin finish.

DRIVER'S SIDE REAR WHEEL WELL STORAGE – WL1

A self-contained breathing apparatus compartment shall be installed in the forward portion of the rear wheel well area, on the driver's side. The compartment door, flange, latches, and hinges shall be constructed of stainless-steel material. The door shall have a rubber gasket to create a 100% seal to protect the interior of the compartment. The latches shall be easily operated with gloved hands. The storage compartment shall be a molded component that is assembled to the door and flange.

DRIVER'S SIDE REAR WHEEL WELL STORAGE – WL2

A three (3) air bottle compartment shall be installed in the rearward portion of the rear wheel well area, on the driver's side. The compartment door, flange, latches, and hinges shall be constructed of stainless-steel material. The door shall have a rubber gasket to create a 100% seal to protect the interior of the compartment. The latches shall be easily operated with gloved hands. The storage compartment shall be a molded component that is assembled to the door and flange.

PASSENGER SIDE REAR WHEEL WELL POSITION – WR1

A self-contained breathing apparatus compartment shall be installed in the forward portion of the rear wheel well area, on the passenger side. The compartment door, flange, latches, and hinges shall be constructed of stainless-steel material. The door shall have a rubber gasket to create a 100% seal to protect the interior of the compartment. The latches shall be easily operated with gloved hands. The storage compartment shall be a molded component that is assembled to the door and flange.

PASSENGER SIDE REAR WHEEL WELL STORAGE – WL2

A three (3) air bottle compartment shall be installed in the rearward portion of the rear wheel well area, on the passenger side. The compartment door, flange, latches, and hinges shall be constructed of stainless-steel material. The door shall have a rubber gasket to create a 100% seal to protect the interior of the compartment. The latches shall be easily operated with gloved hands. The storage compartment shall be a molded component that is assembled to the door and flange.

ADDITIONAL EQUIPMENT

FIRE EXTINGUISHER

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

ROAD SAFETY KIT

The cab and chassis shall include one (1) emergency road safety triangle kit.

DOOR KEYS

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

DIAGNOSTIC SOFTWARE OCCUPANT PROTECTION

Diagnostic software for the advanced protection system shall be available for free download from the chassis manufacturer website to authorized OEMs, dealers and service centers, as well as the vehicle owner.

The software shall be compatible with the following RP1210 interface adapters:

- Dearborn Group DPA4 Plus
- Noregon Systems JPRO DLA+
- Cummins INLINE5
- Cummins INLINE6
- NexIQ USB-Link

The software and adapter utilize the SAE J1939-13 heavy duty nine (9) pin connector which is located below the driver's side dash to the left of the steering column.

PORTABLE FOLDING TANK

One (1) 4000-gallon aluminum collapsible frame folding portable tank shall be supplied. The tank liner shall have 22 oz vinyl sides and a 28 oz vinyl floor that shall be red in color. Grab handles shall be placed on the floor of the liner to help the firefighter pick up the liner when folding.

SUCTION HOSE

Two (2) 6.00" X 10' section(s) of PVC type hard suction hose shall be provided on the apparatus. The hose(s) shall be light weight type with pyrolite, long handle female x rocker lug male, NST threads. The hose shall be black in color.

WHEEL CHOCKS

One pair of heavy duty extruded aluminum wheel chocks measuring 8" high x 7" wide x 11.8" long shall be provided with the apparatus. Worder 7HY HD Yellow Handled Extrusions are the requested chocks. The wheel chocks shall have a bright yellow powder coat finish for high visibility, safety and corrosion resistance.

FIRE SERVICE LADDERS

The following ground ladders shall be supplied with the apparatus:

- One (1) DuoSafety, model 900A, 24' aluminum two-section extension ladder shall be provided.
- One (1) DuoSafety, model 775-A, 14' aluminum roof ladder with folding roof hooks shall be provided.
- One (1) DuoSafety, model 585-A, 10' aluminum folding ladder shall be provided.

FRONT MUD FLAPS

A pair of black rubber mud flaps shall be provided, with the commercial chassis, and installed behind the front wheels.

REAR MUD FLAPS

A pair of black rubber mud flaps, with the manufacturer's logo, shall be provided and installed behind the rear wheels.

MISCELLANEOUS

WALKWAYS AND OVERLAYS

All exterior surfaces designated by the manufacturer as stepping, standing, or walking areas shall be overlaid with 3003 H22 bright tread plate to provide a slip resistant surface, even when the surface is wet. All interior surfaces designated by the manufacturer as stepping, standing, or walking areas shall be slip resistant when the surface is dry. The degree of slip resistance shall be in accordance with NFPA 1901, current edition.

Horizontal walkways shall have .080” aluminum tread plate overlays installed and vertical surfaces shall have .125” aluminum tread plate overlays. Overlays shall be installed that are totally insulated from the apparatus with nylon shoulder washers that extend into holes in the body. Stainless steel cap nuts shall be employed where bolt ends may damage equipment or cause injury. After the apparatus is painted and the overlays are reinstalled, they shall be additionally sealed at the edges with a caulking compound. The exterior top tread plate overlay shall be mounted flush with the outer edges of the apparatus body.

Any designated horizontal standing or walking surface higher than 48” from the ground and not guarded by a railing, or structure at least 12” high shall have a “safety yellow line” marking the outside perimeter of the designated standing or walking surface area. Yellow reflective SCENE dots shall be used to create the line along the outside edges of standing and walking surfaces. Steps and ladders shall not be required to have the yellow line.

STEPPING SURFACES

All steps shall have a surface area of at least 35 square inches and shall be able to withstand a load of at least 500 pounds. Steps shall be provided at any area that personnel may need to climb and shall be adequately lit.

BODY RUB RAILS

Rub rails shall be installed beneath the compartment doors to protect the apparatus body from damage should the body be brushed or rubbed against another object. The rub rails shall be 2-1/2” x 1”, 3/16” aluminum channel. The rub rails shall be highly polished and then bright dip anodized.

The rub rails shall be installed on the body utilizing non-corrosive nylon spacers and secured with stainless steel bolts. The outside edge of the rub rails shall be even with the fenderettes and bolt-on steps to prevent snagging.

REAR UNDERBODY TOW EYE

A minimum of one (1) rear tow eye shall be installed directly below the rear of the chassis frame rails, mounted to the subframe. The tow eye shall be capable of a straight pull rating designed for the GVWR of the apparatus.

REAR WHEEL WELLS

The fenders shall be integral with the body sides and compartments with a seamless appearance. The rear wheel wells shall be radius cut for a streamlined appearance. The fenders shall be fitted with bolt-in removable full circular inner liners in the wheel well area for ease of cleaning and maintenance. The liners shall match the material used to build the body. A sufficient clearance shall be provided in the wheel well to allow the use of tire chains when the apparatus is fully loaded.

FENDERETTES

Four (4) polished stainless steel fenderettes shall be provided over the rear tandem wheel well openings, one (1) each side. Each fenderette shall be made of 14 gauge 304 stainless steel. The stainless steel fenderette shall be secured into place with stainless steel fasteners and shall be easily removable for replacement.

LICENSE PLATE BRACKET

A license plate bracket shall be mounted on the rear of the apparatus. A clear LED light shall be incorporated into the bracket.

TRIMRITE STAINLESS STEEL FASTENERS

TrimRite stainless steel fasteners shall be provided for all exposed and unpainted fasteners throughout the body in locations such as overlays, pump panels, and other numerous hardware mounting locations. TrimRite stainless is a hardenable martensitic stainless steel that provides a high level of corrosion resistance, hardness up to Rockwell C 51, good cold formability and ease of heat treatment, all of which combine to provide an alloy which has been used for many applications. TrimRite stainless is tested to salt spray standard ASTM B117, which is a 200-hour salt spray test. The OEM shall use TrimRite stainless with an added blue patch which provides improved vibration resistance for the fasteners.

FRONT TREAD PLATE OVERLAYS

A tread plate overlay shall be located on the front vertical areas of each side of the apparatus body. The overlays shall be located on the front of the body compartments.

REAR TREAD PLATE OVERLAYS

Aluminum tread plate overlays shall be installed on the inside facing sides of the driver's side and passenger side recessed area on the rear of the apparatus. Overlays shall be totally insulated from the apparatus with nylon shoulder washers that extend into the hole that is drilled into the body. Stainless steel cap nuts shall be employed where bolts may damage equipment or cause injury. After painting and final construction, overlays shall be additionally sealed at the edges with a caulking compound.

WHEEL CHOCK COMPARTMENTS

There shall be two (2) wheel chock compartments installed in an easily accessible area of the apparatus that negates the need to store the wheel chocks in any of the equipment compartments. The wheel chock compartments shall accommodate the specified wheel chocks.

STEPS

FRONT BODY STEPS – LH SIDE

A minimum of three (3) folding steps shall be located on the front of the driver's side body compartments. The steps shall allow access to the dunnage/crosslay portions above the pump module. The folding steps shall be chrome-plated die-castings and constructed with high strength zinc alloy. The

folding steps shall have two large open slots to prevent the buildup of ice or mud and to provide a handhold when necessary. The steps shall have a surface area of at least 35 square inches and shall be able to withstand a load of 500 pounds.

FRONT BODY STEPS – RH SIDE

A minimum of two (2) folding steps shall be located on the front of the passenger side body compartments. The steps shall allow access to the dunnage/crosslay portions above the pump module. The folding steps shall be chrome-plated die-castings and constructed with high strength zinc alloy. The folding steps shall have two large open slots to prevent the buildup of ice or mud and to provide a handhold when necessary. The steps shall have a surface area of at least 35 square inches and shall be able to withstand a load of 500 pounds.

REAR STEPS

A minimum of six (6) folding steps shall be located on either side of the rear dump valve allowing access to the rear hose bed. The folding steps shall be chrome-plated die-castings and constructed with high strength zinc alloy. The folding steps shall have two large open slots to prevent the buildup of ice or mud and to provide a handhold when necessary. The steps shall have a surface area of at least 35 square inches and shall be able to withstand a load of 500 pounds.

FULL-WIDTH HOSE BED STEP

There shall be a fullwidth tread plate step located above the rear dump valve. The step shall be used to assist in reloading the hose bed. The step shall also include handholds in the rear of the step to be used when climbing the rear of the truck. The step shall be adequately lit with LED lighting.

PUMP, PUMP MODULE, PUMP PANEL, AND PUMP AREA

INDEPENDENT ALUMINUM SIDE MOUNT PUMP MODULE

The pump module shall be a side mount design and fabricated from 1/8” 5052-H32 smooth aluminum sheet. The module shall be fabricated as an individual unit independent from the body. The module shall be fabricated utilizing the break and bend technique in order to form a strong yet flexible structure. The pump module shall be fabricated using precision holding fixtures to ensure proper dimensions and all attachment points shall be heavily reinforced.

PUMP COMPARTMENT LIGHTS

Two (2) 9” On-Scene Night Axe LED lights shall be installed in the pump compartment. The lights shall be rated at 100,000 hours of service. The lights shall be waterproof and magnesium chloride resistant. The lights shall be enclosed in tough 5/8” Lexan tube.

DRIVER’S SIDE RUNNING BOARD

An integral running board shall be installed on the driver’s side of the pump module. The running board shall be constructed of anti-slip tread plate. There shall be an integral storage well compartment recessed in the running board and pump compartment. The outside edge of the running board shall be flush with the rub rail that is installed on the body to maintain a uniform appearance. The running board shall be installed with sufficient support to form a sturdy, non-deflecting step area for personnel.

There shall be two (2) sets of black seat belt style straps provided with the storage well. The female ends will be attached on the body and the male ends will be attached on the running board.

The hose wells on both sides of the pump module shall be built as long as possible without interfering with any of the drain controls.

PASSENGER SIDE RUNNING BOARD

An integral running board shall be installed on the passenger side of the pump module. The running board shall be constructed of anti-slip tread plate. There shall be an integral storage well compartment recessed in the running board and pump compartment. The outside edge of the running board shall be flush with the rub rail that is installed on the body to maintain a uniform appearance. The running board shall be installed with sufficient support to form a sturdy, non-deflecting step area for personnel.

There shall be two (2) sets of black seat belt style straps provided with the storage well. The female ends will be attached on the body, and the male ends will be attached on the running board.

The hose wells on both sides of the pump module shall be built as long as possible without interfering with any of the drain controls.

RUNNING BOARD HOSE WELL FINISH

The hose wells on each side of the pump module need shall be coated with Black LineX.

TREAD PLATE DUNNAGE COMPARTMENT

A dunnage compartment shall be located above the pump module. The dunnage compartment floor shall be constructed of tread plate.

PASSENGER SIDE ACCESS PANEL

There shall be a vertically hinged painted aluminum access panel on the upper portion of the passenger side of the pump module to allow access to the pump. The panel shall be of the single pan design and shall be positively latched in the closed position utilizing a compression latch. A gas strut shall be provided on the panel. An aluminum sill protector shall be installed on the bottom of the panel opening to protect the paint from chipping and scratching. The panel shall be wired into the door-ajar warning light circuit.

CONTROL PANEL

The driver’s side of the pump enclosure shall be divided into two sections. The lower section shall be where all valve controls, the primer control, the discharge relief valve controls (pilot valve), and other mechanical controls are located. This surface shall be referred to as the “control panel”.

All valve controls shall be the self-locking type, activated by either direct control or with a direct linkage utilizing friction locking bell cranks and universal ball swivels. The primary valve handles shall have color coded tags installed in a recessed area to clearly denote the purpose of each control.

INSTRUMENT PANEL

The surface up above the control panel shall contain all instruments, gauges, test fittings, and optional controls. This surface shall be referred to as the “instrument panel”. The instrument panel shall be independent and hinged and latched so that it may be opened. All instruments, gauges, and other equipment shall be installed with sufficient slack in any cabling, tubing, or plumbing to allow the panel to swivel to the fully open position.

The instrument and gauge panel shall be vertically hinged “swing out” to provide access for service.

DECK GUN DISCHARGE

One (1) 3.00" discharge with valve shall be located on the top of the pump. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 3.00" outlet shall be equipped with an integral, stainless steel flange terminating with 3.00" Victaulic. The discharge shall be plumbed to the top of the module using 3.00” schedule 10 stainless steel pipe.

The pipe shall terminate in a 3.00” MNPT thread. The pipe shall be held in place by a 2 piece stainless steel bracket.

An Akron Brass 3.00" generation II swing-out valve shall be provided for the deck gun discharge. The valve shall be of the slow-close design so as not to allow the valve to open or close in less than 3 seconds.

The quarter turn valve shall be manually operated with a Class 1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00” x 3.00” identification tag. The controls shall be locked in any position.

One (1) Class1 automatic 0.75" drain valve(s) shall be installed. The valve shall have an all brass body with heavy duty neoprene seal. The valve shall be normally open and shall close at 6 PSI using an all brass check assembly with stainless steel spring.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

DECK GUN MOUNTING ADAPTER

One (1) 3" FNPT 150# ANSI Companion Flange shall be installed on the end of the deck gun outlet for mounting of a deck gun.

PASSENGER SIDE PUMP PANEL

A single panel shall be installed on the passenger side of the pump enclosure. This shall be the area where any passenger side discharges, inlets, steamers, and other pump-associated equipment are located. This panel shall be easily removable and held in place with quick release push latches. It shall be fully removable for pump and plumbing access without the need to use hand tools. Any electrical equipment that may be installed shall be equipped with connectors so they may be easily separated from the opening created when the below described front access panel is removed.

PANEL SURFACES

The control panel, instrument panel, and passenger side pump panel shall be coated with black Bedliner Coating for maximum resistance to abrasion and to minimize glare. The material shall be capable of withstanding the effects of extreme temperatures and weather.

GARNISH RING BEZEL ASSEMBLIES

Innovative Controls intake and/or discharge garnish rings shall be installed to the apparatus with mounting bolts. These bezel assemblies shall be used to identify intake and/or discharge ports with color and verbiage. The garnish rings shall be designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The specified assemblies shall feature a chrome-plated panel-mount bezel with durable UV resistant polycarbonate inserts. These UV resistant polycarbonate graphic inserts shall be subsurface screen printed to eliminate the possibility of wear and protect the inks from fading. All insert labels shall be backed with 3M permanent adhesive, which meets UL969 and NFPA standards.

VERBIAGE TAG BEZEL ASSEMBLIES

Innovative Controls verbiage tag bezels shall be installed. The bezel assemblies will be used to identify apparatus components. These tags shall be designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The verbiage tag bezel assemblies shall include a chrome-plated Panel-mount bezel with durable easy-to-read UV resistant polycarbonate inserts featuring the specified verbiage and color coding. These UV resistant polycarbonate verbiage and color inserts shall be subsurface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the insert labels and bezel shall be backed with 3M permanent adhesive, which meets UL969 and NFPA standards.

SAFETY MESSAGE BEZEL ASSEMBLIES

Innovative Controls safety message bezels shall be installed. The bezel assemblies will be used to identify, instruct, or warn the operators. These tags shall be designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The safety message bezel assemblies shall include a chrome-plated Panel-mount bezel with durable easy-to-read UV resistant polycarbonate inserts featuring ANSI safety standard graphics or custom graphics. These UV resistant polycarbonate graphic inserts shall be subsurface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the graphic insert labels and bezel shall be backed with 3M permanent adhesive, which meets UL969 and NFPA standards.

PUMP PANEL LIGHTING

The pump operator’s control panel and the passenger side pump panel shall each be illuminated by On-Scene LED Night Axe lighting. The pump panel lights shall become energized upon setting the park brake so the gauge information provided may be consulted. A stainless steel shield shall be installed over the pump panel lights to further protect them from the elements and to act as a reflector for additional illumination.

The pump panel lighting shall become energized automatically upon setting the park brake so the gauge information may be consulted at any time the apparatus is parked.

MIDSHIP MOUNT FIRE PUMP

The pump shall be a Hale QMax XS 1,500 U.S. GPM fire pump. The pump shall be a single stage centrifugal class “A” rated fire pump, designed specifically for the fire service.

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 spots as outlined by the latest edition of NFPA 1901. The 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 (2069 bar). All metal moving parts in contact with water shall be of high-quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.

The pump body shall be horizontally split, on a single plane, in two (2) sections for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in chassis.

The pump body shall extend as one piece across the truck chassis from side mounting to side mounting and incorporate the discharge manifolding system with a minimum of (2) 4” ports and (7) 3” ports.

The pump shall have one (1) double suction impeller. The pump body shall have two opposed

discharge volute cutwaters to eliminate radial unbalance. (No exceptions.)

Pump shaft to be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing to be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. (No exceptions.) The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.

The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be superfinished under for longer shaft life. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

FLAME PLATED IMPELLER HUBS

The pump impellers shall be bronze, specifically designed for the fire service and accurately balanced for vibration free running. The stripping edges shall be located on opposite sides of the impellers to reduce shaft deflection.

The impeller shaft shall be stainless steel, accurately ground to size and supported at each end by oil or grease lubricated antifriction ball bearings for rigid, precise support. The bearings used on the impeller shaft shall be automotive type bearings, easily cross-referenced and readily available at normal parts or bearing stores.

The impeller hubs shall be flame plated with tungsten carbide to hardness approximately twice that of tool steel to assure maximum pump life and efficiency. During the flame plating process, the base metal shall not be allowed to exceed a temperature of 300 degrees Fahrenheit to prevent altering the metallurgical properties of the impeller material.

IMPELLER WEAR RINGS

The pump shall be equipped with replaceable bronze wear rings for increased pump life and minimum maintenance cost. The wear rings shall be designed to fit into a groove in the face of the impeller hubs forming a labyrinth that, as the clearance increases with age, directs water from the discharge side in several directions eventually exiting outward, away from the eye of the impeller hub.

LUBRICATION SYSTEM

An internal lubrication system shall deliver lubricant directly to the drive chain. This unique design shall eliminate the need for an external lubrication pump and auxiliary cooling. Oil shall be supplied with the lubrication system.

PUMP GEARBOX

Pump gearbox shall be of sufficient size to withstand up to 18,500 lbs. ft. of drive through torque of the engine system. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature. Gearbox housing is constructed of high strength cast iron with no structural aluminum parts.

The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2-3/4 inches in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine.

All gears both drive and pump, shall be of 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, quiet running, and higher load carrying capability. An accurately cut helical high contact design shall be provided with an exclusive Anti-Hop out Design which keeps the unit firmly in the gear selected. The more torque you put to the gearbox the tougher the grip to stay in gear. (No exceptions.)

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the

engine and transmission selected.

The gearbox is equipped with a power shift with progressive engagement to assure consistent reliable shift in pump/road gear. The shifting mechanism shall be a heat treated, hard anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.

MECHANICAL SEALS

The pump shall be equipped with self-adjusting, maintenance free mechanical shaft seals that shall not require manual adjustment. These seals shall be designed in a manner such that they shall remain functional enough to permit continued use of the pump in the unlikely event of a seal failure.

ZINC ANODES

Four (4) magnesium anodes shall be provided with the fire pump. The anodes shall aid in preventing galvanic corrosion within the water pump and be easily replaceable. The anodes shall be installed as follows:

- Two (2) on the intake side of the pump
- Two (2) in the discharge manifold of the fire pump

PUMP RATING

The pump shall be certified to meet the following deliveries:

- 1,500 GPM @ 150 PSI
- 1,050 GPM @ 200 PSI
- 750 GPM @ 250 PSI

FIRE PUMP MOUNTING

The fire pump shall be mounted within a separate body module that is not directly connected to the apparatus body.

The pump shall be frame mounted; therefore minimizing the likelihood of the pump casing cracking should the apparatus be involved in a collision.

The pump module shall be mounted to the frame in a minimum of four (4) locations and shall be reinforced appropriately in order to carry the expected load for the life of the apparatus.

PUMP SHIFT

The pump shift shall be supplied and installed by the chassis manufacturer. The pump system shift indicator lights in the chassis cab shall be supplied and installed by the chassis manufacturer. The pump system shift indicator lights on the operator’s panel shall be incorporated with the pump pressure governor.

PRESSURE GOVERNOR

A Fire Research Corp. PumpBoss Max Series pressure governor and monitoring display system shall be installed. The system shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 6-3/4” high by 4-5/8” wide by 1-1/2” deep. The control knob shall be 2” in diameter with no mechanical stops, have a serrated grip, and a red control module. Inputs for monitored information shall be a J1939 data bus or independent sensors. Outputs for engine control shall be on the J1939 data bus or engine specific wiring. Inputs to the control module from the pump discharge and intake pressure sensors shall be electrical.

The following continuous displays shall be provided:

- Engine RPM; shown with four daylight bright LED digits more than 1/2" high
- Check engine and stop engine warning LEDs
- Oil pressure; shown on a dual color (green/red) LED bar graph display
- Engine coolant temperature; shown on a dual color (green/red) LED bar graph display
- Transmission Temperature: shown on a dual color (green/red) LED bar graph display
- Battery voltage; shown on a dual color (green/red) LED bar graph display
- Pressure and RPM operating mode LEDs
- Pressure / RPM setting; shown on a dot matrix message display
- Throttle ready LED

The dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. LED intensity shall be automatically adjusted for day and nighttime operation.

The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. The kit shall monitor inputs and support audible and visual warning alarms for the following conditions:

- High Battery Voltage
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Transmission Temperature
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of Water (visual alarm only)
- No Engine Response (visual alarm only)

The program features shall be accessed via pushbuttons located on the front of the control module. A USB port shall be located at the rear of the control module to upload future firmware enhancements.

The governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A throttle ready LED shall light when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 PSI. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

An interlock system shall be provided to prevent advancement of the engine speed at the pump operator's panel unless the apparatus has 'Throttle Ready' indication.

U.L. TEST POINTS

Two (2) U.L. test points shall be mounted on the pump panel for testing of the vacuum and pressures. The test points shall be a single piece with individual ports for suction and discharge.

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 pumphouse.

The discharge side of the intake relief valve shall be plumbed with stainless steel pipe to the below the running boards, away from but, visible to the pump operator, and shall terminate with a chrome 2-1/2" NH male connector on the end of the discharge tube. A label shall be installed in the area of the connector warning against capping it.

PUMP PRIMING SYSTEM

A Trident air operated priming system shall be installed. The unit shall be of all brass and stainless-steel construction and designed for fire pumps of 1,250 GPM or more. The primer shall be three-barrel design with direct connection to the Hale fire pump. The primer shall automatically drain when the panel control actuator is not in operation. The connection to the pump shall have an integral Hale strainer.

The priming system shall be capable to a vertical lift to 22" of mercury and shall be fully compliant to applicable NFPA standards for vertical lift. The system shall create vacuum by using air from the chassis air brake system through a three-barrel multi-stage internal "venturi nozzles" within the primer body.

The primer control shall have a manually operated, panel mounted "push to prime" air valve; which will direct air pressure from the air brake storage tank to the primer body. To prevent freezing, no water shall flow to and from the panel control.

A vacuum gauge 2" in diameter, with graduations from zero to 30-feet, shall be installed in the primer control panel. The gauge shall be physically connected to the vacuum side of the primer and read only when the primer is running so it will never see or be subject to damage from high pump intake pressures.

MASTER DRAIN VALVE

A Class 1 drain valve assembly shall be supplied. This drain shall provide the capability to drain the entire pump by turning a single control. The valve assembly shall consist of a stainless steel plate and shaft in a bronze body with multiple ports. The drain valve control shall be mounted on the driver's side pump panel and labeled "Master Drain".

OVERHEAT PROTECTION MANAGER WITH INDICATOR LIGHTS

An Overheat Protection Manager (OPM) shall be installed on the pump. The relief valve shall automatically relieve water from the pump when the temperature of the pump water exceeds 140 degrees Fahrenheit. In addition, a warning light on the pump panel shall be triggered by a thermal switch when the water in the pump reaches 180 degrees Fahrenheit. The warning light acts as an additional protection device if the temperature inside the pump keeps rising although the valve is open. The valve shall automatically reset after activation.

PAINT PUMP GRAY/PAINT INTAKES PRIMARY BODY COLOR

The pump body shall be painted with AkzoNobel High Solids polyurethane paint. The paint color shall be a neutral gray. The pump enclosure shall be painted the same color as the apparatus body.

The main intake(s) and auxiliary intake valves shall be painted with a AkzoNobel High Solids polyurethane paint. The paint color shall be the same as the apparatus body.

PUMP MANUALS

Two (2) Pump Operation and Maintenance manuals shall be provided in digital format with the apparatus.

PUMP AND ENGINE COOLING SYSTEM

A pump and engine cooling system shall be provided on the apparatus. The cooling system shall keep the engine cool when running for long periods of time and the pump cool during long periods of pumping when water is not being discharged. The cooling system shall also be set up in a way that the cooling system lines can be easily drained through the master pump drain.

The cooling system lines shall consist of high-temperature 3/8” (inside diameter) hose. The engine cooling lines shall be installed with one (1) line going from the discharge side of the water pump through an Innovative Controls model 300822022, 3/8” inline quarter turn ball valve assembly and continuing on to the chassis heat exchanger. The return line from the heat exchanger shall then run into the suction side of the pump. The pump cooling lines shall be installed with one (1) line going from the discharge side of the water pump through an Innovative Controls model 300822022, 3/8” inline quarter-turn ball valve assembly up to the water tank. At the water tank, the pump cooling line shall be plumbed into a 3/8” check valve on the “Tank Fill” valve. The check valve shall prevent tank water from back flowing into the pump when the cooling system is not in use. A return line from the water tank shall be plumbed into the water pump.

The engine cooling system valve shall be controlled on the operator’s panel, and shall be clearly labeled, “ENGINE COOLER”.

The pump cooling system valve shall be controlled on operator’s panel, and shall be clearly labeled, “PUMP COOLER”.

PLUMBING, GUAGES, INTAKES, AND DISCHARGES

PLUMBING MANIFOLD

The plumbing manifold shall consist of the inlet side manifold and the discharge side manifold. Galvanized Victaulic couplings shall be used wherever possible for ease of maintenance and superior corrosion protection.

The inlet side of the plumbing manifold shall utilize schedule 10, 304-grade stainless steel tubing and preformed elbows for inlets that are larger than 3”. Side auxiliary inlets that are 3” or smaller shall utilize schedule 10, 304-grade stainless steel threaded tubing and preformed elbows. The inlet manifold shall thread into the pump auxiliary inlet ports and each inlet valve shall thread onto the inlet manifold.

The discharge side of the plumbing manifold shall utilize schedule 10, 304-grade stainless steel tubing and preformed elbows to ensure the quality of the manifold where welds are required. The discharge manifold shall connect to the pump discharge ports using 1/2” stainless steel flanges that shall be machined to seat an O-ring to ensure a leak proof seal. Each discharge shall derive from a port on the manifold assembly connected to a discharge valve with 1/2” 304-grade stainless steel flanges. Discharges that terminate in a location other than the pump module (i.e. rear discharges) that do not require welding shall utilize a combination of high-pressure flex hose and schedule 10, 304-grade stainless steel tubing to allow flexibility between the body and the pump module.

A 3/4” quarter turn drain valve shall be included. A chrome plated rectangular handle shall be provided on the drain valve to facilitate use with a gloved hand. The drain valve shall be located just above the running board and below the pump panel to reduce clutter in the pump panel area. The drain valve shall be connected to the valve with a flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color-coded bezel shall be included.

INNOVATIVE CONTROLS DISCHARGE GAUGES 2-1/2” 0-400 PSI - LED BACKLIT

The discharge gauges on the apparatus shall be 2-1/2” diameter Innovative Controls pressure gauges. The gauges shall have a one-piece case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. The gauges shall be

LED backlit. Clear scratch resistant molded lenses shall be used to ensure distortion-free viewing, and they shall be sealed to the gauge by being trapped together with a profile gasket by a crimped stainless-steel bezel. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from 40Degrees Fahrenheit to +160Degrees Fahrenheit.

The gauges shall exceed ASME B40.100 Grade B requirements with an accuracy of +/1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

Highly polished stainless-steel bezels shall be provided to prevent corrosion and protect lenses and gauge cases. The gauges shall be installed into decorative chrome-plated mounting bezels that incorporate valve identifying verbiage and/or color labels.

The gauges shall display a range from 0 to 400 PSI.

MASTER PRESSURE CENTER ASSEMBLY – LED BACKLIT

The master gauges shall be installed on the pump panel no more than 6 inches apart in an integrated master pressure assembly that includes the two (2) master gauges and the test port manifold.

The master intake and master discharge gauges shall be 4” diameter Innovative Controls pressure gauges. Each gauge shall have a Nylon case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. The gauges shall both be blue LED backlit. A clear scratch resistant molded lens shall be used to ensure distortion-free viewing, and it shall be sealed to the gauge by being trapped together with a profile gasket by a crimped stainless-steel bezel. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from 40Degrees Fahrenheit to +160Degrees Fahrenheit.

Each gauge shall exceed ASME B40.100 Grade B requirements with an accuracy of +/1% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy. A highly polished stainless-steel bezel shall be provided to prevent corrosion and protect the lens and gauge case.

The two (2) master gauges shall be installed into a decorative chrome-plated zinc mounting bezel that also incorporates a test port manifold and a graphic overlay that identifies the master intake and discharge gauges, the vacuum test port, and the pressure test port. The test port manifold is solid cast brass with chrome-plated plugs.

The gauge on the left shall be the master pump intake gauge and display a range from -30 to 400 PSI with black graphics on a white background. The gauge on the right shall be the master pump discharge gauge and display a range from 0 to 400 PSI with burgundy graphics on a white background.

HARDWARE BRAND

The non-Storz discharge and intake fittings provided on this apparatus shall be South Park Corp. Brand. The adapter/cap/plug fittings shall be manufactured from high-quality brass that shall be polished to remove manufacturing irregularities with a chrome finish applied to the polished surface.

The Storz discharge and intake fittings provided on this apparatus shall be Task Force Tips Brand. For corrosion resistance, the adapter shall be constructed of hard coat anodized aluminum alloy and include a polymer bearing ring for prevention of galvanic corrosion. The auxiliary intake(s) shall terminate with NH swivels, and the discharges shall terminate with male NH threads.

DISCHARGE, PRECONNECT, AND INTAKE DRAINS

An Innovative Controls 3/4” quarter turn drain valve shall be included on each discharge, gated intake,

and steamer valve (if applicable). A side stem, long stroke chrome plated lift handle shall be provided on the drain valve to facilitate use with a gloved hand. The drain valve shall have a verbiage tag that angles upward so that it can easily be seen and read by the operator before opening. The drain valve shall be located just above the running board and below the pump panel to reduce clutter in the pump panel area. The drain valve shall be connected to the valve with a flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color-coded bezel shall be included.

AUTOMATIC DRAINS

A Class 1 automatic drain shall be installed on the deluge valve. The drains shall also be located in low laying areas. The drains will open whenever the pressure in the line drops below 6 PSI.

PLUMBING LABELS

Innovative Controls brand labels shall be used to identify any pump valve, controller, gauge, or drain on the apparatus. The labels shall be color coded in accordance with NFPA 1901, current edition compliance. The colors and verbiage of the labels shall be the OEM standard label package. Each discharge label shall have a unique color and shall have verbiage to identify it.

For easy identification of each component, the verbiage of each label shall be size 22 pt, font “Helvetica Neue Condensed Bold”.

TANK/PUMP PLUMBING LABELS

The tank plumbing valves and controllers shall have the OEM Standard label package unless stated otherwise. The Pump-to-Tank Fill shall be labeled “TANK FILL” and shall have a light blue label color. The Tank-To-Pump shall be labeled “TANK TO PUMP” and shall have a Navy-Blue label color.

The tank plumbing valves and controllers shall have the OEM Standard label package unless stated otherwise. The Pump-to-Tank Fill shall be labeled “TANK FILL” and shall have a light blue label color. The Tank-To-Pump shall be labeled “TANK TO PUMP” and shall have a Navy-Blue label color.

2” TANK FILL

A 2” tank fill shall be plumbed from the pump to the tank. Installation shall be completed with 2” rubber hose and stainless-steel hose couplings. An Akron Brass, model 8820, 2” Swing-Out™ valve shall be provided. The valve shall have an all-brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall carry a ten (10) year warranty by the valve manufacturer.

3” TANK-TO-PUMP

A 3” tank-to-pump shall be plumbed with a flexible hose from the tank to the suction side of the pump. An Akron Brass, model 8830, 3” Swing-Out™ valve shall be provided. The valve shall have an all-brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall also include a necessary B3SH pump flange adapter, which shall be specifically used for the tank-to-pump line to properly adjust the plumbing based on the pitch of the pump. The valve shall carry a ten (10) year warranty by the valve manufacturer.

A check valve shall be between the pump suction and the booster tank valve. The check valve shall eliminate back flow into the water tank when the pump is connected to a pressurized source. The valve shall be actuated by a manual actuator. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle. The controller shall be set to 'in' is open and 'out' is closed.

6" DRIVER'S SIDE MAIN INTAKE

A 6" main intake shall be located on the driver's side of the pump module. The suction fittings shall include a removable diecast screen to provide cathodic protection for the pump thus reducing corrosion. A short steamer barrel shall be installed to accommodate an intake valve without exceeding the legal overall body width. The intake shall terminate male NH threads.

One (1) 6" NH thread long handle chrome plated vented steamer cap, complete with an apparatus manufacturer logo, shall be provided.

2-1/2" DRIVER'S SIDE AUXILIARY INTAKE

A 2-1/2" gated auxiliary intake with 2-1/2" plumbing shall be provided on the driver's side of the pump module. The auxiliary intake shall be fully recessed behind the panel in order to keep the valve protected from the elements.

An Akron Brass, model 8825, 2-1/2" Swing-Out™ valve shall be provided. The valve shall have an all-brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model TS manual actuator installed directly on the valve. The handle shall allow the valve to be controlled directly at the valve and shall be oriented so that "Up" is open, and "Down" is closed.

One (1) 2-1/2" NH thread rocker lug chrome plated vented plug, complete with cable or chain, shall be provided.

6" PASSENGER SIDE MAIN INTAKE

A 6" main intake shall be located on the passenger side of the pump module. The suction fittings shall include a removable diecast screen to provide cathodic protection for the pump thus reducing corrosion. A short steamer barrel shall be installed to accommodate an intake valve without exceeding the legal overall body width. The intake shall terminate male NH threads.

One (1) 6" NH thread long handle chrome plated vented steamer cap, complete with an apparatus manufacturer logo, shall be provided.

2-1/2" PASSENGER SIDE AUXILIARY INTAKE

A 2-1/2" gated auxiliary intake with 2-1/2" plumbing shall be provided on the passenger side of the pump module. The auxiliary intake shall be fully recessed behind the panel in order to keep the valve protected from the elements.

An Akron Brass, model 8825, 2-1/2" Swing-Out™ valve shall be provided. The valve shall have an all-brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be

manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model TS manual actuator installed directly on the valve. The handle shall allow the valve to be controlled directly at the valve and shall be oriented so that “Up” is open, and “Down” is closed.

One (1) 2-1/2” NH thread rocker lug chrome plated vented plug, complete with cable or chain, shall be provided.

2-1/2” DIRECT TANK FILL – REAR

There shall be a one (1) 2-1/2" direct tank fill located on the left-rear of the apparatus. The valve shall be an Akron 8800 Series swing out valve. This valve shall be operated using a direct manual actuator handle. The valve inlet shall be a 2-1/2" female hose NH thread adapter and feature a 30-degree droop with a wire screen inlet strainer and a swivel.

4” DIRECT TANK FILL - REAR

One (1) 4” direct tank fill shall be provided at the rear of the body, on the passenger side, as low as possible. The direct tank fill shall be gated with a 4" Fireman's Friend. The fill valve shall be capable of flowing at a rate in excess of 1,800 gallons per minute and will be of a self-deflecting design, requiring no additional diffusion device. The fill valve shall be constructed of stainless steel. The direct tank fill inlet shall be designed to run away from the tank and elbow down towards the rear bumper. The pipe shall be shall be 4 " stainless steel with a male NPT connection.

REAR 4” DIRECT TANK FILL ADAPTER

There shall be one (1) 4 " female NPT x 4.00" male NST adapter with strainer provided. There shall be one (1) Task Force Tip 4" Female NST rocker lug x 5” Storz Rigid and a 5” Task Force Tip Storz Cap.

INTAKE LABELS

Innovative Controls brand labels shall be used to identify intake labels on the apparatus. The labels shall be color coded in accordance with NFPA 1901, current edition compliance. The colors and verbiage of the labels shall be the OEM standard label package. Each discharge label shall have a unique color and shall have verbiage to identify it.

For easy identification of each component, the verbiage of each label shall be size 22 pt, font “Helvetica Neue Condensed Bold”.

2-1/2” DRIVER’S SIDE DISCHARGE #1

A 2-1/2” discharge with 2-1/2” plumbing shall be located on the driver’s side of the pump compartment. The discharge shall terminate with male NH thread.

An Akron Brass model 8625 2-1/2” Swing-Out™ valve shall be provided. The valve shall have an all-brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass rack and sector actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle.

The discharge shall have a 2-1/2” glass filled nylon 66 case gauge with bezel and a display range from

0 to 400 PSI. The gauge shall have a black dial graphic and illuminated with red light.

One (1) 2-1/2” female NH thread swivel rocker lug x 2-1/2” male NH thread 30-degree chrome plated elbow adapter shall be provided.

One (1) 2-1/ 2” NH thread rocker lug chrome plated vented cap, complete with cable or chain, shall be provided.

2-1/2” DRIVER’S SIDE DISCHARGE #2

A 2-1/2” discharge with 2-1/2” plumbing shall be located on the driver’s side of the pump compartment. The discharge shall terminate with male NH thread.

An Akron Brass model 8625 2-1/2” Swing-Out™ valve shall be provided. The valve shall have an all-brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass rack and sector actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle.

The discharge shall have a 2-1/2” glass filled nylon 66 case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic and illuminated with red light.

One (1) 2-1/2” female NH thread swivel rocker lug x 2-1/2” male NH thread 30-degree chrome plated elbow adapter shall be provided.

One (1) 2-1/2” NH thread rocker lug chrome plated vented cap, complete with cable or chain, shall be provided.

2-1/2” PASSENGER SIDE DISCHARGE

A 2-1/2” discharge with 2-1/2” plumbing shall be located on the passenger side of the pump compartment. The discharge shall terminate with male NH thread.

An Akron Brass, model 8825, 2-1/2” Swing-Out™ valve shall be provided. The valve shall have an all-brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by a manual actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle at the pump operator’s panel.

The discharge shall have a 2-1/2” glass filled nylon 66 case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic and illuminated with red light.

One (1) 2-1/2” female NH thread swivel rocker lug x 2-1/2” male NH thread 30-degree chrome plated elbow adapter shall be provided.

One (1) 2-1/2” NH thread rocker lug chrome plated vented cap, complete with cable or chain, shall be provided.

4” PASSENGER SIDE DISCHARGE (625 GPM NFPA Rated)

A 4” large diameter discharge, with 4” plumbing, shall be located on the passenger side of the pump compartment. The discharge shall terminate with male NH thread.

An Akron Brass, model 8630, 3” Swing-Out™ valve shall be provided. The valve shall have an all-brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass manual gear actuator installed on the valve. The gear actuator shall operate at a 50:1 gear ratio, which operates from fully open to fully closed in twelve (12) rotations.

The gear actuator shall be controlled by an Akron Brass 4” handwheel valve controller. The handwheel worm gear shall be connected to the remote mounted valve via a rod assembly. The handwheel shall turn a gear sector mounted on the valve for smoother and easier operations under pressure. A position indicator shall show the position of the ball valve in accordance with NFPA 1901, current edition. Opening and closing speed shall comply with the current NFPA standard to minimize effects of water hammer.

The discharge shall have a 2-1/2” glass filled nylon 66 case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic and illuminated with red light.

There shall be one (1) Task Force Tip elbow with 4” NFH Swivel Rocker x 5” Storz Rigid and a 5” Task Force Tip Storz Cap.

2-1/2” DRIVER’S SIDE REAR DISCHARGE

A 2-1/2” discharge, with 2-1/2” plumbing, shall be located on the driver’s side rear of the apparatus. It shall be a 2-1/2" female NH thread swivel rocker lug x 2-1/2" male NH thread 45-degree chrome plated elbow adapter shall be provided. The discharge shall terminate in male NH thread.

An Akron Brass, model 8825, 2-1/2” Swing-Out™ valve shall be provided. The valve shall have an all-brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by a manual actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle at the pump operator’s panel.

The discharge shall have a 2-1/2” glass filled nylon 66 case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic and illuminated with red light.

One (1) 2-1/2” female NH thread swivel rocker lug x 2-1/2” male NH thread 30-degree chrome plated elbow adapter shall be provided.

One (1) 2-1/2” NH thread rocker lug chrome plated vented cap, complete with cable or chain, shall be provided.

4” PASSENGER SIDE REAR DISCHARGE (625 GPM NFPA Rated)

A 4” large diameter discharge, with 4” plumbing, shall be located on the passenger side rear of the apparatus. The discharge shall terminate with male NH thread.

An Akron Brass, model 8630, 3” Swing-Out™ valve shall be provided. The valve shall have an all-brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of

swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass manual gear actuator installed on the valve. The gear actuator shall operate at a 50:1 gear ratio, which operates from fully open to fully closed in twelve (12) rotations.

The gear actuator shall be controlled by an Akron Brass 4” handwheel valve controller. The handwheel worm gear shall be connected to the remote mounted valve via a rod assembly. The handwheel shall turn a gear sector mounted on the valve for smoother and easier operations under pressure. A position indicator shall show the position of the ball valve in accordance with NFPA 1901, current edition. Opening and closing speed shall comply with the current NFPA standard to minimize effects of water hammer.

The discharge shall have a 2-1/2” glass filled nylon 66 case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic and illuminated with red light.

There shall be one (1) Task Force Tip elbow with 4” NFH Swivel Rocker x 5” Storz Rigid and a 5” Task Force Tip Storz Cap.

CROSSLAYS

CROSSLAY CONFIGURATION

Two (2) 1-1/2” crosslay pre-connects shall be located above the pump panel. The interior of the pre-connect hose bed shall have a maintenance free abraded finish.

High-pressure flex hose with stainless steel couplings shall be used in the plumbing. These need to be plumbed outboard as far as possible to enable easy reach from the ground.

A 90-degree swivel elbow shall be utilized to keep the hose from kinking when pulled from either side of the apparatus. The swivel for each crosslay shall be located outboard for ease of making connections while changing hose.

The pre-connect hose beds shall be sized to accommodate a minimum of 400’ of 1-3/4” double jacket hose.

CROSSLAY FLOORING

The floor of the pre-connect area shall be covered with DuraDek fiber reinforced material. The DuraDek shall have “T” beams in parallel connected with cross slats that are first mechanically bonded and then epoxied. The “T” sections shall be spaced 3/4” apart to allow for drainage and ventilation.

CROSSLAY ROLLERS

Stainless steel rollers shall be provided at each end of the crosslay hose bed to facilitate deployment of hose. Vertical rollers shall be installed on each side of the hose bed opening and a horizontal roller shall be installed under the opening.

CROSSLAY DIVIDER

One (1) divider shall be in the crosslay area. The divider shall be fabricated of 3/16” aluminum and shall be mounted in a channel on each end for adjustability. The divider shall have a maintenance free abraded finish.

CROSSLAY COVER

An aluminum nonslip tread plate cover shall be installed on the crosslay hose bed. The cover shall not interfere with hose loading when in the open position. When in the open position the cover shall remain open due to automatically engaging mechanisms that require no type of latch operation to engage or release. The cover shall be provided with one full length stainless steel piano style hinge that shall attach the cover to the body. The cover shall be light yet rigid. Opening of the cover may be performed by one person on one side of the apparatus. The cover shall be rigid enough to support weight without deformation.

CROSSLAY END COVERS

A heavy-duty end flap/cover shall be located on each end of the preconnected crosslays. The top of the end covers shall be connected to the tread plate top cover through a C-Rail channel. The bottom of the cover shall be connected using footman loop and J-Hooks with an adjustable buckle. The cover color shall be red. The straps sewn into the covers shall be red as well.

CROSSLAY 1-1/2” PRECONNECT #1

A 1-1/2” pre-connect with 2” plumbing shall be provided. The pre-connect shall terminate out a swivel male NH threads.

The 1-1/2” crosslay pre-connect shall have a capacity of 200’ of 1-3/4” double jacket fire hose stored in a single stack.

An Akron Brass, model 8820, 2” Swing-Out™ valve shall be provided. The valve shall have an all-brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by a manual actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle at the pump operator’s panel.

The discharge shall have a 21/2” glass filled nylon 66 case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic and illuminated with red light.

The discharge shall be designated as a pre-connect so no cap and chain shall be required.

CROSSLAY 1-1/2” PRECONNECT #2

A 1-1/2” pre-connect with 2” plumbing shall be provided. The pre-connect shall terminate out a swivel male NH threads.

The 1-1/2” crosslay pre-connect shall have a capacity of 200’ of 1-3/4” double jacket fire hose stored in a single stack.

An Akron Brass, model 8820, 2” Swing-Out™ valve shall be provided. The valve shall have an all-brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve

shall not require lubrication of seats or any other internal waterway parts and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by a manual actuator installed on the valve. The manual actuator shall be controlled by an Innovative Controls push/pull T-handle at the pump operator's panel.

The discharge shall have a 2-1/2" glass filled nylon 66 case gauge with bezel and a display range from 0 to 400 PSI. The gauge shall have a black dial graphic and illuminated with red light.

The discharge shall be designated as a pre-connect so no cap and chain shall be required.

PAINT

CHASSIS PAINT

The single tone chassis cab shall be painted by the chassis manufacturer.

BODY PAINT PREPARATION

The apparatus body and components shall be metal finished as follows to provide a superior substrate for painting:

- All aluminum sections of the body shall undergo a thorough cleaning process, starting with a phosphoric acid solution to begin the etching process, followed by a complete rinse. The next step shall consist of a chemical conversion coating applied to seal the metal substrate and become part of the aluminum surface for greater film adhesion.
- After the cleaning process, the body and its components shall be primed with a high solids primer and the seams shall be caulked.
- All bright metal fittings, if unavailable in stainless steel or polished aluminum, shall be heavily chrome plated. Iron fittings shall be copper underplated prior to chrome plating.

PAINT PROCESS

The paint process shall follow the strict standards as set forth by AkzoNobel Guidelines.

The body shall go through a three-stage paint process: primer coat, base coat (color), and clear coat. In the first stage of the paint process, the body shall be coated with primer to achieve a total thickness of 2-4 mils. In the second stage of the paint process, the body shall be painted with BTLV650 high solids polyurethane base coat. A minimum of two to three coats of paint shall be applied to achieve covering. In the final stage of the paint process, the body shall be painted with a clear topcoat. A minimum of two to three coats shall be applied to achieve a total dry film thickness of 2-3 mils.

As part of the curing process, the painted body shall go through a Force Dry / Bake Cycle process. The painted components shall be baked at 185 degrees for 3 hours to achieve a complete coating cure on the finished product.

HAND POLISHED

After the Force Dry / Bake Cycle and ample cooldown time, the coated surface shall be sanded using 3M 1000, 1200, and/or 1500 grit sandpaper to remove surface defects. In the final step, the surface shall be buffed with 3M super duty compound to add extra shine to coated surface. No more than .5 mil of clear shall be removed in this process.

BODY PAINT COLOR

The body shall be painted with High Solids Polyurethane Base Coat.

The single tone body shall be painted Sikkens FLNA 32545 Red.

UNDERCOATING

The apparatus shall undergo a two-step undercoating process. The first step shall be a rubberized polyurethane base compound applied after the body has been primed. The materials used incorporate unused paint products to reduce the amount of waste released into the environment. This coat shall be applied to all hidden pockets and surfaces that are not visible after completion.

As a final step, the entire underside of the body shall be coated with a bituminous based automotive type undercoating when the apparatus is completed. During this application, special care shall be taken to avoid spraying the product on airlines, cables, or other items that would hinder normal maintenance.

CORROSION PREVENTION

One (1) 3.75-ounce tube of Electrolysis Corrosion Kontrol (ECK) shall be provided to use when additional items are mounted to the apparatus. ECK protects aluminum and stainless steel against electrolytic reaction, isolates dissimilar metals and gives bedding protection for hardware and fasteners. ECK contains an anti-seizing lubricant for threads. ECK is dielectric and perfect for use with electrical connectors.

SAMPLE PAINT CARD

One (1) sample paint card shall be provided with the apparatus. The card shall show an example of the apparatus body color on one side and have the specific Sikkens/AkzoNobel paint formula printed on the reverse side.

STICKERING AND STRIPING

REFLECTIVE STRIPING – EACH SIDE

A white 6” retroreflective strip shall be affixed to each side of the apparatus, covering at least 50 percent of the cab and 50 percent of the body, excluding the pump panel areas. The striping shall be completely horizontal and located near the lower third of the apparatus. An exact location shall be determined at the pre-construction meeting.

REFLECTIVE STRIPING – FRONT CAB

The retroreflective stripe located on the sides of the apparatus shall wrap around the front of the chassis cab and terminate at chassis grille. This stripe shall be at least 25 percent of the width of the front of the apparatus, measured at the front of the vehicle, not including mirrors or other protrusions. An exact location shall be determined at the pre-construction meeting.

RUB RAIL REFLECTIVE STRIPING

There shall be 2” reflective striping installed in the rub rail channel. The reflective striping shall be diamond grade quality material for increased visibility. The reflective shall be silver in color.

CHEVRON COLOR - RED/FLUORESCENT YELLOW GREEN

The chevron striping shall consist of red, 3M part number 1172 EC, and fluorescent yellow-green, 3M part number 3983 and shall meet the chevron color requirements in accordance with NFPA 1901, current edition.

Only 3M Diamond Grade VIP Reflective Striping shall be used. 3M Diamond Grade VIP Reflective Striping is a wide-angle prismatic lens reflective sheeting designed for the production of durable traffic control signs and delineators that are exposed vertically in service. This sheeting is designed to provide higher sign brightness than sheeting's that use glass bead lenses. It is intended to also provide high

sign brightness in the legibility distance where other sheeting's do not. If something other than 3M is being used, third party documentation must be provided with the bid to prove it is compliant with Federal DOT and NFPA 1901, current edition.

CHEVRON STRIPING REAR BODY

Retroreflective striping shall cover at least 50% of the rear-facing vertical surfaces in accordance with NFPA 1901, current edition. The striping shall be in a chevron pattern sloping downward and away from the centerline of the apparatus at an angle of 45.00 degrees. Each stripe shall be a minimum of 6-inch width. The striping shall consist of a solid base layer of reflective material and alternate between the exposed base layer material and durable, transparent, acrylic colored film.

The chevron pattern shall include the rear face of the body and any other painted storage compartment doors, such as the upper left and right-hand storage doors.

SALES ADMINISTRATION & WARRANTIES

CHASSIS WARRANTY

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom-built cab and chassis for a period of twenty-four (24) months, or the first 36,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the first end user.

CHASSIS OPERATION MANUAL

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

ENGINE AND TRANSMISSION OPERATION MANUALS

The following manuals specific to the engine and transmission models ordered will be included with the chassis in the ship loose items:

(1) Hard copy of the Engine Operation and Maintenance manual with digital copy

(1) Digital copy of the Transmission Operator's manual

(1) Digital copy of the Engine Owner's manual

ENGINE SERVICE MANUALS

There shall be one (1) printed hard copy set of Cummins engine service reference manuals which shall be provided with the chassis.

TRANSMISSION SERVICE MANUALS

There shall be one (1) printed hard copy set of Allison 4500EV transmission service manuals included with the chassis.

CAB/CHASSIS AS BUILT WIRING DIAGRAMS

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

SALES TERMS

The sale of the chassis shall be governed by the terms contained on the Sales Terms ‐ Acceptance of Purchase Order document, a copy of which is attached to this option.

GENERAL LIMITED WARRANTY

Tehama County Fire Department shall receive a General Two (2) Years or 36,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0002. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

BODY STRUCTURE (ALUMINUM) LIMITED WARRANTY

Tehama County Fire Department shall receive a Body Structure (Aluminum) Ten (10) Years or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0502. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

ELECTRICAL LIMITED WARRANTY

Tehama County Fire Department shall receive an Electrical Two (2) Years or 36,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0202. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

PLUMBING AND PIPING (STAINLESS STEEL) LIMITED WARRANTY

Tehama County Fire Department shall receive a Plumbing and Piping (Stainless Steel) Ten (10) Years or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0800. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

WATER TANK WARRANTY

The tank shall be complete with a lifetime warranty. The tank manufacturer shall mark the tank and furnish notice that indicates proof of warranty. Full details shall be provided in the complete warranty document.

BODY SUBSTRUCTURE (GALVANIZED) LIMITED WARRANTY

Tehama County Fire Department shall receive a Body Substructure (Galvanized) Twenty (20) Years or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0515. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

PAINT AND FINISH (EXTERIOR CLEAR COATED) LIMITED WARRANTY

Tehama County Fire Department shall receive a Paint and Finish (Exterior Clear coated) Ten (10) Years limited warranty in accordance with, and subject to, warranty certificate RFW0710. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

PUMP WARRANTY

The fire pump shall be warranted by Hale for a period of seven (7) years from the date of delivery to the Tehama County Fire Department or seven and one-half (7-1/2) years from the shipment date by Hale, whichever period expires first. Full details shall be provided in the complete warranty document.