City of Meriden, Connecticut

Purchasing Department

Request For Proposal

For

Meriden Fire Department Pumper Truck

Meriden, CT

RFP022-04

Proposals Due: August 26, 2021 @ 11:00 AM

Purchasing Department
142 East Main St. Room 210
Meriden, CT 06450
(203) 630-4115

LEGAL NOTICE

The City of Meriden is accepting sealed proposals for:

RFP022-04 Meriden Fire Department Pumper Truck

The City of Meriden is seeking a new pumper truck. The design and construction of the apparatus shall embody standard automotive heavy vehicle engineering practices. The apparatus shall be designed, engineered and constructed with due consideration for the severe service nature of the fire service. The apparatus shall conform to the requirements of the current (at the time of bid) National Fire Protection Association Pamphlet #1901 for Motor Fire Apparatus unless otherwise specified in these specifications. The apparatus shall be a 2021 model Pumper fire apparatus.

Submissions shall be accompanied by a "Contractor's Proposal" consisting of a detailed description written by the manufacturer of the apparatus and equipment proposed and to which the apparatus furnished under contract shall conform. To facilitate accurate and timely proposal evaluation, the company's proposal shall be ordered in the same sequence as the purchaser's proposal specification. In no case shall a company submit a copy of the purchaser's specifications as their companies' Proposal. Failure to comply with these requirements shall be cause for proposal rejection. The specifications shall indicate size, type, model and make of all component parts and equipment and shall be submitted in **five (5) complete** sets and **one (1) flash drive**, in the manner specified. Forms and specifications may be obtained from the Purchasing Department, on the City of Meriden website (www.meridenct.gov/business/bids-rfps/), and on the State of Connecticut Department of Administrative Services website (https://portal.ct.gov/DAS/CTSource/CTSource). Proposals will be accepted at the Purchasing Department, 142 East Main Street, Room 210, Meriden, Connecticut 06450 until **11:00 A.M. local, eastern standard time on August 26, 2021**. Any proposal received after the time and date specified shall not be considered.

The right is reserved to reject any or all proposals, in whole or in part, to award any item, group of items, or total proposal, and to waive informality or technical defects, if it is deemed to be in the best interest of the City of Meriden. No proposer may withdraw their submission within one hundred twenty (120) days of the date of the opening.

The successful firm(s) shall ensure that any appropriate licenses or certifications required by the State of Connecticut are maintained for the duration of the project. The firm must meet all municipal, state and federal affirmative action and equal employment opportunity practices

The City of Meriden is an Affirmative Action/Equal Opportunity Employer. Disadvantaged, minority, small, and women business enterprises are encouraged to respond.

Adam B. Tulin
Purchasing Officer
City of Meriden, CT 06450-8022
Dated: July 23, 2021

CITY OF MERIDEN, CONNECTICUT

RFP022-04 Meriden Fire Department Pumper Truck

INFORMATION TO PROPOSERS

1. PROPOSAL PROCEDURES

   Submissions will be received by the City of Meriden's Purchasing Department, Room 210, City Hall, 142 East Main Street, Meriden, Connecticut, 06450-8022 until 11:00 A.M. on August 26, 2021.

2. PROPOSALS

   Please submit five (5) copies of your proposal forms. One (1) shall be an original and four (4) can be copies. Please submit one additional complete copy of your submission on a flash drive.

   a. Proposals must be made out and signed in the corporate, or other, name of Proposer, and must be fully and properly executed by an authorized person.
   b. The sealed envelope must denote the Proposer's name and address in the upper left hand corner and the words "PROPOSAL DOCUMENT – RFP022-04 to be opened at 11:00 A.M." in the lower left hand corner.
   c. Proposals received later than the time and date specified will not be considered.
   d. Amendments to or withdrawal of proposals received later than the date and time set forth in the proposal opening will not be considered.

3. N/A

4. EXAMINATION OF PROPOSAL DOCUMENTS

   Proposers are to examine all documents and visit the site in order to make a thorough examination of the conditions so that the proposer may familiarize itself with all of the existing requirements, conditions, and difficulties that will affect the execution of the work in order to determine the amount of work necessary to carry out the true intent of the specifications and work shown on drawings.

   The City of Meriden and its agents do not have any responsibility for the accuracy, completeness, or sufficiency of any bid document obtained from any other source other than from the City of Meriden. Obtaining documents from any other source(s) may result in obtaining incomplete and inaccurate information. Obtaining documents from any other source may also result in failure to receive any addenda, corrections, or other revisions to the documents that may be issued.

   No request shall be honored if such request is made less than seven (7) calendar days prior to the date fixed for the opening of proposals. Any and all such interpretations, and any

supplementary instructions, will be in the form of a written addenda to the specifications which, if issued, will be made available on the City of Meriden website (www.meridenct.gov) unless it is to change the date fixed for the opening of proposals, not later than three (3) days prior to the date fixed for the opening of proposals. Proposers are encouraged to check the website regularly for addenda. Failure of any proposer to receive any such addenda shall not relieve any proposer from any obligations under its proposal as submitted.

Any questions about the proposal document must be submitted in writing via email to meridenpurchasing@meridenct.gov. Any other format of question will not be answered.

5. PROPOSALS TO REMAIN OPEN

No proposer may withdraw its proposal within one hundred twenty (120) days of the date of the proposal opening. Should there be reason why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the City of Meriden and the successful proposer.

6. AWARD OF CONTRACT

The Purchasing Officer reserves the right to make an award on the proposal which, by the Purchasing Officer's judgment and recommendation from the Meriden Fire Department following proposal evaluations, best meets the specifications and is deemed to be in the best interest of the City of Meriden.

The contract will not be awarded to any corporation, firm, or individual which/who is in arrears to the City of Meriden by debt or contract, or who is in default as security or otherwise by any obligation to the City of Meriden.

The right is reserved to reject any or all proposals, in whole or in part, to award any item, group of items, or total proposal, and to waive informality or technical defects, if it is deemed to be in the best interest of the City of Meriden.

7. N/A

8. N/A

9. N/A

10. SCHEDULE OF WORK

The Contractor shall schedule all work in a manner that will not disrupt City of Meriden operations. Once the work has begun, the Contractor shall work full-time until completion of the Contract.

11. TAXES

The City of Meriden is exempt under Connecticut General Statutes from the payment of the excise taxes imposed by the federal government and the Sales and Use Tax of the State of Connecticut; such taxes should not be included in the bid price. Upon request, exemption certificates will be furnished to the successful proposer.

12. FAIR EMPLOYMENT PRACTICES

The Contractor shall agree that neither it or its subcontractors, except in the case of a bona fide occupational qualification or need, to refuse to hire or employ or to bar or to discharge from employment any individual or to discriminate against such individual in compensation or in terms, conditions or privileges of employment because of the individual's race, color, religious creed, age, sex, gender identity or expression, marital status, national origin, ancestry, present or past history of mental disability, intellectual disability, learning disability, physical disability, including, but not limited to, blindness or status as a veteran. The aforementioned terms are obtained from Connecticut General Statutes Section 46a-60, *et seq.,* entitled "Discriminatory employment practices prohibited," as amended.

13. FORM OF AGREEMENT BETWEEN CITY OF MERIDEN AND CONTRACTOR

The City anticipates use of a Purchase Order as form of agreement between the City and a selected vendor, for the purposes of engaging a firm to provide the requested apparatus. Contract considerations that cannot be modified include, but are not limited to, adherence to conditions cited within this RFP, with specific attention to language for indemnification, governing law, and insurance and liability.

14. LOCAL SUBCONTRACTORS, SUPPLIERS, etc.

Local subcontractors, material suppliers, and labor in the City of Meriden should be considered and sought out insofar as it is practical in the performance of this project.

15. CITY OF MERIDEN CODE OF ETHICS

The City of Meriden has adopted a Code of Ethics located in Chapter 21 of the Code of the City of Meriden, sections 21-1 through 21-15, inclusive, which are expressly incorporated herein by reference. The terms of the Code of Ethics shall constitute a part of any contract or agreement entered into by the City of Meriden as a result of this bid as if those terms were fully set forth in such contract or agreement.

Proposers are specifically advised that the Code of Ethics prohibits public officers and employees, as well as their immediate families and businesses, with which they are associated from participating in any transaction which is incompatible with the proper discharge of official duties or responsibilities. Proposers are also advised that the Code of Ethics contain provisions with respect to paid contractors and former employees and officials.

PROPOSERS SHOULD NOTE THAT PROPOSALS, CONTRACTS, AND AGREEMENTS ENTERED INTO OR AWARDED IN VIOLATION OF THE CODE OF ETHICS ARE VOIDABLE BY RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MERIDEN.

Copies of the Code of Ethics may be obtained from the office of the City Clerk or may be found online on the City of Meriden's website.

16. NON-COLLUSION BID STATEMENT

Each proposer submitting a proposal to the City of Meriden for any portion of the work contemplated by the documents on which proposing is based shall execute and attach thereto the sworn Non-Collusive Proposal Statement, to the effect that the proposer has not colluded with any other person, firm, or corporation in the submission of the proposal.

17. SOIL CONDITIONS - N/A

18. AWARD IN CASE OF A TIE – N/A

19. ASSIGNMENT OF CONTRACT

No contract may be assigned without the written consent of the Purchasing Officer or designee.

20. PERMITS

The Contractor shall be responsible for obtaining any and all necessary permits required by the City of Meriden prior to the commencement of work. The Contractor may contact the City of Meriden Building Department for permit information at (203) 630-4091. For all other required permits, contact the City of Meriden Engineering Department at (203) 630-4018.

21. PROPOSAL PRICE AND PAYMENT

The City of Meriden is exempt from the payment of the excise taxes imposed by the Federal government and the Sales and Use Tax of the State of Connecticut under Connecticut General Statutes; accordingly, such taxes shall not be included in the proposal price.

The City of Meriden, unless stated otherwise in the proposal documents or Contract, will make payment to the Contractor not less than thirty (30) days following completion of services.

24. QUALITY

All materials, equipment, supplies, and services shall be subject to rigid inspection. If defective material, equipment, supplies, or services are discovered, the Contractor shall remove or make good such material, equipment, or supplies without extra compensation. It

is expressly understood and agreed that any inspection by the City of Meriden will in no way lessen the responsibility of the Contractor or release Contractor from the obligation to perform and deliver to the City sound and satisfactory materials, equipment, supplies, or allow the cost to be deducted from any monies due it from the City of Meriden. All services will be performed in a workmanlike manner.

25. INSURANCE

The successful bidder shall be required to provide a Certificate of Insurance denoting general liability, automobile liability, workers compensation liability, and other coverage required by the City's Risk Manager.

26. CITY HALL CLOSING

If Meriden City Hall is closed due to inclement weather, or any other unforeseen event, proposals will be due at the same time on the next business day that City Hall is open.

CITY OF MERIDEN, CONNECTICUT

RFP022-04 Meriden Fire Department Pumper Truck

NON-COLLUSIVE PROPOSAL STATEMENT/AFFIDAVIT

The undersigned proposer, having been duly sworn, does hereby depose and says:

1. The proposal has been arrived at by the proposer independently and has been submitted without collusion and without any agreement, understanding, or planned common course of action with any other vendor of materials, supplies, equipment, or services described in the Request for Qualifications/Proposal.

2. The contents of the proposal has not been communicated by the proposer or its employees or agents to any person not an employee or agent of the proposer or its surety on any bond furnished with the proposal, and will not be communicated to any such person prior to the official opening of the proposal.

3. The undersigned proposer is duly authorized to bind the business entity identified below.

The undersigned proposer further certifies, under oath, that this statement is executed for the purposes of inducing the City of Meriden to consider the proposal and make an award in accordance therewith.

_____
Signature of Proposer

_____
Print Legal Name of Proposer

_____
Relationship to Business Entity Below

_____
Business Entity Name, Address, Telephone Number, and Email Address

STATE OF CONNECTICUT)
) ss:
COUNTY OF)

Duly sworn and subscribed to before me
this __ day of _____, 2021.

_____
Notary Public
My Commission Expires:
Commissioner of the Superior Court

STATEMENT OF PROPOSER'S QUALIFICATIONS

This Statement of Proposer's Qualifications is to be submitted by the proposer at the time of the proposal. All questions must be answered and the data given must be clear and comprehensive. The proposer may submit any additional information he/she desires. It is understood that when the City has executed an Agreement, to which these General Conditions are a part, it is in part done upon the reliance of the answers provided herein by the proposer or the agent of the proposer.

1. Firm Name: _____

2. Permanent main office address: _____

3. Type of ownership: Minority Owned _____ Yes _____ No

4. Year Established? : _____

5. If a corporation, where incorporated: _____

6. How many years have you been engaged in business under your present firm name? _____

7. Former firm name? :_____

8. Personnel: Total_____

9. Have you ever failed to complete any contract awarded to you? If so, where and why?

_____

_____

10. List similar work performed within the past Five (5) Years, Including the Name and Address of each Contact Person and Telephone Number; and approximate cost of each project:

_____

_____

_____

11. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the City of Meriden, in verification of the recitals comprising this Statement of Proposer's Qualifications.

Dated at _____ this _____day of _____, 2021

Name of Proposer:

_____

By: _____ Title: _____

PLEASE SUBMIT THIS FORM WITH PROPOSAL

South West Meriden

MFD ENGINE COMPANY 1 SPECIFICATIONS

1500 GPM Pumper Version 3.3

Table of Contents

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the ***Meriden Fire Department*** a complete apparatus equipped as hereinafter specified. With a view of obtaining the best results and the most acceptable apparatus for service in the ***City of Meriden***, these specifications cover only the general requirements as to the type of construction and tests to which the apparatus must conform, together with certain details as to finish, equipment and appliances with which the successful proposer 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. The apparatus shall conform to the requirements of the current (at the time of bid) National Fire Protection Association Pamphlet #1901 for Motor Fire Apparatus unless otherwise specified in these specifications. The apparatus shall be a 2021 model Pumper fire apparatus. If the 2021 model has terminated the apparatus shall be a 2022 model.

Each proposal shall be accompanied by a "Contractor's Proposal" consisting of a detailed description written by the manufacturer of the apparatus and equipment proposed and to which the apparatus furnished under contract shall conform. To facilitate accurate and timely proposal evaluation, the company's proposal shall be ordered in the same sequence as the purchaser's proposal specification. In no case shall a company submit a copy of the purchaser's specifications as their companies' Proposal.
Failure to comply with these requirements shall be cause for proposal rejection.

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

STATEMENT OF EXCEPTIONS

Any exception or variation in construction, performance, test or items of equipment between this purchaser's specification and the company's proposal shall be detailed and submitted as an exception. The following requirements shall be strictly adhered to:

- Exceptions will be allowed if they are equal to or superior to that specified and provided they are listed and fully documented and explained on a separate page entitled "EXCEPTIONS TO SPECIFICATIONS". The exception list shall refer to specification page number and paragraph.
- All exceptions or deviations must be approved in writing by the Fire Department or the jurisdiction having authority...
- The purchaser shall be the sole judge as to whether an exception or variation meets or exceeds the specification and reserves the right to determine which, if any, exceptions or deviations are acceptable
- Proposals taking total exception to specifications shall not be accepted.
- The apparatus shall be inspected upon delivery for compliance with the specifications. Deviations shall not be allowed and shall be cause for rejection of apparatus unless they were originally listed in company's proposal and approved in writing by the purchaser.

The document must be signed by an officer of the company, and an authorized agent of the purchaser. NO EXCEPTIONS

PROPOSAL SUBMISSION

Companies wishing to provide a proposal are required to complete and return this RFP document. Companies are required to complete the proposal truthfully. If a manufacturer believes that they have met the intent of the specification paragraph, but do not meet the exact requirements of the specification, then they shall submit a letter of exceptions with explanations and submit the document with their proposal package

Failure to adequately document an exception shall be considered a "Not Compliant" response. *BE ADVISED: This document, and all responses and exception taken therein, shall become part of the contract.*

The total price on the company's proposal sheet must include all items in the purchaser's specifications. Listing any requirement contained in the specifications as an option at additional cost shall be cause for proposal rejection.

COMPLIANCE WITH NFPA 1901

The National Fire Protection Association Standard "NFPA 1901 - Standard for Automotive Fire Apparatus - Current Edition" (hereinafter referred to as NFPA 1901) in effect at the time of the purchase shall be used as a reference and its requirements shall be met by the company. Company shall construct the apparatus in accordance with federal and state laws effective at the time of purchase. Any federal, state or NFPA amended changes that shall affect the cost of producing said apparatus shall be charged to the purchaser. Mandatory minor apparatus equipment as stated in the applicable paragraphs (5.8, 6.7, 7.7, 8.8, 9.8, 10.5, 11.9 and respective subparagraphs) of the NFPA standard shall not be provided unless specifically stated and listed in purchaser's written specifications.

Any and all references to "NFPA 190I" within this document shall refer to the current edition of NFPA 190I in effect at the time of the purchase.

MERIDEN FIRE DEPARTMENT'S NFPA 1901 RESPONSIBILITIES

In accordance with NFPA 1901, current edition, it shall be the responsibility of the ***Meriden Fire Department*** to specify the following details of the apparatus:

- Its required performance, including where operations at or above elevations of 2000 ft. or on grades greater than 6 percent are required
- The maximum number of firefighters to ride within the apparatus.
- Specific electrical loads that are to be part of the minimum continuous electrical load defined in13.3.3 of NFPA 2003
- Any hose, ground ladders, or equipment to be carried by the apparatus that exceed the

minimum requirements of the NFPA 1901 standard in effect at the time of the proposal. Equipment weight and location on the apparatus are the responsibility of the purchaser as a prerequisite of defining the loaded vehicle's vertical center of gravity for rollover stability calculations, when required.

GENERAL CONSTRUCTION, QUALITY AND WORKMANSHIP

The design and construction of the apparatus shall embody standard automotive heavy vehicle engineering practices. The apparatus shall be designed, engineered and constructed with due consideration for the severe service nature of the fire service. All parts of the apparatus shall be installed in accordance with the OEM specifications and shall be strong enough to withstand the general service under full load for twenty (20) years.

Distribution of load between the front and rear axles shall be engineered so that all specified equipment, including a filled water tank, full complement of personnel and fire hose shall be carried without damage to the apparatus. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association and current standard automotive practices.

The workmanship shall be of the highest quality in its respective field. In order to assure the quality that the purchaser demands and expects, all welding personnel that shall be utilized in the fabrication and construction of structural components of the apparatus chassis, body shall hold a valid ce1iificate from the AWS - American Welding Society
The apparatus shall be designed to conform to the intent of ANSI and NFPA 1901 standards. The following design criteria shall be applicable to this specification to the extent specified herein:

- American Society for Testing Materials (ASTM) - A-36, Specification for Structural Steel
- Society of Automotive Engineers, Inc. (SAE) - SAE Handbook American Welding Society (AWS) - AWS014.4-77 Classification and Application of Welded Joints for Machinery and Equipment
- American Society for Non-Destructive Testing (ASNT)
- ASNT Guidelines; Procedure SNT-TC- I A

The apparatus shall have symmetrical proportions and a pleasing appearance as a result of design detail and fit/finish quality. The apparatus shall be engineered with firefighter safety as the top priority. Ease of operation and ease of maintenance shall also be considered in the apparatus design, but shall not compromise safety. No special tools shall be required to access normal service or maintenance items.

All sensitive components shall be protected against adverse weather conditions. Any exposed metal surface which is not painted or otherwise coated shall have a bright finish. Corrosion protection shall be provided between any dissimilar metals joined in the construction of this apparatus.

PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be documented with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and free from abnormal vibration or noise throughout the operating range of the apparatus. The apparatus, when loaded, shall be approximately 66% on the rear axle. The successful proposer shall furnish a weight certification showing weight on the front and rear axle, and the total weight of the completed apparatus at the time of delivery.

The apparatus must be capable of accelerating to 30 MPH from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed engine RPM.

The service brakes shall be capable of stopping the fully loaded vehicle within 35 feet from a speed of 25 MPH on a level concrete highway.

The apparatus, fully loaded, shall be capable of obtaining a speed of 50 MPH on a level highway with the engine not exceeding 95% of its governed RPM (full load).

The apparatus shall be tested and approved by a qualified testing agency in accordance with their standard practices for pumping engines.

The contractor shall furnish copies of the Pump Manufacturer's Certification of Hydrostatic Test (if applicable), the Engine Manufacturer's current Certified Brake Horsepower Curve and the Manufacturer's Record of Construction Details.

A performance analysis report shall be run on the vehicle, as ordered, using computer software to determine top speed, gradeability, optimum shift points and acceleration on various grades. The report shall be delivered with the completed vehicle, but shall be available within thirty (30) days of the Pre-Build Meeting.

WHEELBASE

The wheelbase shall not exceed be 178 inches

OVERALL HEIGHT RESTRICTION

IMPORTANT NOTICE! The overall height of the proposed apparatus shall not exceed 112 inches do to underpass restrictions. NO EXCEPTIONS

OVERALL LENGTH RESTRICTION

IMPORTANT NOTICE! The overall length of the proposed apparatus shall not exceed 375 inches.

FAILURE TO MEET TESTS

In the event that the apparatus fails to meet the road test requirements of these specifications

upon delivery, during the first trials, second trials may be made at the option of the company 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 of the apparatus. Permission from the manufacturer to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the Fire Department during the above specified period shall not constitute acceptance.

DELIVERY REQUIREMENTS

The apparatus shall be completely equipped as per these specifications upon arrival and on completion of the required tests shall be ready for immediate service in the fire department of the purchaser. Any and all alterations required at the scene of delivery to comply with these specifications must be done at the contractor's expense.

PURCHASER RIGHTS

The Purchaser reserves the right to accept or reject any bid. The purchaser also reserves the right to award in their best interest and reserves the right to waive any formalities.

ACQUAINTANCE WITH SPECIFICATIONS

It is the responsibility of the company to review all of the proposal requirements. Failures of a company to be acquainted with this information shall not relieve the company from any obligations of the proposal requirements.

ERRORS AND OMISSIONS

Any error or omission in the specifications shall be reported immediately to the City of Meriden for correction, prior to submitting proposals.

PROTOTYPE OR EARLY PRODUCTION APPARATUS

No prototype, experimental or early production apparatus shall be accepted. The company shall demonstrate that they have successfully produced apparatus of the same design in the past, and that those apparatus have a repair history that is acceptable to the purchaser.

COMPANY OVERVIEW AND HISTORY

Each company shall include in their proposal a clear overview of their company's manufacturing history, particularly as it relates to the manufacturing of fire apparatus. The company shall also include specifics about the factory location in which the apparatus they are proposing will be manufactured

RELIABILITY OF MANUFACTURER

Proposals shall only be considered from companies which have an established reputation in the

field of fire apparatus construction and have been building fire apparatus for a minimum of 15 years.

Proposals shall only be considered from manufacturers who are full time fire apparatus manufacturers, and who are current members of the Fire Apparatus Manufacturers Association (FAMA).

Each company shall furnish satisfactory evidence of their ability to construct the apparatus specified and shall state the location of the factory where the apparatus is to be manufactured. Each company shall also show that they are in a position to render prompt service and to furnish replacement parts for said apparatus.

MANUFACTURER'S LIABILITY

The company, if their proposal is accepted, shall defend any and 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.

PROPOSAL SELECTION/AWARD CRITERIA

The ***City of Meriden reserves*** the right to reject any or all proposals, or to accept such proposal that, in the purchaser's sole opinion, is in the best interest of the purchaser. The purchaser does not, in any way, obligate itself to accept the lowest proposal.

The selection of the successful company will be based on a combination of factors which, in the purchaser's sole opinion, will best serve the purchaser's interest in obtaining the desired service levels. Factors that will be considered, but shall not be limited to, are:

- Experience
- Capability
- Prices
- Past performance
- References
- Responsiveness to the proposal document
- Delivery time
- Quality of item(s) proposal
- Warranty Coverage's
- Service ability and location

COMPLETION DATE

Each company shall include in their proposals the number of calendar days for delivery of the completed apparatus, from the receipt of the complete order and signed approval drawing.

BID SEQUENCE

For ease of evaluation, all proposals shall be submitted in the same order as the fire

department's specification. NO EXCEPTIONS.

PROPOSAL DRAWING

Full size, blueprint type drawings of the apparatus being proposed shall be submitted with the proposal package. These drawings shall be drawn to scale on a CAD system to assure an accurate and professional drawing. The drawing shall show five (5) views of the vehicle (front, rear, both sides and top). The drawings shall show the wheelbase and overall dimensions of the apparatus, proposed compartment sizes and features, booster tank position and the location of all emergency warning equipment, work lights, seating and other major items that are to be provided on the apparatus. An additional drawings of the proposed layout of the pump panel, dash board and switch panel(s) configuration(s) shall be provided.

Because these drawings are an important tool in the proposal evaluation process, the drawings submitted shall be specifically for the apparatus being proposal. Drawings that are "similar to" or general in design are not acceptable and shall be considered non-compliant and non-responsive.

Proposals submitted without drawings shall also be considered non-compliant and no-responsive.

APPROVAL DRAWINGS

Following the completion of the Pre-Build Meeting, three (3) sets of engineering, blueprint type drawings, specifically for this apparatus, shall be provided by the manufacturer and shall be approved by the Fire Department before construction begins. Both the Fire Department and the manufacturer's representative shall have a copy of this drawing. It shall become part of the total contract. These drawings shall be drawn to scale on a CAD system to assure an accurate and professional drawing. The drawing shall show five (5) views of the vehicle (front, rear, both sides and top). The drawings shall show the wheelbase and overall dimensions of the apparatus, final compartment sizes and features, booster tank position, the location of all emergency warning equipment, work and scene lights, and all changes, if any, mutually agreed to during the pre-build meeting.

PRE-BUILD MEETING

A pre-build meeting shall be held at the factory or by telemeeting with the successful company. The meeting shall be scheduled during normal business hours, Monday - Friday. All expenses for transpiration, meals and lodging for four (4) representatives of the *Meriden Fire Department* shall be included in the proposal price. The meeting shall be of sufficient duration to complete the business required. A distributor or sales representative shall accompany the *Meriden Fire Department* on the trip. The meeting shall be held prior to the commencement of any work being done on the apparatus.

Factory sales and engineering personnel shall participate in the meeting as needed to ensure that the apparatus fulfills all the requirements of the accepted proposal. Authorized

representatives from both the *Meriden Fire Department* and manufacturer shall approve and sign any changes made during these meetings prior to the commencement of any work being done on the apparatus.

It is understood and agreed that delays beyond thirty (30) days of contract approval for pre-construction meeting changes in specifications shall be cause for delay in delivery.

DIGITAL PICTURES

Digital pictures shall be taken of the apparatus in place of an "in-process" inspection. On a given day determined by the manufacturer, a quantity of thirty-six (36) pictures shall be taken of the apparatus. Depending upon the type of apparatus, the pictures may include any or all of the following: cab interior and exterior, pump operators stand, and body.

NEW VEHICLE TRAINING

A qualified person from the manufacturer or sales agency shall be available at the discretion of the purchaser for training of the apparatus maintenance, chassis, pump and any other training required for equipment delivered. Trainer must have a minimum of 10 years in the repair, service and training of Fire Apparatus. Trainer must be recognized as a qualified instructor in pumps, chassis operation and maintenance. Trainer must be certified in engine, fire pumps and electrical repair for fire apparatus

Training for the new fire apparatus shall be provided by the proposer. The training shall consist of four (4) sessions, 3 hours each (12 hrs total) for the Fire Department. The training will take place at the Fire Department Training Center at Station 1 168 Chamberlain Hwy, Meriden CT, On day mutually agreeable to the Division Chief of Training. These sessions recorded for future use of the purchaser. If more training is required than specified in the specifications, the additional expense shall be covered by the purchaser.

Separate training shall be provided to the department mechanic regarding the use of any diagnostic software or diagnostic computer provided in the bid (engine, transmission, ABS system, electrical and VDR). Additionally, the manufacturer shall offer hands-on repair, troubleshooting and maintenance training class for manufacturer specific components.

DIAGNOSTIC SOFTWARE ENGINE

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

DIAGNOSTIC SOFTWARE TRANSMISSION

The cab and chassis shall include the latest version of Allison's DOC diagnostic software for the transmission, which shall interface with the MagiKey®. The software shall be compatible with both 3000 and 4000 Gen IV transmissions.

Allison® DOC™ for PC-Service Tool is backward compatible with older electronically controlled transmissions.

The feature matrix for Allison Transmission Diagnostic Tools shall offer a user friendly table which shall guide you through all available and unavailable functions of the Allison Transmission diagnostic tools.

The software shall be supported by Microsoft® Windows, XP, Professional and Window 2000 (SP4 or later).

DIAGNOSTIC SOFTWARE ABS

The cab and chassis shall include diagnostic software for the Wabco ABS system shipped loose with the vehicle. This software shall interface with the MagiKey® parallel port interface module. The Wabco software version E software is a comprehensive PC-based diagnostics program. The system requirements recommended by Meritor Wabco are:

- 32/64 Bit CPU-based PC
- Microsoft Windows® XP, Vista or Windows 7 operating system
- 512 MB RAM
- 60 MB HD space for full installation
- RP1210A compliant communications adapter for SAE J1708/J1587 or PLC Serial Port, Parallel Port or USB Port for RP1210A adapter

DIAGNOSTIC INTERFACE MODULE

The shipped cab and chassis shall include a USB-Link™ interface module equipment kit which, shall communicate between the vehicle and the computer. The vehicle interface is compatible with RP1210A OEM diagnostic software including: Caterpillar, Cummins, Detroit Diesel, Allison Transmission and Meritor Wabco.

The kit shall include the USB-Link™, a USB cable which shall be 15.00 feet in length, a quick start reference guide, a 6 and 9 pin “Y” Deutsch adapter, and Configuration utility CD and manuals.

DIAGNOSTIC SOFTWARE OCCUPANT PROTECTION

The cab and chassis shall include diagnostic software for the Advanced Occupant Protection System shipped loose with the vehicle. The software kit shall include an interface module with connectors to link a laptop computer to the vehicle for diagnostic purposes.

FINAL INSPECTION TRIP

One (1) final inspection trip for four (4) representatives of the Meriden Fire Department shall be included in the proposal. The inspection shall take place at the successful company's factory

during normal business hours, Monday - Friday. The cost of transportation, meals and lodging shall be included. A distributor or sales representative shall accompany the Meriden Fire Department on the inspection trip. The trip shall be of sufficient duration to complete the business required. The apparatus to be inspected shall be in finished condition and ready for shipment when the final inspection is conducted.

UNDERSIDE FINAL INSPECTION

During Final Inspection, the complete vehicle shall be raised, allowing the Meriden Fire Department inspection team to walk under the apparatus to review the complete underside.

PRE-DELIVERY ROAD TRIP AND FINAL FACTORY CHECKLIST

Prior to delivery, the completed apparatus shall be thoroughly inspected by the factory. This inspection shall include road testing by the factory of no less than 100 miles. During the factory inspections and road testing, a checklist shall be utilized by factory personnel to document the inspection and road test results. The checklist shall include:

- Documentation of the make, model and serial numbers of all major components such as the engine, transmission, pump, axles, etc.
- Complete, comprehensive operational check of all chassis/drive train components and fluid levels.
- A comprehensive review of the entire exterior and interior of the apparatus for fit and finish, checked against the customer's pre-construction meeting approval specifications, and any ensuing change orders.
- A thorough test of all driving systems under actual highway and city driving conditions, for no less than 100 miles.

DELIVERY

The fire apparatus shall be delivered over the road and under its own power to insure proper break-in of all driving components while still under warranty. Rail or truck freight shipment of the apparatus is not acceptable.

FAMILIARIZATION

An experienced and qualified distributor or sales representative shall familiarize Meriden Fire Department personnel (as designated by the authority in charge) in the proper operation, care and maintenance of the apparatus delivered.

The representative must be a qualified, trained agent of the local authorized distributor or sales representative, or a direct employee of the manufacturer of the apparatus.

The familiarization period shall consist of four (4) sessions over a period of four (4) days, during the normal work week (Monday - Friday). The schedule of the instruction sessions shall be arranged by mutual agreement of the Meriden Fire Department and the delivering authority. The number, length and time of the sessions may vary due to the nature of the apparatus and

availability of attendees and must be approved in advance. The balance of any time remaining in a session may be devoted to minor adjustments or corrections to the apparatus for items which may have developed while in transit from the factory.

DOCUMENTATION - NFPA REQUIREMENTS

All NFPA required documentation and certifications shall be supplied with the apparatus at the time of delivery.

GENERAL DESIGN REQUIREMENTS

The design and layout of the apparatus specified herein has been carefully selected to meet the needs of the **Meriden Fire Department.** Because the **Meriden Fire Department** is buying a custom fire apparatus, the expectation is that all companies can provide and shall adhere to the details specified herein.

The specified apparatus shall be a custom cab type, designed and manufactured specifically for the fire service in North America. Modification of a conventional or commercial chassis is unacceptable. The apparatus shall meet or exceed the requirements of the NFPA 1901, current edition, in all respects.

An angle of approach and an angle of departure of at least 11 degrees shall be maintained at the front and rear of the vehicle when it is loaded to the estimated in-service weight, as defined by NFPA 1901 2009 edition.

PERFORMANCE BOND

Within twenty (20) days of notification to the successful proposer by the purchaser, prior to any work commencing on the proposed apparatus, the successful proposer shall, at their own expense, obtain and submit to the purchasing entity a performance bond in the amount of 100% equal to the total contract price.

Additionally, each proposer must disclose the price/amount it pays for bonding, per $1,000. This is to demonstrate the economic stability and credit worthiness of the proposer. NO EXCEPTIONS.

CUSTOM CHASSIS

A Severe Duty Cab and Chassis system shall be provided. The chassis shall be manufactured in the factory of the proposer. The chassis shall be designed and manufactured for heavy duty service with adequate strength and capacity of all components for the intended load to be sustained and the type of service required. The cab and chassis system shall be considered the proposer “Top of the Line”.

GROSS VEHICLE WEIGHT RATINGS

Front Vehicle Weight Rating shall be no less than 18,000 pounds.
Rear Vehicle Weight Rating shall be no less than 27,000 pounds.
Gross Vehicle Weight Rating shall be no less than 43,000 pounds

DOUBLE FRAME RAILS/SINGLE AXLE

The chassis frame shall be of a ladder type design utilizing industry accepted engineering best practices. The frame shall be specifically designed for fire apparatus use.

Each frame rail shall be constructed of two .375" thick-formed channels. The outer channel shall be 10.188" x 3.50" x .375" and the inner channel (liner) shall be 9.31" x 3.13" x .375".

Over the entire length of the frame rail, the section modulus shall be 31.8 $in.^3$. The resistance to bending moment (RBM) shall be 3,498,000 in./lbs.

Each rail is media blasted to remove scale, oil, and contaminants. This blasting also ensures paint adhesion. Each rail will be primed with Cathacoat 302HB, a high performance, two component, reinforced inorganic zinc-rich primer with proven cathodic protection of steel structures, prior to assembly.

The cross-members shall be constructed of minimum .375" formed channels and have formed gusseted ends at the frame rail attachment. Single axle rear suspensions will utilize 3 piece bolt assembled cross-members at each suspension hanger

.625 inch, grade 8 flange, bolt fasteners shall be used on all permanently attached brackets to the frame to eliminate the need for bolt re-tightening. Additional hardware will be Grade 8 Zinc coated flange head locking fasteners.

A lifetime warranty shall be provided, per manufacturer's written statement.

FRONT BUMPER TOW EYES

Two (2) heavy-duty tow eyes shall be installed Forward facing, bolted directly to the chassis frame rail or via structure attached directly to the frame rail with grade 8 bolts. (During the Pre Constuction Meeting, discussion on attachment and or the possibility of being recessed in the bumper.

REAR TOW EYES

Two (2) heavy-duty tow eyes shall be installed Rear facing, bolted directly to the chassis frame rail.

TOW EYES, PAINTED FINISH

The tow eyes shall be chromate acid etched for superior corrosion resistance and painted to match the chassis.

STEERING

The steering system shall be a TRW wheel to wheel steering system that is tested and certified by TRW, consisting of a heavy duty TRW/Ross Model TAS-85 power steering gear, TRW PS36 steering pump, miter box, drag links, and a thermostatic controlled fan cooled system (set point 185 deg. F to 170 deg. F). The steering gear shall be bolted to the frame at the cross-member for steering linkage rigidity. Four (4) turns from lock to lock with an 18" diameter slip resistant rubber covered steering wheel. Steering column shall have six-position tilt and 2" telescopic adjustment. The cramp angle shall be 45 degrees with 315mm tires or 43 degrees with 425mm tires providing very tight turning ability.

DRIVE LINE

The driveline shall consist of Spicer 1810 series dual grease fitting universal joints with "half-round" end yokes. The drive shaft shall be built with a heavy-duty steel tube 4.095" outside diameter x .180 wall thickness. The shafts shall be dynamically balanced prior to installation into the chassis. A splined slip joint shall be provided in each shaft assembly. Universal joints shall be extended life. There shall be two (2) Zerk fittings in each universal joint assembly so the joint can be greased without turning the shaft.

ENGINE

The apparatus shall be powered by a Cummins Diesel X 12 sereies 450 HP @ 1800 R.P.M., 1550 ft. lb. torque @ 1100 R.P.M.

The ISX 12 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 2013 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.
The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand Citgard 500, or equivalent SAE 15W40 CJ4 low ash engine oil, which shall be utilized for proper engine lubrication. A Fleetguard LF14000NN Oil Filter shall be used.

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.

ENGINE WARRANTY

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

AIR COMPRESSOR

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

STARTER MOTOR

The single start electrical system shall include a Prestolite brand starter motor.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a Fleetguard FS19551 fuel filter/water separator with a thermostatically controlled integral heater as a primary filter. The fuel filter shall have a see through cover to allow visual inspection of fuel and filter condition and a drain valve. The fuel lines shall be extended an additional eighteen (18) inches in front and behind the fuel filter to allow the fuel filter to be easily relocated. Fleetguard FF5776 Filter shall be used.

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

An instrument panel lamp and audible alarm which indicates when water is present in the fuel-water separator shall also be included.

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 connected with reusable steel fittings.

FUEL SHUTOFF VALVE

There shall be two (2) fuel shutoff valves which shall be installed, one (1) in the fuel draw line at the primary fuel filter and one (1) in the fuel outlet line at the primary fuel filter to allow the fuel filters to be changed without loss of fuel to the fuel pump.

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

ENGINE EXHAUST SYSTEM

The exhaust system shall be mounted below the frame in the outboard position with the SCR canister in line rearward of the DPF. The exhaust system shall utilize a 90-degree bend in the

exhaust tubing from the turbo into a side inlet DPF canister that allows the entire system to be pulled forward. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires.

The exhaust system shall include a diesel particulate filter (DPF), a diesel oxidation catalyst, 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 Knox into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be injected into the system through the decomposition tube between the DPF and SCR.

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

The DPF, the decomposition tube, and the SCR canister through the end of the tailpipe shall be connected with zero leak clamps.

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 to provide easy access for filling.

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

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

A placard shall accompany fill location noting DEF specifications.

UNDER CAB ACCESS DOOR

The cab shall include an access door in the left crew step riser constructed of embossed aluminum tread plate with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.

ENGINE EXHAUST ACCESSORIES

The exhaust system shall be modified to accept a Plymovent exhaust extraction system collar.

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.

ON-BOARD DIAGNOSTIC (OBD) SYSTEM

The engine shall be equipped with an on-board diagnostic (OBD) system which shall monitor emissions- related engine systems and components and alert the operator of any malfunctions. The OBD system is designed to further enhance the engine and operating system by providing early detection of emission- related faults. The engine control unit (ECU) will manage smart sensors located throughout the engine and after-treatment system. The system shall monitor component verification and sensor operation. There shall be warning lights located in the dash instrument panel to alert the operator of a malfunction. A data port shall be provided under the driver's side dash for the purpose of code reading and troubleshooting. All communication shall be provided through the J1939 data link.

ENGINE AIR INTAKE

The engine air intake system shall include an ember separator air intake filter which shall be located in the front of the cab behind the right hand side fascia. This filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a corrosion resistant steel frame. This multilayered screen shall be designed to trap embers or allow them to burn out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation. A Fleetguard AF 27876 Filter shall be used.

The engine shall also include an air intake filter which shall be bolted to the frame and located under the front of the cab on the right hand side. The dry type filter shall ensure dust and debris safely contained inside the disposable housing, eliminating the chance of contaminating the air intake system during air filter service via a leak-tight seal. . An Air Restriction guage shall be provided and located on the cab dash.

The air flow distribution and dust loading shall be uniform throughout the high-performance filter cone pack, which shall result in pressure differential for improved horsepower and fuel economy. The air intake shall be mounted within easy access via a hinged panel behind the right hand side headlight module. 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.

AIR INTAKE PROTECTION

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

TRANSMISSION

The chassis shall be equipped with a Generation 5 Allison EVS4000 six (6) speed automatic transmission. It shall be programmed five (5) speed, sixth gear locked out, for fire apparatus vocation, in concert with the specified engine.

The transmission is communicated on the J-1939 through the communication port. The fifth gear shall be an overdrive ratio, permitting the vehicle to reach its top speed at the engine's governed speed. The dipstick is dipped in a rubber coating for ease in checking oil level when hot.

The chassis to transmission wiring harness shall utilize Metri-Pack 280 connectors with triple lip silicone seals and clip-type positive seal connections to protect electrical connections from contamination without the use of coatings.

Ratings: Max Input (HP) 600 Max Input (Torque) 1850 (lb ft)
Max Turbine (Torque) 2600 (lb ft)

Mechanical Ratios: 1st - 3.51:1; 2nd - 1.91:1; 3rd - 1.43:1; 4th - 1.00:1; 5th - 0.74:1; Reverse - -5.00:1

Discussion with design engineer regarding the gear ratios, and transmission programming will be necessary to ensure correct options.

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will automatically select a five (5) speed operation. The sixth speed over drive shall be available with the activation of the mode button on the shifting pad.

TRANSMISSION FEATURE PROGRAMMING

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

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

An eight (8) pin Delphi connector will be provided next to the steering column connector. This will contain the following input/output circuits to the transmission control module. The Gen

IV-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

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

ENGINE BRAKE

The engine shall be equipped with a Jacobs compression engine brake. An "On/Off" switch and a control for "Low/High" shall be provided on the instrument panel within easy reach of the driver.

The engine brake shall interface with the Wabco ABS brake controller to prevent engine brake operations during adverse braking conditions.

A pump shift interlock circuit shall be provided to prevent the engine brake from activating during pumping operations.

The brake light shall activate when the engine brake is engaged.

TRANSMISSION COOLER

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. The cooler shall be encased in an aluminum housing and mounted to the outside of the officer's side frame rail for accessibility and ease of service.

TRANSMISSION FLUID

The transmission shall include two (2) internal oil filters which shall offer Castrol Transient™ 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. NO EXCEPTION.

TRANSMISSION SHIFT SELECTOR

An Allison pressure sensitive range selector touch pad shall be provided and located to the

right of the driver within clear view and easy reach. The shift selector shall have a graphical vacuum Fluorescent Display (VDF) capable of two lines of text. The shift selector shall provide a prognostic indicator (wrench symbol) on the digital display between the selected and attained indicators. The prognostics monitor various operating parameters to determine and shall alert you when a specific maintenance function is required. The shift selector shall be mounted to the right of the driver on the engine cover accessible to the driver. The shift position indicator shall be indirectly lit for nighttime operation.

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 third gear to decrease the rate of speed assisting the secondary braking system and slowing the vehicle.

ENGINE COOLING SYSTEM

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

The cooling system shall be comprised of a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank; a charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.

The radiator shall be a down-flow design constructed with aluminum cores, plastic end tanks, and a steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall include a one piece injected molded polymer eleven (11) blade fan with a fiberglass fan shroud. The engine cooling system shall incorporate a heavy-duty composite 11- blade Z-series fan. It shall provide the highest cooling efficiently while producing the lowest amount of noise. A fan clutch shall be provided that shall allow the cooling fan to operate only when needed. The fan shall remain continuously activated when the truck is placed in pump gear.

A shroud and recirculation shield system shall be used to ensure air that has passed through the radiator is not drawn through again.

The fan tip to radiator core clearance shall be kept at a minimal distance to increase the efficiency of the fan and reduce fan blast noise.

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

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

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

ENGINE COOLING SYSTEM PROTECTION

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

ENGINE COOLANT

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

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

ENGINE COOLANT FILTER

An engine coolant filter WF2122 with a shut-off valve for the inlet and outlet shall be installed on the chassis. The location of the filter shall allow for easy maintenance.

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

ELECTRONIC COOLANT LEVEL INDICATOR

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

COOLANT HOSES

The cooling system hoses shall be blue stripe heater hose with formed silicone radiator coolant hoses and formed aluminized steel tubing. The heater hose, radiator hose, and tubing shall be secured with stainless steel constant torque band clamps.

FUEL TANK

The chassis shall be equipped with a 65-gallon stainless steel rectangular fuel tank. The fuel tank shall be certified to meet FMVSS 393.67 tests. It shall also maintain engine manufacturer's recommended expansion room of 5%.

The tank shall be removable by means of six (6) bolted connections and dropped. One (1) tank baffle shall be used.

Dual pick-up and return ports with a single 3/4" tank drawtube shall be provided for diesel generators if required.

The fuel lines shall be nylon braid reinforced fuel hose with brass fittings. The lines shall be carefully routed along the inside of the frame rails. All fuel lines are covered in high temperature rated split plastic loom.

Single suction and return fuel lines shall be provided.

The fuel tank shall be mounted in a saddle with a barrier between the tank and the saddle. The bottom of the fuel tank shall contain a 1/2" drain plug.

FUEL FILL

The fuel tank shall be equipped with a 2-1/4" filler neck assembly with a 3/4" vent located on the driver's (Left) side of the truck. A fuel fill cap attached with a lanyard shall be provided.

FUEL COOLER

Installed on the apparatus fuel system shall be an Air-To-Liquid aluminum fuel cooler. The fuel cooler shall be located in the lowest module of the cooling system.

ALTERNATOR

A 320 ampere or larger Prestolite/Leece Neville alternator with serpentine belt shall be provided The alternator shall generate a minimum of 260 amperes at idle.

A low voltage alarm, audible and visual, shall be provided.

BATTERIES

The battery system shall be a single system consisting of four negative ground, 12 volt Interstate Group 31 MHD batteries, cranking performance of 950 CCA each with total of 3800 amps, 185 minute reserve capacity with 25 ampere draw at 80 degrees Fahrenheit. Each battery shall have 114 plates. Warranty shall be accepted nationwide.

The batteries shall be installed in a vented 304 stainless steel battery box with a removable aluminum cover to protect the batteries from road dirt and moisture. The battery cover shall be secured with four "T" handle rubber hold downs to provide easy access for maintenance and inspection. Stainless steel hardware will be used for installation. The batteries are to be placed on dri-deck and secured with a fiberglass hold down.
The batteries shall be wired directly to starter motor and alternator.

The battery cables shall be 3/0 gauge. Battery cable terminals shall be soldering dipped, color-coded and labeled on heat shrink tubing with a color-coded rubber boot protecting the terminals from corrosion.

There shall be a 15-ampere fuse protecting the pump primer and a 250-ampere fuse protecting the electric cab tilt pump and other options as required.

BATTERY JUMPER TERMINAL

There shall be one set (two studs) of battery jumper terminals located by the battery box under the cab. The terminals shall have plastic color-coded covers. Each terminal shall be tagged to indicate positive/negative.

BATTERY CONDITIONER

A Kussmaul 1200 battery conditioner shall be supplied. The battery conditioner shall be mounted in the cab behind the driver's seat.

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in the cab, viewable through the cab mid side window behind the left front door.

A 120 volt Auto Pump air compressor shall also be provided to maintain air within the air brake system.

A miniature air filter that mounts in the output pressure line of the air pump to trap moisture

shall be provided. The micron filter element removes contaminants from the air line. A transparent bowl permits easy monitoring of water collected and a manual purge valve allows the operator to conveniently drain the bowl. A Bendix DV2 heated automatic drain valve shall be provided.

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.

Amp Draw Reference List:
Kussmaul 1000 Charger - 3.5 Amps
Kussmaul 1200 Charger - 10 Amps Kussmaul 35/10 Charger - 10 Amps 1000W Engine Heater - 8.33 Amps 1500W Engine Heater - 12.5 Amps 120V Air Compressor - 4.2 Amps

ELECTRICAL INLET LOCATION

An electrical inlet shall be installed on the left hand side of cab over the wheel well (Final location to be determined during Pre-Build Meeting).

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.

SHORELINE

A shoreline connection shall be provided and located on the driver's side of the cab between the front and rear doors

SHORE POWER

A shore power connection shall be provided with two (2) 110-volt outlets. The location of the outlets shall be determined during the Pre-Build Meeting.

FRONT AXLE

The front axle shall be a Meritor™ MFS-20-133A 3.74" drop beam with a minimum capacity

of 18,000 pounds. The axle shall be hub piloted, 10 stud, furnished with oil seals and come complete with assist cylinder, hoses, and mounting brackets.

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 AXLE WARRANTY

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

SUSPENSION (FRONT)

The front suspension shall be a variable rate taper-leaf design, 54" long and 4" wide. Long life, maintenance free, urethane bushed spring shackles shall be utilized. All spring and suspension mounting shall be attached directly to frame with high strength bolts and self-locking round collars. Greaseless spring shackles and pins shall not be acceptable. NO EXCEPTIONS.

ENHANCED FRONT SUSPENSION SYSTEM

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

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

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

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

FRONT TIRES

Front tires shall be Sumitomo 385/65R22.5, load range L, G296 highway tread, single tubeless type with a GAWR of 22,000 pounds. Wheels shall be disc type, hub piloted, 22.5 x 12.25 10 stud 11.25 bolt circle.

REAR AXLE

The rear axle shall be a Meritor™ RS-30-185 Single reduction drive axle with a minimum capacity of 27,000 lbs. The axles shall be hub piloted, 10 studs, furnished with oil seals.

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 0.63 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

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

The differential shall have a selective locking mechanism for traction on slippery surfaces.

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR AXLE WARRANTY

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

VEHICLE TOP SPEED

The top speed of the vehicle shall be approximately 60 MPH +/-2 MPH at governed engine RPM.

SUSPENSION (REAR)

31,000 LB AIR RIDE
A Hendrickson FIREMAAX model FMX312 air ride rear suspension shall be provided. The suspension shall be a dual air spring design equipped with dual height control valves to

maintain proper ride height. To reduce axle stress and maintain axle position and pinion angle the suspension design shall incorporate three torque rods. The ground rating of the suspension shall be 31,000 pounds.

REAR TIRES

Rear tires shall be Sumitomo ST909 11 R22.5, Mud and Snow tread, dual tubeless type with a GAWR up to 31,000 pounds. Wheels shall be disc type, hub piloted, 22.5 x 9 10 stud with 11.25" bolt circle.

TIRE PRESSURE INDICATOR

A voucher provided with the chassis for a pop up style tire pressure indicator Installation by the customer

WHEELS

The front and rear wheels shall be steel. The wheels shall be painted lower truck color. A painted chrome/aluminum outer dress ring shall be painted on the rim color.

FRONT MUD FLAPS

Hard rubber mud flaps shall be provided for front tires.

REAR MUD FLAPS

Hard rubber mud flaps shall be provided for rear tires.

BRAKES, Front

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00 inch vented rotors. The breaking system shall be matched to the weight and general operation of the apparatus.

BRAKES, Rear

The rear brakes shall be Meritor 16.5X8.63 S-Cam drum brakes. The breaking system shall be matched to the weight and general operation of the apparatus.

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 BRAKE SYSTEM

The vehicle shall be equipped with air-operated brakes. The system shall meet or exceed the design and performance requirements of current FMVSS-121 and test requirements of current NFPA 1901 standards.

Each wheel shall have a separate brake chamber. A dual treadle valve shall split the braking power between the front and rear systems.

All main brake lines shall be color-coded nylon type protected in high temperature rated split plastic loom. The brake hoses from frame to axle shall have spring guards on both ends to prevent wear and crimping as they move with the suspension. All fittings for brake system plumbing shall be brass.

The air system shall be provided with a rapid build-up feature, designed to meet current NFPA 1901 requirements. The system shall be designed so the vehicle can be moved within 60 seconds of startup. The quick build up system shall provide sufficient air pressure so that the apparatus has no brake drag and is able to stop under the intended operating conditions following the 60-second buildup time. The vehicle shall have a separate on-board electrical air compressor or shoreline hookup to maintain this requirement. The compressor shall be hardwired to shore power, and be regulated to maintain adequate pressure on the system.

Four (4) supply tanks shall be provided. One air reservoir shall serve as a wet tank and a minimum of one tank shall be supplied for each the front and rear axles. A Schrader fill valve shall be mounted in the front of the driver's step well.

AIR HORN RESERVOIR

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

AIR DRYER

The brake system shall include a Wabco System Saver 1200 air dryer with an integral 100 watt heater with a Metri-Pack sealed connector. The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle.
The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be located on the right hand frame rail forward of the front wheel behind the right hand cab step.

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 on an enclosure that is left of center of the tunnel within easy access of both the driver and officer positions

A spring actuated air release emergency/parking brake shall be provided on the rear axle. One (1) parking brake control shall be provided and located on the engine hood next to the transmission shifter within easy reach of the driver. The parking brake shall automatically apply at 35 ±10 PSI reservoir pressure. A Meritor WABCO IR-2 Inversion Relay Valve, supplied by both the Primary and Secondary air systems, shall be used to activate the parking brake and to provide parking brake modulation in the event of a primary air system failure. Accessories plumbed from the air system shall go through a pressure protection valve and to a manifold so that if accessories fail they shall not interfere with the air brake system.

AIR BRAKING ABS SYSTEM

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

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the single rear axle. The ATC system shall apply the ABS when the drive wheels loose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

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

The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any

rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

FRONT BRAKE CHAMBERS

The front brakes shall be provided with MGM type 30 long stroke brake chambers.

REAR BRAKE CHAMBERS

The rear axle shall include TSE 30/36 brake chambers which shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE Type 30 brake chamber shall offer a 30.00 square inch effective area.

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 cleaner bracket on the right frame rail behind the officer step.

MOISTURE EJECTORS

Automatic moisture ejectors with a manual drain provision 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

A Kussmaul air automatic eject connection for the shoreline air inlet shall be supplied.

AIR INLET/ AUTO EJECT CONNECTION COVER

The air auto eject connection shall be red in color. Location shall be determined in the Pre Build Meeting.

AIR INLET LOCATION

Location shall be determined in the Pre-Build Meeting.

PLUMBING AIR INLET CONNECTION

The air inlet connector shall be plumbed to the air system with a check valve to prevent air from escaping through the inlet connector.

AIR INLET/ OUTLET FITTING TYPE

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

REAR AIR TANK MOUNTING

If a combination of wheel base, air tank quantity, or other requirements necessitate the location of one or more air tanks to be mounted rear of the fuel tank, these tank(s) will be mounted parallel to frame.

MISCELLANEOUS CHASSIS EQUIPMENT

Fluid capacity plate shall be affixed below driver's seat.
Chassis filter part number plate affixed below driver's seat. Maximum rated tire speed plaque near driver.
Tire pressure label near each wheel location.
Cab occupancy capacity label affixed next to transmission shifter. Do not wear helmet while riding plaque for each seating position. NFPA compliant seat belt and standing warning plates provided.

CAB STYLE

The cab shall be a, custom, fully enclosed, non raised roof, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a

superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.

The cab shall be constructed using multiple aluminum extrusions in conjunction with aluminum plate, which shall provide proven strength and the truest, flattest body surfaces ensuring less expensive paint repairs if needed. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

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

The structural extrusion framework shall be overlaid with interlocked aluminum alloy sheet metal panels to form the exterior skin of the cab. The cab sides shall be constructed of 3/16" thick 5052H32 aluminum plate that slides into an integral channel of the extrusion framework. The plate is then skip welded into that channel to allow for tolerable flex while the apparatus travels down the roadway. Cab designs that utilize 1/8" thick aluminum for the cab sides shall not be acceptable.

The cab roof shall utilize 5" x 5" honeycomb re-enforced 6061 T6 aluminum extrusion, with fully radiused outer corner rails with integral drip channel and 6061 T6 ¾" x 2" x 3/16" aluminum box tubing type cross brace supports. Structures that do not include an integral drip channel will not be accepted. The box tubing type cross brace supports shall be installed in a curved fashion beginning from the midline of the apparatus cab and curving toward the exterior corner rails. This curvature will allow for increased strength in the event of a roll over while not allowing for rainwater buildup on the apparatus cab roof.

The cab sides shall be constructed from 1 ½" x 3" x 3/16" 6061 T6 extruded door pillars and posts that provide a finished door opening, extruded and formed wheel well openings supports, formed aluminum wheel well liners and box tubing type support braces.

The cab floor and rear cab wall shall utilize 1 ¾" x 4" x 3/16" 6061 T6 extruded box tubing type framing and support bracing.

The framework shall be of a welded construction that fully unitizes the structural frame of the cab.

The structural extrusion framework shall support and distribute the forces and stresses imposed by the chassis and cab loads and shall not rely on the sheet metal skin for any structural integrity.

The cab face extrusion framework shall be overlaid with 1/8" thick 5052H32 aluminum plate to allow for an aesthetically pleasing radiused cab face.

The cab interior shall be designed to afford the maximum usable interior space and attention to ergonomics with hip and legroom while seated which exceeds industry standards. The crew

cab floor shall be flat across the entire walking area for ease of movement inside the cab.

The cab shall offer an interior height of approximately 57.50 inches from the front floor to the headliner at a minimum. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of approximately 36.5 inches wide X 73 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of approximately 36.5 inches wide X 73 inches high, from the cab floor to the top of the door opening.

The cab doorframes shall be constructed from 6061 T6 aluminum extrusions fitted with a 5052 H32 aluminum sheet metal skin and shall be equipped with dual weather seals. The outside cab door window opening shall be framed by a black anodized aluminum trim, to provide a clean appearance. The cab doors shall be equipped with heavy-duty door latching hardware, which complies with FMVSS 206. The door latch mechanism shall utilize control cable linkage for positive operation. A rubber coated nylon web doorstop shall be provided.

The doors shall be lap type with a 10 gauge full-length stainless steel flange and 3/8" diameter hinge pin and shall be fully adjustable.

All openings in the cab shall be grommeted or equipped with rubber boots to seal the cab from extraneous noise and moisture.

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 a fiber reinforced plastic composite with a black matt 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.

DOOR LOCKS

Each cab entry door shall include a manually operated door lock. The each door lock may be actuated from the inside of the cab by means of a red knob located on the paddle handle of the respective door or by using a TriMark key from the exterior. The door locks are designed to prevent accidental lock out.

CAB SUB-FRAME

The cab shall be mounted to a 4" x 4" x 3/8" steel box tube sub-frame, and shall be isolated from the chassis, through the use of no less than six (6) elastomeric bushings. This substructure shall be completely independent of the apparatus cab. The sub frame shall be painted to match the primary chassis color.

The sub-frame shall be mounted to the chassis through the use of lubricated Kaiser Bushings for the front pivot point, and two (2) hydraulically activated cab latches, to secure the rear.

Cab mounting that does not include a sub-frame shall not be considered. NO EXCEPTIONS.

The exterior width of the cab shall be approximately 98 inches wide with a minimum interior width of approximately 88.00 inches. The overall cab length shall be no more than 132.0 inches with approximately 62 inches from the centerline of the front of the axle to the back of the cab. Any exceptions to this specification shall be noted.

CAB FENDER

Full width wheel well liners shall be installed on the cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of rubber.

CAB INSULATION

The exterior walls, doors, and ceiling of the cab shall be insulated from the heat and cold, and to further reduce noise levels inside the cab. The cab interior sound levels shall not exceed 90 decibels at 45 mph in all cab seat positions. NO EXCEPTIONS

UNDER CAB INSULATION

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

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

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

EXTERIOR GLASS

The cab windshield shall be of a two piece curved design utilizing tinted, laminated, automotive approved safety glass and shall have a minimum area of 2,700 square inches. The window shall be held in place by an extruded rubber molding. The cab shall be finished painted prior to the window installation.

SUN VISORS

The header shall include two (2) 7.00 inches high X 18.00 inches wide impact resistant, transparent acrylic polycarbonate sun visors with a smoke gray tint shall be provided and installed on the header above the driver and officer.

The see thru visors are designed for maximum flexibility of positioning utilizing an arm with virtually unlimited adjustability with 13.50 inch long lateral travel of the tinted visor at the end of the arm which can be locked in place by a thumbscrew.

The visors are easily adjusted and can be placed into a chosen position with one hand. The sun visors will help protect vehicle occupants from solar glare without obscuring their vision.

CAB STEPS

The lower cab steps shall be no more than 22" from the ground. An intermediate step shall be provided, mid way between the lower cab step, and the cab floor.

The intermediate step shall be slightly inset to provide for safer ingress and egress. All steps shall be covered with material that meets or exceeds the NFPA requirements for stepping surfaces.

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

The first step for the driver and officer area shall measure approximately 11.5 inches deep X 31.5 inches wide. The intermediate step shall measure approximately 8.5 inches deep X 33.0 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.50 inches.

The first step for the crew area shall measure approximately 11.5 inches deep X 21.5 inches wide. The intermediate step shall measure approximately 10.20 inches deep X 22.5 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.8 inches.

The manufacturer shall provide at time of delivery of the apparatus, a certification that all

materials used for exterior surfaces designated as stepping, standing and walking areas, all interior steps and all interior floors meet the slip resistance requirements of the applicable edition and section of NFPA 1901.

STEP LIGHTS

A white LED strip light shall illuminate each interior cab step. These lights shall illuminate whenever the battery switch is on and the cab door is opened.

CAB STRUCTURAL INTEGRITY

The cab of the apparatus shall be designed and so attached to the vehicle as to eliminate, to the greatest possible extent, the risk of injury to the occupants in the event of an accident.

The apparatus cab shall be tested to specific load and impact tests with regard to the protection of occupants of a commercial vehicle.

A test shall be conducted to evaluate the frontal impact strength of the apparatus cab to conform to the test J2420 and the "United Nations Regulation 29, Annex 3, paragraph 4, (Test A). A second test shall be conducted to evaluate the roof strength of the apparatus cab to conform to the Society of Automotive Engineers (SAE) SAE J2422/SAE J2420 and "United Nations Regulation 29, Annex 3, paragraph 5, (Test B) and SAE J2420. The evaluation shall consist of the requirements imposed by ECE Regulation 29, Paragraph 5.

The test shall be conducted by a certified independent third party testing institution.

A letter stating successful completion of the above test on the brand of cab being supplied shall be included in the bid. There shall be "no exception" to this requirement.

SEAT BELT TESTING

The seat belt anchorage system shall be tested to meet FMVSS 207 Section 4.2a and FMVSS 210 section 4.2. Testing shall be conducted by an independent third party product evaluation company.

A copy of the certification letter shall be supplied with the bid documents.

CAB TILT SYSTEM

An electrically powered hydraulic cab tilt system shall be provided, and shall lift the cab to an angle of 45 degrees, exposing the engine and accessories for fluid checks and service work. The system shall be interlocked to only operate when the parking brake is set.

The lift system shall be comprised of two (2) hydraulic lift cylinders, an electrically driven hydraulic pump, and a control switch. The hydraulic pump shall be located on the exterior of the frame rail on the driver's side of the chassis that can be easily accessible when the cab is tilted. A mechanical locking system consisting of an air operated actuator and a heavy radiused wall 3" x 3" aluminum extrusion will be provided to ensure the cab remains in the raised position in the event of a hydraulic failure. Additionally, each of the hydraulic lift cylinders shall incorporate a check valve, and velocity fuses that will activate should a sudden drop in pressure by detected. The cab tilt controls shall be interlocked to the parking brake to ensure the cab will not move, unless the parking brake is set. The cab tilt controls will consist of a momentary raise/lower switch and a two position cab safety lock switch.

The hydraulic lift cylinders will be connected to a steel cab sub-frame, and not directly to the cab. NO EXCEPTIONS

MANUAL CAB LIFT

There shall be a manually operated hydraulic pump for tilting the cab in case the main pump should fail. Access to the pump shall be located under the left corner of the front bumper.

CAB TILT LIMIT SWITCH

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

CAB TILT ALARM

A Preco Matic model 1059 audible alarm shall be installed and shall automatically activate when the cab tilt is actuated acting as a notification and warning.

CAB TILT CONTROL RECEPTACLE

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include eight (8) feet of cable with a six (6) pin Deutsch receptacle with a cap.

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

CAB TILT LOCK DOWN INDICATOR

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

and locked to the cab mounts.

In addition to the alert message an audible alarm shall sound when the cab is unlocked and ajar and the parking brake is released.

MANUAL WINDOWS

All four-cab entry doors shall have manual window regulators. All four windows shall roll down completely.

SIDE WINDOWS

Fixed position side window shall be provided on each side of the cab between the forward cab area and the crew cab area. The widows shall be approximately 20.5" high x 16.50" wide to provide maximum visibility. The side windows shall be held in place by an extruded rubber molding with a chrome plated decorative locking bead.

REAR CAB WINDOWS

Two windows approximately 16.25" wide x 14.25" high shall be provided in the back wall of the cab.

GLASS TINT

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

The windshield shall be green tinted to reduce sun glare. The tinting shall begin at the uppermost part of the windshield and extend down no more than 8 inches.

WINDSHIELD WIPERS

Two (2) black anodized finish two speed synchronized electric windshield wiper system. Dual motors with positive parking. System includes large dual arm wipers with built in washer system. One (1) master control works the wiper, washer and intermittent wipe features. Washer bottle is a remote fill with a 4 quart capacity. Washer fill is located just inside of officer cab door.

GRAB HANDRAILS

There shall be a 24" long, handrail provided and installed, at each cab entrance. The handrails

shall be constructed of type 304 stainless steel 1.25 inch diameter tubing with bright finish and knurled gripping surface. Mounting flanges shall be constructed from 7 gauge, .180 thick, stainless sheet. Each grab rail shall have 90 degree returns to flanges. The ends of grab rail shall pass through the flanges and be welded to form one structural unit. The handrails shall be mounted using 1.25" SS Hex bolts, with a barrier rubber gasket at each flange.

Sufficient space shall allow for a gloved hand to firmly grip the rail.

There shall be two (2) rubber coated grab handles provided and mounted on the interior of the cab, one each side, on the windshield post for ingress assistance. The handrail on the driver's side shall be approximately 11" long and the handrail on the officer's side shall be approximately 18" long.

CAB DOOR HANDRAILS

Two (2) 1.25" diameter knurled stainless steel handrails shall be provided on the inside of the rear crew doors just above the windowsill.

CONVEX CROSSOVER MIRROR

An 8" diameter convex mirror with a polished stainless steel housing shall be provided on the right front of the cab above the windshield

MIRRORS

Retrac Aerodynamic West Coast style single vision mirror heads model 613275 shall be provided and installed on each of the front cab doors.

The mirrors shall be mounted via 1.00 inch diameter tubular stainless steel arms to provide a rigid mounting to reduce mirror vibration.

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an 8.00 inch convex mirrors with a stainless steel back, model 980-4, installed below the flat glass to provide a wider field of vision. The flat mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The convex mirrors shall be manually adjustable. The flat mirror glass shall be heated for defrosting in severe cold weather conditions.

The mirrors shall be constructed of a vacuum formed chrome plated ABS plastic housing that is corrosion resistant and shall include the finest quality non-glare glass.

REARVIEW MIRROR HEAT SWITCH

The heat for the rearview mirrors shall be controlled through a virtual button on the **SWTICH PANNEL** and control screen.

GRILLE

The front of the cab shall be equipped with a polished stainless steel grille with sufficient area to allow proper airflow into the cooling system and engine compartment. Plastic chrome plated grilles shall not be acceptable.

PAINTED STEEL BUMPER

There shall be a 12" high painted formed steel wrap-around (45 degree) bumper provided at the front of the apparatus. The bumper shall be mounted to a reinforcement plate constructed of 1/4" x 12" x 70" carbon steel. The frame rail extension shall be a reinforced four-sided boxed frame rail for superior safety protection. A gravel shield shall be provided, constructed of .188" aluminum diamond plate. The bumper extension shall be approximately 12". The bumper shall be primed and painted to match the cab lower color. The side portions of the bumper shall have Pockets constructed for attachment of emergency lighting.

AIR HORNS

Two (2) Grover 1510 round, chrome plated, air horns shall be provided. The air horns shall be recess mounted in the front bumper face, one (1) on the right side of the bumper in the inboard position relative to the right hand frame rail and one (1) on the left side of the bumper in the inboard position relative to the left hand frame rail.

LANYARD CONTROL FOR AIR HORNS

The air horns shall be activated by a split "Y" lanyard in cab ceiling.

ELECTRONIC SIREN

A Whelen 295HFS2 electronic siren control head with remote amplifier shall be provided and flush mounted in the switch panel with a location specific to the customer's needs. The siren shall feature 200-watt output, hands free mode and shall be in "standby" mode awaiting instruction. The siren shall offer 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. The siren shall default to "ON" when the master warning switch is activated.

SIREN SPEAKER

The bumper shall a Cast Products Inc. model SA4301, 100 watt speaker which shall be recess mounted within the bumper fascia. The speaker shall measure 6.20 inches tall X 7.36 inches wide X 3.06 inches deep. The speaker shall include a flat mounting flange which shall be polished aluminum. The electronic siren speaker shall be located on the front bumper face on the left side outboard of the frame rail in the far outboard position

FEDERAL Q2B SIREN

There shall be a Federal Q2B-NN siren installed at a location specified in the Pre-Build Meeting. The siren shall be securely mounted. If the siren is not nose mounted, it shall be recessed into the front bumper. No part of the siren shall extend beyond the front flat surface of the bumper.

MECHANICAL SIREN ACTIVATION

The mechanical siren shall be actuated by two (2) Linemaster model SP491-S81 foot switches mounted in the front section of the cab for use by the driver and officer. A siren brake shall be provided on the **SWTICH PANNEL**.

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

SIREN WIRED TO STEERING WHEEL BUTTON

A switch on the **SWTICH PANNEL** and 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.

LIGHTING CAB EXTERIOR

Exterior lighting and reflectors shall meet or exceed Federal Motor Vehicle Safety Standards and National Fire Protection Association requirements in effect at this time.

LED HEADLIGHTS

There shall be Maxima halogen rectangular headlights in custom housings on each side of the front of the cab. Low beam shall be Maxima VHL4X6LO heated LED headlamp. High beam shall be Maxima VHL4X6HI heated LED headlamp. Headlights shall have a 5 year warranty.

Headlight alignment shall conform to SAE J599 AUG. 1997
- DOT Approved FMVSS 108
- SAE J96 ECE Reg. 112
- Sealed to IP67 NEED LIGHT SPECIFICATIONS

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

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model 60A00TAR 4.00 inch X 6.00 inch programmable amber LED turn signals which shall be installed in polished aluminum housing above and outboard of the front warning and head lamps

CAB REAR WALL COVERING

The rear outside wall of the cab shall be covered with 1/8" aluminum diamond plate.

DIAMOND PLATE, CAB ROOF

The rear exterior section roof of the cab shall have a diamond plate overlay. The overlay shall be constructed of .125" aluminum serrated diamond plate and measure 36" x 59".

CAB INTERIOR

The metal surfaces of the cab interior shall be coated and sealed with MultiSpec gray speckle, urethane modified, mar resistant paint. The textured coating shall provide paramount durability and wear resistance against foreign objects and normal wear and tear.

The front and rear headliners, as well as the rear cab wall, shall be finished in Gray-Black Durawear covered padded panels. A 3/16 Aluminum "Tool Panel" shall be mounted to the rear wall of the cab.

INTERIOR DOOR PANELS

The interior of the cab entry doors shall have a 304 brushed stainless steel scuff plate, contoured to the door, from the door window sill down.

DOOR TRIM SCUFF PLATE

There shall be stainless steel scuff plate along the door jamb to protect the painted surface from damage should the seat belt buckle come in contact with the door jam.

In addition, the painted surface rear of the front door windows on the inside of the door shall include a stainless steel scuff plate to protect the painted surface from damage caused by the seat belt buckle.

REFLECTIVE MATERIAL, INTERIOR CAB DOORS

The interior of each door shall include high visibility reflective tape. A white reflective tape 1.00 inch in width shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes. The chevron tape shall measure 6.00 inches in height.

CAB FLOOR COVERING

The cab interior floor shall be covered with a 5/16" thick, black rubberized material to provide a rugged but cosmetically pleasing stepping surface throughout the cab. The floor covering shall provide superior durability and resistance against foreign objects as well as normal wear and tear.

ENGINE ENCLOSURE

An integral, formed aluminum and composite engine enclosure shall be provided. The engine enclosure shall be contoured and blended in an aesthetically pleasing manner with the interior dash and flooring of the cab. The enclosure shall be kept as low as possible, to maximize space and increase crew comfort.

The enclosure shall be constructed from 5052 H2 aluminum plate and GRP composite materials, providing high strength, low weight, and superior heat and sound deadening qualities.

Additionally, the underside of the engine enclosure shall be coated in with a ceramic spray on insulation and sound control. This coating is an environmentally-friendly coating that is applied seamlessly and rapidly while providing superior thermal insulation and protection against vibration and noise, and will prevent future corrosion from forming by sealing the substrate. NO EXCEPTIONS

ENGINE ENCLOSURE COVERING

The top of the engine enclosure shall be covered with Scorpion heavy duty, gray polyurethane blended coating. The textured coating shall provide paramount durability and wear resistance against foreign objects and normal wear and tear as well as sound deadening and insulation. The rubberized cab floor covering shall extend up the lower exterior sides of the engine enclosure to aid in sound deadening and heat resistance.

CENTER CONSOLE

There shall be a storage console installed on the engine enclosure between the driver and officer. The console shall be constructed from smooth aluminum and shall be coated with the same finish as the engine enclosure. The console shall measure approximately 23” long X 11.375” wide X 8.125” high. The console shall have a 13” long storage area in the center that shall be divided into five (5) separate areas with four (4) fixed vertical dividers. The dividers shall be spaced 2.125” apart for map book storage. A Velcro strap shall be installed front to rear to secure the map books. Each outboard area of the console shall have one (1) stainless steel cup holder and one (1) approximately 5.5” long X 4.75” wide X 3.5” high open storage area.

ENGINE HOOD LIGHTS

An LED work light shall be installed in the engine enclosure with an individual switch located on the base of the light. Location to be determined at Pre-Build Meeting.

COMPUTER TRAY

There shall be a slide-out tray in front of the officer’s seat for a laptop computer or other use.

Under the slide out will be a stationary compartment approximately 13.5" wide x 3.75" high x 12" deep. The compartment shall have a hinged drop down door. Location to be determined at Pre-Build Meeting.

INSTRUMENT PANEL

The main dash shroud, which covers the area directly in front of the driver from the doorpost to the engine hood, shall be custom molded and covered with a non-glare black vinyl. The dash shall be a one-piece hinged panel that tilts outward for easy access to service the internal components. The gauge panel shall be constructed of durable aesthetically pleasing light gray polymer material, placed over a heavy duty steel backing plate, for added strength and durability.

The gauges shall be Beede Instruments, NexSys Link gauges with built-in self-diagnostics and red warning lights to alert the driver of any problems. All gauges and controls shall be backlit for night vision and identified for function. All main gauges and warning lights shall be visible to the driver through the steering wheel.

MASTER BATTERY & IGNITION SWITCH

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a one-quarter turn red 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.

DIESEL PARTICULATE FILTER CONTROLS

There shall be two (2) controls for the diesel particulate filter. One control shall be for regeneration and one control shall be to inhibit engine regeneration. These shall be located below the steering wheel in the kick panel.

INSTRUMENTATION & CONTROLS

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

The instrument panel shall contain the following gauges:

One (1) electronic speedometer shall be included. 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.

One (1) electronic tachometer shall be included. The scale on the tachometer shall read from 0 to 3000 RPM.

One (1) two-movement gauge displaying primary system, and secondary system air volumes and integral LCD odometer/trip odometer shall be included on the lower portion of the LCD. The scale on the air pressure gauges shall read from 0 to 150 pounds per square inch (PSI). The air pressure scales shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate a low air pressure, as well as a message on the LCD screen. The odometer shall display up to 9,999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD shall display Transmission Temperature in degrees Fahrenheit on the upper portion of the LCD. The LCD screen shall also be capable of displaying certain diagnostic functions.

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, fuel level, voltmeter, and an indicator bar displaying Diesel Exhaust Fluid (DEF) LED bar shall be included. The scale on the engine oil pressure gauge shall read from 0 to 120 pounds per square inch (PSI). The engine oil pressure scale shall be linear to operate with an accuracy of 1 degree of the measured. A red indicator light in the gauge shall indicate a low engine oil pressure, as well as a message on the LCD screen. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (F). The coolant temperature scale shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate high coolant temperature, as well as a message on the LCD screen. The scale on the fuel level gauge shall read from empty to full as a percentage of fuel remaining. An amber indicator light shall indicate low fuel at 25% tank level. The scale on the voltmeter shall read from 10 to 16 volts with a red indication zone on the gauge showing critical levels of battery voltage. A red indicator light shall indicate high or low system voltage, as well as a message on the LCD screen. The scale on the DEF LED bar will consist of four (4) LEDs displaying levels in increments of 25% of useable DEF in green. Upon decreasing levels, the indicator bar will change colors to notify the driver of decreasing levels of DEF and action will be required. An amber indicator light shall indicate low levels of DEF, as well as a message on the LCD screen and an audible alarm.

The instrument panel shall include a light bar that contains the following LED indicator lights and produce the following audible alarms in applicable configurations:

RED LAMPS

Stop Engine-indicates critical engine fault
Air Filter Restricted-indicates excessive engine air intake restriction Park Brake-indicates parking brake is set
Seat Belt Indicator-indicates when a seat is occupied and corresponding seat belt remains unfastened Low Coolant-indicates engine coolant is required

AMBER LAMPS

MIL-indicates an engine emission control system fault Check Engine-indicates engine fault Check Trans-indicates transmission fault
High Transmission Temperature-indicates excessive transmission oil temperature ABS-indicates anti-lock brake system fault
Wait to Start-indicates active engine air preheat cycle HEST-indicates a high exhaust system temperature Water in Fuel-indicates presence of water in fuel filter DPF-indicates a restriction of the diesel particulate filter
Regen Inhibit-indicates regeneration has been postponed due to user interaction
Range Inhibit-indicates a transmission operation is prevented and requested shift request may not occur. SRS-indicates a problem in the RollTek supplemental restraint system
Check Message-Turn Signal On Check Message-Door Ajar Check Message-Cab Ajar Check Message-ESC Active
Check Message-DPF Regen Active Check Message-No Engine Data Check Message-No Transmission Data Check Message-No ABS Data
Check Message-No Data All Communication With Vehicle Systems Has Been Lost Check Message-Check Engine Oil Level
Check Message-Check Washer Fluid Level
Check Message-Check Power Steering Fluid Level Check Message-Low Transmission Fluid Level Check Message-Check Coolant Level

GREEN LAMPS

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 active
OK to Pump-indicates the pump engage conditions have been met Pump Engaged-indicates the pump is currently in use
Auxiliary Brake-indicates secondary braking device is active

BLUE LAMPS

High Beam Indicator

CONSTANT AUDIBLE ALARMS FROM GAUGE PACKAGE

High Trans Temp High or Low Voltage Seatbelt
Check Engine Check Transmission Stop Engine
Low Air Pressure Fuel Low
Water in Fuel ESC
High Coolant Temperature Low Engine Oil Pressure Low Coolant Level
Low DEF Level Air Filter Restricted
Extended Left and Right Turn Remaining On Cab Ajar
Door Ajar

ABS System Fault
SRS (Supplemental Restraint System) Fault

EXTERNAL AUDIBLE ALARMS

Air Filter Cab Ajar Door Ajar Seatbelt
Check Engine Stop Engine
Low Air Pressure Water in Fuel Low DEF
ABS System Fault
SRS (Supplemental Restraint System) Fault High or Low Voltage

LCD MESSAGES

Transmission Temperature
Battery Voltage
Engine hours
Vehicle Speed
Engine RPMs
Fuel level
DEF Level
Engine oil Pressure
Ammeter (if Equipped)
Engine Coolant Temp
Primary System Pressure
Secondary system pressure
Turbo Boost Pressure
Exhaust Temperature
Engine Load
Engine torque
Instant Fuel Economy
Average Fuel Economy

BACKLIGHTING COLOR

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

Instrumentation on dash panel:

Controls located on main dash panel:

- Master power disconnect with ignition switch
- Engine start switch
- Headlight switch
- Windshield wiper/washer switch
- Dimmer switch for backlighting

Controls included in steering column:

- Horn button
- Turn signal switch
- Hi-beam low-beam switch
- 4-way flasher switch
- Tilt-telescopic steering wheel controls

CENTER CONTROL CONSOLE

There shall be an ergonomically designed center control console. The console shall be constructed of 1/8" smooth aluminum and shall be mounted on the engine hood between the driver and officer. The console shall have a durable coating to match the color of the engine hood covering and shall feature surfaces on each side that are contoured to face the driver and the officer for easy viewing and accessibility. The switches and other customer specified electrical items shall be mounted in removable 1/8" smooth aluminum panels with a black wrinkle finish. The console shall have an aluminum lift-up lid with quick release latch. The lid shall be held in the open position with a gas strut to allow for easy access and serviceability.

Controls located in the console conveniently accessible to the driver:
- Transmission shifter
- Pump shift control with OK TO PUMP and PUMP ENGAGED lights
- Remote mirror control
- Illuminated rocker switches to control high idle, Jacob's brake, siren/horn, siren brake, master emergency, and other customer specified components
- 12V power point (if applicable)

Controls located in the console conveniently accessible to the driver and the officer (center):
- Parking brake control with a guard to prevent accidental engagement

Controls located in the console conveniently accessible to the officer:
- Illuminated rocker switches to control customer specified components that are easily reachable to the officer and do not allow for compromise of the driver's view, and eliminate the need for foot switches
- Surface to recess siren head, radio head, or other desired items as space permits
- 12V power point (if applicable)

Driving compartment warning labels shall include:
- HEIGHT OF VEHICLE
- OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION
- DO NOT USE AUXILIARY BRAKING SYSTEMS ON WET OR SLIPPERY ROADS
- EXIT WARNINGS

Additional labels included:
- COMPUTER CODE SWITCH
- ABS CODE SWITCH

- FLUID DATA TAG
- CHASSIS DATA Tag

USB POWER PORT

2 12 V Kussmaul USB power ports shall be installed in the officer's side dash area.

OVERHEAD CONTROL CONSOLE

An ergonomically designed overhead console shall be provided above the driver and officer, running the full width of the cab. The overhead console shall be constructed from 1/8" aluminum plate and shall be painted with a durable finish to match the inside of the cab. There shall be seven (7) removable 1/8" smooth aluminum plates with a black wrinkle finish to house switches and other electrical items.

Directly above the driver there shall be two (2) panels with no cutouts, unless otherwise specified by the customer.

There shall be a panel located to the right of the driver that shall be designated for defroster, heat, and air conditioning controls (if specified).

The center overhead panel shall be designated for up to seven (7) door ajar indicators. Upon releasing the apparatus parking brake, one or more of these lights shall automatically illuminate (flash) when any of the following conditions occur that may cause damage if the apparatus is moved: cab or compartment door is open; ladder or equipment rack is not stowed; stabilizer system deployed; any other device has not been properly stowed.

There shall be a panel to the left of the officer as well as two (2) directly above the officer. These panels shall have no cutouts, unless otherwise specified by the customer.

ENGINE WARNING SYSTEM

An engine warning system shall be provided to monitor engine conditions such as low oil pressure, high engine temperature and low coolant level. Warning indication shall include a STOP ENGINE (red) light with audible buzzer activation and a CHECK ENGINE (amber) light

Note: (Some engine configurations may also include a fluid warning light.)

There shall be a master information light bar with 24 lights located across the center of the dash panel that covers up to 24 functions. These are defined under Indicators and Warning Lights above.

CHASSIS WIRING

All chassis wiring shall have XL high temperature crosslink insulation. All wiring shall be

color-coded, and the function and number stamped at 3" intervals on each wire. All wiring shall be covered with high temperature rated split loom for easy access to wires when trouble shooting. All electrical connectors and main connectors throughout the chassis shall be treated to prevent corrosion.

MASTER ELECTRICAL PANEL

The main chassis breaker panel shall be wired through the master disconnect solenoid and controlled by the master battery switch. The breaker panel shall be located in front of the officer on the interior firewall and shall be protected by a removable aluminum cover. The cover shall have an aluminum notebook holder on the exterior face accessible to the officer. The cover shall be painted with a durable finish to match the interior of the cab and shall be secured with two (2) thumb screws.

The breaker panel shall include up to 22 ground switched relays with circuit breaker protection. An integrated electrical sub-panel shall be provided and interfaced to the body and chassis through an engineered wire harness system.

Twelve (12) 20-ampere relays and one (1) 70-ampere relay shall be provided for cab light bar and other electrical items. If the option for a mechanical siren has been selected two (2) additional relays shall be provided.

Up to two (2) additional relay boards with circuit breaker protection shall be provided for additional loads as required. Each board shall contain four (4) relays. The relay boards shall be configured to trip with input from switch of positive-negative or load manager by moving the connector on the board (no tools required).

All relay boards shall be equipped with a power-on indicator light (red), input indicator light (green) and power output indicator light (red).

Up to twenty-three (23) additional automatic reset circuit breakers for non-switched loads that are remotely switched (ie: heater fans, hood lights, etc.) shall be provided.

All relays and circuit breakers on the relay boards shall be pull-out/push-in replaceable.

All circuit breakers on the relay boards shall be 20 ampere automatic reset which can be doubled or tripled for 40 or 60-ampere capacity.

The system shall utilize Deutch DRC weather resistant connectors at the breaker panel, toe board and main dash connections.

All internal wire end terminals, including locking connectors, shall be mechanically affixed to the wire ends by matching terminal crimping presses to assure the highest quality terminations.

All internal splices shall be ultrasonically welded connections and all internal wiring shall be high temperature GXL type wire that is protected by wiring duct wherever possible.

All switches shall be ground controlled; no power going through any rocker switch.

Any switch controlling a relay in the breaker panel shall be capable of being set to function only when the parking brake is set. All relays shall be tagged with the function that the relay is controlling.

PUMP SHIFT MODULE

A pneumatic pump shift module with indicating lights shall be located within easy reach of the driver. A gear lockup shall be provided to hold the transmission in direct drive for pump operation.

LOAD MANAGER

Load manager shall have the ability to sequence loads on and off. It shall also be able to shed 8 loads when the vehicle is stationary, starting at 12.7 volts lowest priority load to be shed, then respectively at 12.6, 12.4, 12.2, 12.0, 11.8, 11.4 and 11.0 volts DC. Any load that has been shed shall be off for a minimum of five minutes, and then if voltage has rebounded above shed voltage, the shed load shall automatically come on. There shall also be an indicator panel along side the rocker switches, which indicate power is on, battery warning and fast idle. Battery warning indicator shall flash at a rate proportional to the voltage discharge rate.

AUTOMATIC HIGH IDLE ACTIVATION

The load management system shall be capable of activating the apparatus high idle system when the system voltage drops below 12.3 volts DC. The system shall raise engine speed for a minimum of five minutes until voltage exceeds 13.0 volt DC. The load management system shall activate the high idle feature before any devices are automatically shed OFF. The high idle function request from the load management device shall function only if the appropriate interlocks are present; that is, control of the high idle system is monitored and shall be superseded by the state of the interlock control module. The automatic high idle system shall be deactivated whenever the brake pedal is pressed, and shall remain inactive for two minutes thereafter to allow an operator to override the high idle function and return the engine to idle before PTO engagement.

HIGH IDLE

The engine shall have a "high idle" switch on the dash that shall maintain an engine RPM of 1,000. The switch shall be installed at the cab instrument panel for activation/deactivation. The "high idle" mode shall become operational only when the parking brake is on and the truck transmission is in neutral.

AUXILIARY POWER POINTS

Two (2) 12-volt 20-ampere auxiliary lighter socket type plug-ins, shall be provided in the cab, one near the driver and one near the officer.

CAB ACCESSORY FUSE PANEL

A fuse panel shall be located underneath the rear facing seat on the officer's side. The fuse panel shall consist of six (6) battery hot and six (6) ignition switch circuits. Each circuit shall be capable of 10-ampere 12- volt power and total output of 50-amps. The fuse panel shall be capable of powering accessories such as hand held spotlights, radio chargers, hand lantern chargers and other miscellaneous 12-volt electrical components.

POWER GROUND STUDS

There shall be a minimum of four (4) threaded power studs provided in the chassis electrical compartment to accommodate the future installation of two-way radios. The studs shall be wired as follows:

One (1) 12-volt 40-amp controlled by the battery switch One (1) 12-volt 100-amp ground One (1) 12-volt 60-amp controlled by the ignition switch One (1) 12-volt 60-amp, direct to the battery

VEHICLE DATA RECORDER

The chassis shall have a Weldon Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901. 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 lap top connection shall be a panel mounted female type B USB connection point, remotely mounted in the left side foot well of the cab.

LIGHTING CAB INTERIOR

Interior lighting shall be provided inside the front of the cab for passenger safety. Two (2) ceiling mounted combination red/clear LED dome lights with a push button on/off switch in

the light lens. One light shall be located over each the officer and driver's position. The lights shall also activate from the open door switch located in each cab doorjamb.

LIGHTING CREW CAB INTERIOR

Interior lighting shall be provided inside the crew cab for passenger safety. Two (2) ceiling mounted combination red/clear LED dome lights with a push button on/off switch in the light lens shall be provided. The lights shall also activate from the open door switch located in each cab doorjamb.

MAP LIGHTS

A Sunnex swivel map light shall be provided. The light shall have a clear lens and a control switch on the base. The light shall be mounted on the overhead HVAC cover on the right hand side.

DO NOT MOVE APPARATUS LIGHT

The front headliner of the cab shall include a flashing red Whelen 500 Series 5mm LED light clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, a remote audible alarm and an audible alarm programmed shall be included which shall sound while the light is activated.

The flashing red light shall be 5.40 inches long X 1.70 inches wide X 0.90 inches high and 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.

SPOTLIGHT

A 12 volt Golight Striker30204 LED spotlight shall be installed in a location determined at pre-build. The officer position shall include controller joystick.

CLIMATE CONTROL DRAIN

The climate control system shall include a gravity drain for water management. The gravity drain shall remove condensation from the air conditioning system without additional mechanical assistance.

CLIMATE CONTROL ACTIVATION

The heating, defrosting and air conditioning controls shall be located on the **SWTICH PANNEL** and control screen.

A/C COMPRESSOR

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 65,000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil HEATER/DEFROSTER/AIR CONDITIONER

There shall be a minimum 65,000 cool BTU and 65,000 heat BTU single unit, heater/air conditioner mounted over the engine cover. The unit shall be mounted in center of the cab on the engine hood/enclosure. Unit shall have a shutoff valve at the right side of the frame, next to the engine. Airflow of the heater/air conditioner shall be a minimum 1200 CFM. To achieve maximum cooling, a TM-21 Compressor (10 cu. in.) will be used.
The defroster/heater shall be a minimum of 35,000 BTU and shall be a separate unit mounted over the windshield. There shall be eight (8) louvers/diffusers to direct to windshield and door glass. Airflow of the defroster/heater shall be a minimum 350 CFM. The unit shall be painted Zolatone greystone to match the cab ceiling.

The condenser shall be roof mounted and have 65,000 BTU rating. The unit shall include three fan motors. Airflow of the condenser shall be a minimum 2250 CFM. (This roof-mounted condenser shall work at full rated capacity at an idle with no engine heat problems.)

HEATER/DEFROSTER/AIR CONDITIONING CONTROLS

The heater/defroster/air conditioning shall be located in the overhead console in the center of the apparatus cab within reach of the driver and officer. The controls shall be illuminated for easy locating in dark conditions. The controls shall be located in such a way that the driver will not be forced to turn away from the road to make climate control adjustments. Control of all heater/defroster/air conditioning functions for the entire apparatus cab shall be achieved through these controls.

DEFROSTER DIFFUSER

A molded diffuser made of durable ABS plastic ductwork system shall be provided. It shall be form fitted and shall attach to the cab's overhead defroster unit to provide temperature controlled air to the windshields.
Air flow of up to 280 cfm is balanced and directed across the entire windshield for optimum defrosting capability in all types of weather.

TOOL MOUNTING PLATE

There shall be a 3/16" smooth aluminum plate installed on top of the heat/ air conditioning unit for use in mounting of equipment. The plate shall measure approximately 25" wide x 19.5" long and shall be spaced up 1". The mounting plate shall feature beveled edges on the front and rear for a finished appearance. The plate shall be coated with the same finish as the heat/air conditioning unit and shall be secured with screws for easy replacement.

SEAT COLOR

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

DRIVER'S SEAT

The driver's seat shall be an H.O. Bostrom Sierra model seat with air suspension. The four-way seat shall feature 3.0 inches of vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.

The seat position shall include a three-point shoulder harness with lap belt and an automatic retractor attached to the cab. The buckle portion of the seat belt shall be mounted on a semi-rigid stalk extending from the seat base within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 37.00 inches measured with the seat suspension height adjusted to the upper limit of its travel.

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.

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

The driver's seat shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable titling seat back. The seat back shall also feature a contoured head rest.

One (1) IMMI Smart Doc™ Gen 2 SCBA locking system which shall be one bracket model and store most U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool. Location to be determined at pre-build meeting

OCCUPANT PROTECTION DRIVER

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

The officer's seating area APS shall include:

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

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

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

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

OFFICER'S SEAT

An H.O. Bostrom Tanker 450 SCBA seat shall be provided for the officer. . The seat shall feature 2 way manual adjustment and a tapered and padded seat, and cushion. The seat shall also feature integrated 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.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches.

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

The officer's seat shall feature a IMMI Smart Doc™ Gen 2 SCBA locking system which shall be one bracket model and store most U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically**.**

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto- locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

UNDER SEAT STORAGE COMPARTMENT

There shall be a storage area under the officer's seat, accessible from the front through a hinged door with Southco C5 compression lever latch. The door shall be shall be painted with a durable finish to match the inside of the cab and shall be vertically hinged near the engine enclosure.

The storage area shall be approximately 19.5" wide x 14.375" high x 21.75" deep. The lower rear portion of the compartment shall be tapered to accommodate the wheel well and wiring chase. The opening shall be approximately 15.5" wide x 10.5" high.

OCCUPANT PROTECTION OFFICER

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

The officer's seating area APS shall include:

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

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

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

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

CREW SEAT – DRIVER'S SIDE, REAR FACING

The crew seating shall be a H.O. Bostrom . Tanker 450 SCBA seat The seat shall feature a tapered and padded seat, and cushion.

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

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

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

The rear facing outboard seat shall feature a IMMI Smart Doc™ Gen 2 self contained breathing apparatus (SCBA) locking system which shall store most U.S. and International SCBA brands and bottle sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically**.**

The bracket system shall be free of straps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The seat back shall include a removable padded cover which shall be provided over the SCBA

cavity

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

CREW SEAT – OFFICER'S SIDE, REAR FACING

The crew seating shall be a H.O. Bostrom . Tanker 450 SCBA seat The seat shall feature a tapered and padded seat, and cushion.

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

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

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

The rear facing outboard seat shall feature a IMMI Smart Doc™ Gen 2 self contained breathing apparatus (SCBA) locking system which shall store most U.S. and International SCBA brands and bottle sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically**.**

The bracket system shall be free of straps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

CREW SEAT –, FORWARD FACING - FOLDING

1 forward facing folding seats shall be mounted to the back wall officers side. The seat shall be supplied with seat belts and integrated into occupant safety system. The seat shall be upholstered with heavy duty Durawear material.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

CREW SEAT – OFFICER'S SIDE, FORWARD FACING, INBOARD

One (1) H.O. Bostrom Tanker 400CT ABTS SCBA flip-up base seat shall be installed in the officer's side forward-facing inboard position. The seat back shall have a SCBA cavity and auto-pivot-and-return padded headrest. The seat shall be equipped with a red 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The seat shall be upholstered with heavy duty Durawear material.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

SEAT BELT WARNING SYSTEM

An Akron / Weldon seat belt warning system shall be provided, and shall monitor each seating position. Each seat shall be supplied with a sensor that, in conjunction with the display module located on the dash, shall determine when the seat belt was fastened and if the seat is occupied. An icon shall represent that the seat is properly occupied. An audible and visual alarm shall be activated if the seat is occupied and/or the belt is not fastened in the proper sequence.

CREW SEAT COMPARTMENT

A compartment shall be provided under the forward facing crew seats on the back wall of the cab. The compartment shall be full through, with an access door on each side, accessible from the side of the crew cab doors.

ANTENNA MOUNTING

Two (2) universal antenna mount(s), model MATM, with 17 feet of coax cable and weatherproof cap shall be provided for the two-way radio equipment. The mount(s) shall be installed in the cab roof as requested by the customer. The cable shall be routed to the lower dash, or as requested by the customer, with any excess cable secured in an accessible location. All installation locations and cable routing shall be confirmed with the customer during the pre-construction process.

DEPARTMENT RADIOS

Two (2) ***Meriden Fire Department*** furnished mobile radios shall be wired and mounted in the cab dash

SETCOM DIGITAL INTERCOM SYSTEM

There shall be a SetCom System 950 multi radio digital intercom system provided on the apparatus. The wireless headset options shall be included.. It shall be compatible with VHF and UHF radios. The system shall have a total power input requirement for each system not to exceed two amps. It shall have independent transmit and receive level adjustments. The system shall have the capacity for up to six (6) headsets without reduction or fluctuation of sound level, regardless of the number of attached headsets. It shall have a separate 3.5 mm auxiliary input and output jack. The intercom shall have a two (2) year standard warranty from the intercom manufacturer.

DRIVER POSITION

One SetCom wireless headset shall be provided. A hanger located in close proximity to the driver shall be provided. The headset shall include, volume control, a noise canceling microphone, adjustable head strap, flex boom microphone, liquid foam ear seals, and a red push to talk button.

OFFICER POSITION

One SetCom wireless headset shall be provided. A hanger located in close proximity to the driver shall be provided. The headset shall include, volume control, a noise canceling microphone, adjustable head strap, flex boom microphone, liquid foam ear seals, and a red push to talk button.

CREW POSITIONS

One SetCom wireless headset shall be provided for each riding position. A hanger located in close proximity to the driver shall be provided. The headset shall include, volume control, a noise canceling microphone, adjustable head strap, flex boom microphone, liquid foam ear seals, and a red push to talk button.

Hanging hooks or systems of head set storage shall be shipped loose for attachment after delivery.

HD STEREO

A Jensen HD Stereo AM/FM/WB World Turner shall be provided with four speakers.

REAR VIEW CAMERA

An Audiovox Voyager heavy duty 3 camera (rear, both sides) system shall be supplied. The system shall afford the driver a clear view to the rear of the vehicle while backing, as well as either side when turn signal is activated..

The camera shall be wired to dual Weldon **SWTICH PANNEL**s located, one (1) on the driver and one (1) on the officer dash. The rear camera display shall activate when the vehicle's transmission is placed in reverse, as well as either side when turn signal is activated..
The camera system display can also be activated through the **SWTICH PANNEL** panel.

MIDSHIP PUMP / GEARBOX MODEL

The midship pump/gearbox provisions shall be for a Hale QMAX 150-23L pump rated at 1500 gallons per minute.

MIDSHIP PUMP RATIO

The ratio for the midship pump shall be 2.28:1.

MIDSHIP PUMP GEARBOX DROP

The Hale pump gearbox shall have a (medium length) drop length.

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 road sides 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 customer installed pump. The air supply shall be pressure protected from service brake system.

MANUAL OVERRIDE PUMP SHIFT

A manual override system shall be supplied for the pump shift should a problem develop in the chassis air brake system. Controls for the override shall be located at the lower right hand corner of the left side pump panel. Full instructions shall be inscribed on a plate near the pump shift controls.

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 four (4) locations and shall be reinforced appropriately in order to carry the expected load for the life of the apparatus.

A pump compartment light shall be provided inside the right side pump enclosure and accessible through a door on the pump panel.

PAINT PUMP JOB COLOR

The pump, pump enclosure and steamer inlet valve(s) shall be painted with PPG polyurethane enamel paint. The paint shall be job color, same as the body.

PRIMING PUMP

There shall be a Trident Air Operated Priming System included with the pump. The priming pump shall be an electrically actuated air operated venturi valve mounted firmly within the pump area above the manifold. The pump shall be controlled from the pump operator's panel.. The pump shall be capable of creating suction and discharging water from a lift of 10 feet through 20 feet of suction hose of the appropriate size, in not more than 30 seconds starting with the pump dry. It shall be capable of developing a vacuum of 22 inches at an altitude of up to 1000 feet.

IDENTIFICATION TAGS

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

All discharge outlets shall have color coded identification tags, with each discharge having its own unique color.

Color coding shall include the labeling of the outlet and the drain for each corresponding discharge.

All line pressure gauges shall be mounted directly above the corresponding discharge control tee handles and recessed within the same chrome plated casting as the rod guide for quick identification.

The gauge and rod guide casting shall be removable from the face of the pump panel for ease of maintenance.

The casting shall be color coded to correspond with the discharge identification tag.

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

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

PRESSURE CONTROL

The pump shall be equipped with a Hale Intake Relief Valve system. A single bronze variable pressure setting relief valve shall be provided and be of ample capacity to prevent an undue pressure rise as per NFPA Pamphlet No. 1901. The relief valve shall be normally closed and shall open against pump pressure, with a control light to signal when open. In event of relief valve control failure, the pump is to remain operable for the complete range of the pump's rated capacity, without requiring the closing of any emergency or "in case of failure" (off/on) valves. (No Exceptions.)

PUMP TEST & CERTIFICATION

The pump shall be tested and certified by a third party independent testing agency, in accordance with NFPA 1901. A 3 hour pumping test from draft shall be conducted consisting of 2 hours of continuous pumping at 100% of rated capacity at 150PSI net pump pressure, followed by ½ hour of continuous pumping at 70% of rated capacity at 200PSI net pump pressure, and ½ hour of continuous pumping at 50% of rated capacity at 250PSI net pump pressure). The testing shall also include a pressure control system test, priming system test, vacuum test, a gauge/flowmeter test, and a pumping engine overload test. If the apparatus is equipped with a water tank, the water tank-to-pump test shall also be included.

AUXILIARY COOLER

An auxiliary cooler shall be furnished to provide additional cooling to the engine under extreme pumping conditions. Water from the pump is to be piped to the coils of the heat exchanger allowing the engine fluid to be cooled as required.

PUMP CONNECTIONS

All suction and discharge lines (except pump manifolds) 1" and larger shall be heavy-duty stainless steel pipe. Where vibration or chassis flexing may damage or loosen piping or where a coupling is necessary for servicing, a flexible connection shall be furnished. All lines shall be drained by a master drain valve or a separate drain provided at the connection. All individual drain lines for discharges shall be extended with a 90 degree fitting in order to drain below the chassis frame. All water carrying gauge lines shall utilize nylon tubing.

TANK TO PUMP

The booster tank shall be connected to the intake side of the pump with a check valve. The 3 ½ " tank to pump line shall run from a bottom sump into the 3 ½" valve. To prevent damage due to chassis flexing or vibration, a short 3 ½" flexible rubber hose coupling shall be used to connect the tank to the intake valve.

VALVE

The valve shall be an Elkhart, full flow trunnion mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart push/pull handle located at the operator's panel.

TANK FILL

A 1.5" tank fill shall be provided, using a quarter turn full flow ball valve controlled from the pump operator's panel.

VALVE

The valve shall be an Elkhart, full flow trunnion mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart push/pull handle located at the operator's panel.

PRESSURE GOVERNOR / MONITORING DISPLAY

Fire Research PumpBoss model PBA400-A00 pressure governor and monitoring display kit shall be installed. The kit shall include a control module, two (2) 600 psi pressure sensors, 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 3/4" deep. Inputs for monitored information shall be from a J1939 databus or independent sensors. Outputs for engine control shall be on the J1939 databus or engine specific wiring.
The following continuous displays shall be provided: CHECK ENGINE and STOP ENGINE warning LEDs
Engine RPM; shown with four daylight bright LED digits more than 1/2" high Engine OIL PRESSURE; shown on an LED bar graph display in 10 psi increments
Engine TEMPERATURE; shown on an LED bar graph display in 10 degree increments
Transmission TEMPERATURE; shown on an LED bar graph display in 10 degree increments
BATTERY VOLTAGE; shown on an LED bar graph display in 0.5 volt increments
PSI / RPM setting; shown on a dot matrix message display PSI and RPM mode LEDs
THROTTLE READY LED.

A 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.
The program shall store the accumulated operating hours for the pump and engine, previous

incident hours, and current incident hours in a non-volatile memory. Stored elapsed hours shall be displayed at the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:
High Engine RPM
High Transmission Temperature
Low Battery Voltage (Engine Off)
Low Battery Voltage (Engine Running) High Battery Voltage
Low Engine Oil Pressure
High Engine Coolant Temperature
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 control knob that uses optical technology shall adjust pressure or RPM settings. It shall be 2" in diameter with no mechanical stops, a serrated grip, and have a red idle push button in the center.
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.
The pressure governor and monitoring display shall be programmed to interface with a specific engine.

6" PUMP INLET

6” Left side steamer connection with an Elkhart relief valve, Kocheck steamer crank slow open valve shall be provided. The inlet shall extend through the side pump panels and terminate with a 5” stortz and stortz cap, removable strainer and a Class 1 bleeder valve shall be incorporated.

2.5" LEFT SIDE INLET

A 2.5" gated inlet valve shall be provided on the left side pump panel. The valve shall be supplied with chrome plate female swivel, plug, chain, and removable strainer. The valve shall attach directly to the suction side of the pump with the valve body behind the pump panel.

VALVE

The valve shall be an Elkhart, full flow trunnion mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by a swing type handle located at the operator's panel. The handle shall have a full 90 degree movement.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

6" PUMP INLET

6" Right side steamer connection with an Elkhart relief valve, Kocheck steamer crank slow open valve shall be provided. The inlet shall extend through the side pump panels and terminate with a 5" stortz and stortz cap. removable strainer and a Class 1 bleeder valve shall be incorporated.

DISCHARGE #1 - LEFT

The discharge in position #1 on the left side rear of the apparatus shall include the following features.

A 2.5" discharge shall be provided on the left side of the apparatus.

VALVE

The valve shall be an Elkhart, full flow trunnion mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by a swing type handle located at the operator's panel. The handle shall have a full 90 degree movement.

2.5" PRESSURE GAUGE

A Class 1 liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

DISCHARGE #2 - LEFT

The discharge in position #2 on the left side of the apparatus shall include the following features.

A 2.5" discharge shall be provided on the left side of the apparatus.

VALVE

The valve shall be an Elkhart, full flow trunnion mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by a swing type handle located at the operator's panel. The handle shall have a full 90 degree movement.

2.5" PRESSURE GAUGE

A Class 1 liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

DISCHARGE #3 - RIGHT

The discharge in position #3 on the right side of the apparatus shall include the following features.

A 4" discharge shall be provided on the right side of the apparatus.

VALVE

The valve shall be an Elkhart, full flow trunnion mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart handwheel control with position indicator located at the operator's panel.

2.5" PRESSURE GAUGE

A Class 1 liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

DISCHARGE ADAPTER

One (1) Task Force Tips #AH3ST-NP 4" NST female x 5" Storz 30-degree adapter with #A01ST 5" Storz cap and chain shall be provided for the above discharge.

DISCHARGE #4 - RIGHT

The discharge in position #4 on the right side of the apparatus shall include the following features.

A 2.5" discharge shall be provided on the right side of the apparatus.

VALVE

The valve shall be an Elkhart, full flow trunnion mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either

direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by a swing type handle located at the operator's panel. The handle shall have a full 90 degree movement.

2.5" PRESSURE GAUGE

A Class 1 liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

The following discharges shall be in the hose bed, back wall upper area

Two (2) 1.75" DISCHARGES, LEFT UPPER BODY hose bed #5 & # 6

There shall be two (2) gated discharge piped to the front of the upper left top of the hose bed compartment. The discharge shall be installed with proper clearance for spanner wrenches or adapters. Plumbing shall be 2 " piping and a full flow 2" ball valve with the control at the pump operator's panel.

VALVES

The valve shall be an Elkhart, full flow trunnion mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATORS

The valves shall be controlled by Elkhart 0push/pull handles located at the operator's panel.

2.5" PRESSURE GAUGE

A Class 1 liquid filled individual line pressure gauge shall be provided for each discharge. The

gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

2.5" DISCHARGE, RIGHT SIDE UPPER HOSE BED #7

There shall be a 2.5" gated discharge piped to the front of the upper right side body. The discharge shall be installed with proper clearance for spanner wrenches or adapters. Plumbing shall be 2.5" piping and a full flow 2.5" ball valve with the control at the pump operator's panel.

VALVE

The valve shall be an Elkhart, full flow trunnion mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart push/pull handle located at the operator’s panel.

2.5" PRESSURE GAUGE

A Class 1 liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

2.5" DISCHARGE, RIGHT SIDE UPPER HOSE BED #8

There shall be a 2.5" gated discharge piped to the front of the upper rigth side body. The discharge shall be installed with proper clearance for spanner wrenches or adapters. Plumbing shall be 2.5" piping and a full flow 2.5" ball valve with the control at the pump operator's panel.

VALVE

The valve shall be an Elkhart, full flow trunnion mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart push/pull handle located at the operator's panel.

2.5" PRESSURE GAUGE

A Class 1 liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

BOOSTER REEL DISCHARGE (#9)

There shall be one (1) Hannay series electric rewind booster reel with automatic brake installed on the apparatus. The rewind motor shall be mounted/located internally to the reel frame in order to provide the widest drum for the open dunnage area front to back depth. The reel shall have a capacity of 200' of 1" forestry fire hose (stored uncollapsed).

A 1½-inch Elkhart, full flow trunnion-mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

There shall be a manual rewind device provided. A manual crank shall be mounted adjacent to booster reel. The hose reel specified shall be polished aluminum. The hose reel shall be mounted above the pump house on the officer's side. An electric rewind switch shall be located on the officer's side lower pump panel. A second rewind switch shall be located near the booster reel in the dunnage area to facilitate loading from the top. The switches shall have a weather resistant rubber cover and label denoting its function.

The hose shall deploy from the top of the drum to the guide rollers. There will be two sets of stainless steel hose roller guides installed on each side of the upper pump house to allow hose payout to either side of the apparatus. The guides shall be the same width of the hose reel, with upper, lower and side rollers for hose retention.

Optional: to meet the height restrictions, this reel can be relocated to the rear storage compartment. Location within the compartment shall maximize the available storage area. Roller placement shall afford the easies deployment of the hose to either side of the apparatus.

BOOSTER HOSE

The reel shall come equipped with 200 feet of 1" diameter collapsible Forestry hose, 100-foot lengths with aluminum NH thread couplings. A third length of 100-foot Forestry hose shall be shipped loose.

BOOSTER HOSE NOZZLE AND MOUNT

There shall be an Elkhart Brass model SB-275-GAT 1" nozzle with a ½ inch integrated smooth bore. The nozzle shall be configured with a pistol grip, free-swivel base. An Elkhart model 4000-04 chief adjustable tip attached. The nozzle shall be connected to the booster reel line and stored in a nozzle mount attached to the right pump panel. Location to be confirmed at the pre build meeting

VALVE ACTUATOR

The valve shall be controlled by an Elkhart push/pull handle located at the operator's panel.

2.5" PRESSURE GAUGE

A Class 1 liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

CROSSLAYS (Discharge 10, 11, 12)

Three (3) crosslay hose beds shall be supplied as follows:

The forward crosslay shall have with 2 " piping, 2 " valve, and 1 3/4" swivel with the capacity of 250' of 1 3/4" hose (Discharge #10).

The middle crosslay shall have with 2 "piping, 2 " valve, and 1 3/4" swivel with the capacity of 250' of 2" hose (Discharge #11).

The rear crosslay shall have with 2.5 " piping, 2.5" valve, and 2.5" swivel with the capacity of 250' of 2 1/2" hose (Discharge #12).

VALVE

The valves shall be an Elkhart, full flow trunnion mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATORS

The valve shall be controlled by an Elkhart push/pull handle located at the operator's panel.

2.5" PRESSURE GAUGE

A Class 1 liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

MASTER STREAM VALVE and MASTER STREAM DEVICE (discharge 13)

The Master Stream valve shall be an Elkhart 3" electric valve. The valve shall be controlled by an Elkhart UBEC-3 electric actuator located at the operator's panel. The actuator shall be connected to both a flow sensor and a pressure sensor. The actuator shall display pressure, flow, and valve position.

1 3" deluge riser to mounted on the pump compartment, TFT extend a gun, detachable Stinger monitor and ground mount with anchor kit, stacked tips with stream straighter, shall be supplied. The riser shall be either a 12 or 18 inch rise selected to maximize height, while maintain overall vehicle height requirements.

CROSSLAY COVER

A vinyl crosslay cover shall be provided to enclose the top and sides of the crosslays, capable of being secured at the top and sides.

MASTER PUMP DRAIN

A multiport master drain valve shall be provided and plumbed to multiple locations on the main pump body. The valve assembly shall be clearly marked as the Master Drain.

DRAIN VALVES LIFT UP STYLE

Vertical lift up style, quarter turn style drain valves shall be provided for each suction inlet, or discharge outlet as specified. Each drain shall be clearly marked and color coded to match the corresponding suction or discharge.

PUMP AND GAUGE PANELS

Pump panels on both sides shall be easily removable. The gauge and control panels shall be two separate panels for ease of maintenance. There shall be one (1) removable access door as large as possible on the right side pump panel. This door shall have 1/4 turn latching mechanisms for easy removal.

The pump controls and gauges shall be located at the left side of the apparatus and properly marked. The control panel shall be laid out in a user-friendly manner.

All valve controls shall have the corresponding discharge gauge located immediately adjacent to control handle to allow operator to view the discharge pressure without searching the panel.

MANUAL HAND THROTTLE

A Fire Research "InfinityPRO" model ETA400 series remote hand throttle shall be installed. The control knob shall be 2" in diameter with a serrated grip, no mechanical stops, and have a red idle push button in the center. When the throttle is active, the cab accelerator shall be inhibited to prevent inadvertent operation of the cab accelerator, which could result in a sudden and dangerous increase in pump discharge pressure.

The remote throttle shall set the engine RPM to idle when the pump engaged interlock signal is recognized regardless of the control knob position. It shall use optical technology to detect the direction and speed of the control knob when it is rotated.

LIGHT SHIELD

There shall be an integrated light shield installed over the pump operators panel.

There shall be 12 volt DC white LED lights installed under the stainless steel light shield to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights shall be activated by the pump panel light switch.

The lights shall be activated by a switch located on the pump panel.

PANEL FINISH

The panels shall be constructed of black vinyl covered aluminum for maximum protection against abrasion caused during normal use.

ESCUTCHEON PLATES

The pump panel shall be equipped with color-coded removable escutcheon plates around the suction and discharge valves.

COLOR CODING

Each discharge valve control, outlet, and corresponding line gauge shall be color-coded. The color-coding shall be (as applicable):

Pump House
#1 2 ½ Discharge – Yellow
#2 2 ½ Discharge – White
#3 4" Discharge – Yellow with White Border
#4 2 ½ Discharge – Black

Rear of hose beds
#5 1 ¾ Pre-Connect - Red
#6 1 ¾ Pre-Connect – Brown
#7 2 ½ Pre-Connect – Orange
#8 2 ½ Pre-Connect – Green

Booster reel
#9 1 inch booster reel – Magenta

Cross lays
#10 Front Cross lay – Tan
#11 Middle Cross lay Lavender
#12 Rear Cross lay Olive

#13 Deluge Gun Silver

Inlets
Tank Fill - Lime Green
Tank to Pump – Burgundy

PUMP PANEL LIGHTS, LED

The driver's side pump panel controls and gauges shall be illuminated by a minimum of three (3) Weldon 2631 LED lights.

A separate wire provision shall be provided for a flood light at the pump panel. Sufficient wire shall be provided for placement to illuminate the area around the pump operator. The circuit shall be activated by a switch located on the pump panel.

PUMP PANEL LIGHT

A light shall be provided for the opposite side pump panel.

PUMP PANEL ILLUMINATION

One pump panel illumination light shall be activated when the pump is engaged.

PUMP PANEL GAUGES AND CONTROLS

The following gauges and controls shall be provided at the pump panel:

- Two (2) certified laboratory test gauge outlets.
- Pump primer control.
- Master drain control and additional drains as needed.
- Tank-fill and pump cooler valve controls.
- Tank to pump valve control.
- Pump capacity rating plate.
- All discharge controls.
- Two (2) master pump gauges.
- Gauges on all discharge lines.

AIR HORN BUTTON

A push button switch shall be provided on pump operators panel to activate the air horns.

4” MASTER GAUGES

Class 1 liquid filled pump pressure and vacuum gauges shall be provided. The gauges shall be 4" in diameter with white faces and black lettering. The gauges shall have a pressure range of 30"-0-400 psi.

WATER TANK GAUGE

An innovative controls encapsulated (14) super bright LED light indicator shall monitor the water tank level and shall be mounted on the pump operator's panel. The fourteen LED lights are arranged in a "V" pattern for easy identification of liquid level. When the liquid level reaches less than a 1/4 full the refill level begins to flash. The tank-sensing probe shall be chemical resistant PVC with stainless steel sensing wires. The cover plate shall be aluminum sub-plate, black background and blue graphics, with an outdoor exposure rated composite

overlay.

TANK LEVEL LIGHTS

There shall be TWO (2) Innovative controls SL Monster 3030753 water level light strips, surface mounted installed vertically on each side of the cab. Each light shall be surface mounted at a location to be determined in the Pre-Build Meeting. They shall be interfaced to the Innovative tank sensing probe through a innovative controls monster light relay

The lights shall be provided in four (4) colors. The light colors from top to bottom shall be green, blue, amber and red.

WATER TANK

The tank shall be constructed of PT3™ polypropylene material by United Plastic Fabricating (UPF). This material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum protection. Tank shell thickness may vary depending on the application and may range from ½ to 1" as required. Internal baffles are generally 3/8" in thickness.

The tank shall be of a specific configuration and shall be designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include PolyProSeal™ technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The top of the booster tank shall be fitted with removable lifting assembly designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" PT3™ polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions shall interlock with one another and completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength as part of the tank's unique Full Floor Design™.

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT3™ polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall have a 1/4" thick removable polypropylene screen and a PT3™ polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 4" that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901 so as to not interfere with rear tire traction.

The tank cover shall be constructed of 1/2" thick PT3™ polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall

be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" minimum polypropylene dowels spaced a maximum of 40” apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall accommodate the necessary lifting hardware.

There shall be one (1) sump constructed of a minimum of 1/2" PT3™ polypropylene and be located in the left front quarter of the tank, unless specified otherwise. On all tanks that require a front suction, a 3" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" N.P.T. threaded outlet on the bottom for a drain plug per NFPA. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 3” above the inside floor.

There shall be two (2) standard tank outlets: one for the tank-to-pump suction line, which shall be sized to provide adequate water flow to the pump; and, one for tank fill line, which shall be sized according to the NFPA minimum size chart for booster tanks. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1000 G.P.M. All auxiliary outlets and inlets must meet all NFPA guidelines in effect at the time of manufacture.

The UPF Poly-Tank® III shall rest on the body cross members in conjunction with such additional cross members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor. In cases where overall height of the tank exceeds 40 inches, cross member spacing must be decreased to allow for not more than 400 square inches of unsupported area.

The tank shall be isolated from the cross members through the use of hard rubber strips with a minimum thickness and width dimension of 1/4” x 1”. The rubber must be installed so it will not become dislodged during normal operation of the vehicle. Additionally, the tank must be supported around the entire bottom outside perimeter and captured both in the front and rear as well as side to side to prevent tank from shifting during vehicle operation.

The tank shall be completely removable without disturbing or dismantling the apparatus structure.

The tank shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. The tank shall be delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on weight. Engineering estimates for capacity calculations shall not be permitted for capacity certification. A center of gravity and weight calculation for both empty and full conditions shall be required with each tank.

The tank shall have a limited Lifetime warranty that provides warranty service for the life of the fire apparatus in which the tank is installed. Warranties are transferable if the apparatus ownership changes by requesting the transfer from UPF. In applications where the tank will be subject to severe conditions, the tank may have a warranty unique to the application that is

clearly defined for each such application.

The water tank shall have a minimum capacity of 500 U.S. gallons; and a maximum capacity of 750 gallons. Water capacity shall be maximized, while maintaining ladder Storage, low hose bed height specifications, and weight allowances.

RESCUE STYLE APPARATUS BODY

This apparatus body shall be built using a design that incorporates the sub-frame, tank cradle, compartments and outer body shell into one solid, integrated module.

This method of construction shall be utilized as it is a far superior design for overall strength, durability and longevity when compared to designs utilizing modular construction methods.

The sub-frame and tank cradle shall be constructed of 3" x 3" x *Y.* " wall (5052 extruded) crush resistant aluminum tubing spaced on 15" centers to allow for the proper amount of flexion without the possibility of forming cracks.

The body support system shall not utilize inferior strength angle and different metals that will lead to corrosion.

The inner and outer surfaces of the body shall be constructed of 3/16" thick, 3003 smooth aluminum plate to allow for the proper amount of flexion without the possibility of forming cracks.

Portions of the body that shall utilize aluminum diamond plate material for protective surfaces, non-skid surfaces or for cosmetic coverings shall be formed using .125” and .187" aluminum diamond plate material. This material will be added to enhance the appearance and for protection of certain body areas of the apparatus as described above and shall not be utilized as a structural component of the body.

All components of this apparatus utilizing aluminum shall be constructed of formed, welded, bolted or extruded products.

All corners and edges shall be finished to produce a smooth, symmetrical and rounded surface.

All aluminum diamond plate coverings shall be polished aluminum with a non-slip embossed design on all stepping surfaces.

The body shall be designed and manufactured with integrated aluminum channel reinforcement for rigidity.

All body parts and attachments shall be fastened with rust resistant fasteners to preclude loosening of bolts and screws and/or the cracking of welded joints.
The body shall be reinforced as necessary with additional material where hose reels, steps, mounting brackets, hose troughs, ladder brackets, etc. are attached.

a)
The body shall be an all welded and bolted structure positioned in a jig device to ensure proper positioning and accuracy of welds during the fabrication process.

All components shall be constructed to allow for the removal of any component for service and/or repair.

The body and components thereof shall be permanently and securely attached to the frame of the chassis.

A corrosion, chemical, and water resistant coating shall be provided in areas where metals are in contact with the substructure.

All welds shall be cleaned of any weld residue prior to coating or when presenting a natural finish in order to present a clean appearance on all surfaces.

The exposed front outer sides of the body shall be covered with .125" aluminum diamond plate for increased durability and protection of painted surfaces.

All seams shall be sealed with body sealer to prevent seepage of moisture into the covered area.

The apparatus body, including the running boards shall be supported by structural channel and angle. The rear design shall be strong enough to support the complete body.

Each compartment shall be properly vented with louvers.

Each compartment shall have drain holes for the release of moisture. Each compartment shall have sweep- out flooring with no obstructions at the floor bottom.

STORAGE COMPARTMENTS

The compartments shall be constructed of formed and welded 3/16", 3003 formed aluminum sheeting and shall allow for the proper amount of flexion without the possibility of forming cracks.

Each compartment shall be finished with a durable Zolatone spatter coating. If customer should request, compartment finish can be left with a natural finish or be sanded to a satin finish.

All compartments shall incorporate a sweep out design on the lowest horizontal surfaces.

Each compartment shall be equipped with a AMDOR shutter style roll-up door unless specified different below. The doors shall have a painted finish.

Each compartment shall utilize On-Scene access series LED track-style lighting that shall be

integrated into the front track of each compartment door.

Each compartment light shall be activated individually and illuminatewhen the door is in the open position.

Three extra LED light modules and three extra door sensors shall shipped loose with the apparatus.

NOTE Compartment sixes listed are approximates, and will be confirmed during Pre-Build Meeting*

REAR COMPARTMENT

AMDOR rollup door.
AMDOR handle non-locking
Dimensions approximately 39” wide and 29” deep. Height to be determined with the intent of making the hose bed as close to the ground as practical

NFPA Compliant chevron striping/Reflective Engine 1 Company Logo to be applied

LEFT SIDE CONSTRUCTION

COMPARTMENT INTERIOR - L1

The L1 compartment on the left side of the apparatus shall include the following features:

Dimensions approximately 49” wide by 55” high. Depth approximately 25” at the floor and 14” at the upper level
One (1) adjustable tool shelf fabricated of .188" aluminum plate shall be provided, with stainless steel strut channel mounting, upper level
Roll out tray abraded finish
Dry-deck interlock matting material shall be provided in the compartment.

COMPARTMENT INTERIOR - L2

The L2 compartment on the left side of the apparatus shall include the following features:

AMDOR rollup door
AMDOR handle non-locking
Dimensions approximately 31” wide by 55” high. Depth approximately 14.
One (1) adjustable tool shelf fabricated of .188" aluminum plate shall be provided, with stainless steel strut channel mounting, upper level
Roll out tray abraded finish

Dry-deck interlock matting material shall be provided in the compartment.

COMPARTMENT INTERIOR - L3

The L3 compartment on the left side of the apparatus shall include the following features:

AMDOR rollup door
AMDOR handle non-locking
Dimensions approximately 26” wide by 55” high. Depth approximately 14.
One (1) adjustable tool shelf fabricated of .188" aluminum plate shall be provided, with stainless steel strut channel mounting, upper level
Roll out tray abraded finish
Dry-deck interlock matting material shall be provided in the compartment.

COMPARTMENT LWL

One (3) bottle SCBA Storage in the left wheel well.

RIGHT SIDE CONSTRUCTION

COMPARTMENT R1

AMDOR rollup door
AMDOR handle non-locking
Dimensions approximately 49” wide by 55” high. Depth approximately 25” at the floor and 14” at the upper level
One (1) adjustable tool shelf shall be provided, with stainless steel strut channel mounting
Roll out tray abraded finish
Dry-deck interlock matting material shall be provided in the compartment

COMPARTMENT R2

AMDOR rollup door
AMDOR handle non-locking
Dimensions approximately 31” wide by 55” high. Depth approximately 14.
One (1) adjustable tool shelf shall be provided, with stainless steel strut channel mounting
Roll out tray abraded finish
Dry-deck interlock matting material shall be provided in the compartment

COMPARTMENT R3

AMDOR rollup door
AMDOR handle non-locking

Dimensions approximately 26” wide by 55” high. Depth approximately 25” at the floor and 14” at the upper level
One (1) adjustable tool shelf shall be provided, with stainless steel strut channel mounting
Roll out tray abraded finish
Dry-deck interlock matting material shall be provided in the compartment

COMPARTMENT RWL

Two (3) bottle SCBA Storage wells in the left wheel well, forward and aft of the tire.

AMDOR ROLL UP DOORS

Doors shall be front roll

There shall be an aluminum drip rail above each compartment door with a non-abrasive seal (or) a brush seal

Magnetic door -ajar system must be integrated into the lift bar handle and the retainer block to signal an open door. No mechanical sensors or switches interior top the compartment shall be used **NO EXCEPTIONS**

Every slat must have interlocking end shoes to prevent slats from moving side to side and binding the door

Between each slat must be a co-extruded PVC inner seal to prevent metal-to-metal contact and to repel moisture.

Slats shall have interlocking joints with a folding locking flange.

Slats shall be double-wall extrusion 1.366" high by .315" thick. Exterior surfaces are to be flat and interior surface are to be concave to prevent loose equipment from interfering with door operation.

The latch system shall be a one piece full width aluminum lift bar with a two point exterior latch. The latch shall be operable by one hand. A 2" wide finger pull will be integrated into the bottom rail extrusion for easy one hand opening and closing of the compartment door. **NO EXCEPTIONS**

A clip system shall connect the curtain slats to the operator drum which will allow for easy tension adjustments without the use of tools.

Each roll-up door shall have a counterbalance operator drum to assist in lifting the door and assist in the prevention of accidental closure.

Compartment lighting system integrated into door track. Compartment lights shall activate individually when door is opened and there shall not be a master compartment light switch.

NO EXCEPTIONS

Door tracks shall be a one-piece aluminum extrusion that has an attaching flange and finishing flange incorporated into its design.

The drip rail will have a specially designed seal that prevents the seal from scratching the door.

Bottom rail to have a "V" shaped sill to prevent water and debris from entering the compartment.

Each door shall have a rubber seal installed at the outside edge to prevent moisture from entering the storage area.

Bottom rail extrusion must have a smooth back to prevent loose equipment from jamming the door.

HARD SUCTION HOSE AND STORAGE (see end note 1)

Left side 2 racks for 6" x 10' Kochek PVC hard suction hose and couplings (Supplied by proposer) location to be determined at pre-build.

COMPARTMENT LIGHTING

Each compartment shall be equipped with two (2) LED light strip modules which shall provide a consistent pattern to illuminate to entire compartment.

ADJUSTABLE SHELES AND SHELF TRACK

There shall be two (2) sets of uni-strut track mounted on each side of compartments L1, L2, L3 and R1, R2, and R3

The track shall be vertically installed and extend the full height of the upper half of the compartment

The track shall not be painted.

Shelves shall be constructed of 3/16" flat aluminum and have a satin finish. Shelves shall have a minimum 2" lip on all four sides.

Shelves shall be engineered to hold a maximum of 250 pounds.

HOSE BED (see end note 1)

Hose Bed to be as low to the ground as possible with a minimum of 500 gal tank and noted configuration.
Flooring shall be removable and shall be of a design to allow hose aeration.

Hose bed to be configured for the following hose loads (left to right)

Note: Rear discharges notes shall be aligned with the specified hose load. The ability to change out hose shall not be inhibited by the hose bed dividers.

LEFT WALL

250 feet of 1 ¾ double-jacketed hose and nozzle (pre-connected to outlet in front top area of the hose bed)

DIVIDER

250 feet of 1 ¾ double-jacketed hose and nozzle (pre-connected to outlet in front top area of the hose bed)

DIVIDER

900 feet of 5 rubber supply hose and stortz couplings

DIVIDER

A split compartment (divided horizontally) shall be provided between the hose divider of the 5 inch hose, and the last divider. This compartment shall accommodate the MFD configuration for HR Hose pack on the bottom, and 250 feet of 2 ½ double-jacketed hose and wye (pre-connected to outlet in front top area of the hose bed) Preconcert or outlet at the rear? The rear outlet may result in a raised hose bed.

DIVIDER

250 feet of 2 ½ double-jacketed hose and nozzle (pre-connected to outlet in front top area of the hose bed)

RIGHT WALL

HOSEBED DIVIDERS

Four (4) hose dividers shall be provided and installed on an adjustable track at the front and rear of the body. A mid level divider to accommodate the MFD high-rise pack shall be provided.

Each divider shall be constructed of a 3/16" aluminum flat sheet with angle fasteners and supports on each side.

All surfaces shall be abraded to a satin finish for uniform appearance and durability.

Hose dividers shall be constructed as to not inhibit hose deployment from the rear area of the apparatus

HOSE BED COVER

There shall be a red nylon/vinyl hose bed cover for the main hose bed. The cover shall be capable of being securely fastened at the front, sides and rear.

BODY HANDRAILS

Handrails shall be constructed of type 304 stainless steel 1.25 inch diameter tubing with bright finish and knurled gripping surface. Mounting flanges shall be constructed from 7 gauge, .180 thick, stainless sheet. Each grab rail shall have 90 degree returns to flanges. The ends of grab rail shall pass through the flanges and be welded to form one structural unit. The handrails shall be mounted using 1.25" SS Hex bolts, with a barrier rubber gasket at each flange. Sufficient space shall allow a gloved hand to firmly grip the rail. Coat hooks shall be provide at all cab door handles. Hook locations to be determined at Pre-Build Meeting.

STEPS

There shall be one (1) fold-down step on each side of the front face of side compartments as required by N.F.P.A.

There shall be one (1) fold-down step at each side of the rear area.

RUB RAILS

The body shall be equipped with heavy extruded aluminum rub rails at the sides. The rail shall be approximately 2 inches high and 1 inch deep. Rub rails shall be spaced away from the body by 1/2" polymer spacers. The rub rails shall be polished to a bright finish and be fitted with custom cast end caps.

ALUMINUM TREADPLATE

All load bearing aluminum treadplate running boards shall be .155 thick bright annealed with a serrated embossed finish. Running boards and rear step edges shall be flanged down for added strength. Running boards shall also be flanged up to form kick plates. All non-load bearing aluminum shall be .125" thick bright annealed finish. In areas where aluminum treadplate shall function as a load-bearing surface, there shall be a heavy steel sub-structure. This structure shall consist of 3" channel and 1-1/2" angle welded support. This shall assure that there shall be no flexing or cracking of running boards. The aluminum shall be insulated from the steel by closed cell foam body barrier material.

Treadplate locations:

1. Skirting around front bumper.
2. The step at the cab entrance.
3. The jump seat steps.

4. The running boards.
5. The rear step.
6. The top of the compartments.

SCBA CYLINDER COMPARTMENTS

There shall be a total of seven (9) spare breathing air cylinder compartments recessed in the fender wells, three (3) left and four (6) right. The compartments shall have brushed stainless steel doors with equipped with a weather resistant flush fitting thumb latch. The interior of the door shall incorporate a rubber seal to keep the compartment free of road debris and moisture.

DUO-SAFETY LADDERS

Apparatus shall be capable of carrying minimum of: One (1) 10 ft. collapsible ladder, One (1) 14 ft. roof ladder with roof hooks, Series 875A and One (1) 24 ft. 2-section extension ladder, Series 900A

LADDER MOUNTING

Option 1: The ladders shall be stored in a through the body configuration. Access from the rear of the body and held in place by polished aluminum door. This option must maintain a low hose be deployment height and 500-gallon tank minimum.

Option 2: An electrically actuated, hydraulic ladder rack shall be installed on the right side of the apparatus. Hydraulic cylinders that raise and lower shall be dual stroke 8″ cylinders. The rack shall have the capacity of 300 lb. The rack shall be heavy-duty, 2″ x 4″ powder-coated cast aluminum booms color to match the body.

When in the stored position the stored rack and ladders must meet the overall height requirement of the apparatus. When deployed, the rack should place the ladders at a height, which makes access and removal easy from the ground. Booms shall mount to end walls of apparatus cabinetry, allowing for extra storage space, and be away from the side body, so that access to side compartments remains unrestricted.

Control panels shall be locate in an ergonomic area for access. Pneumatic power clamps automatically lock booms in place when returned to the fully-stored position.

NFPA compliant flashing lights and alarm shall a visual/audible signal when the system is out of the stored position.

LICENSE PLATE BRACKET

A Cast Products LP0013 cast aluminum license plate bracket with LED light shall be provided at the rear of the apparatus.

MASTER ELECTRICAL PANEL

The main breaker panel shall be wired through the master disconnect solenoid and controlled with a three- position ignition rocker switch. Circuit breakers and flashers shall be located at officer's right side lower interior firewall with removable cover and schematic provided with notebook holder on outside cover.

A deluxe breaker panel with up to 22 ground switched relays with circuit breaker protection shall be provided.

An integrated electrical sub-panel shall be provided and interfaced to the body and chassis through an engineered wire harness system.

Twelve (12) 20-ampere and one (1) 70-ampere relay for cab lightbar and assemblies shall be provided. If the option for a mechanical siren has been selected two (2) additional relays shall be provided.

Additional four relay boards with circuit breaker protection for additional loads. Maximum two boards (8 relays) per breaker panel. All relay boards set up to trip with input from switch of positive-negative or load manager by moving connector on board (no tools needed to do this).

All relay boards shall be equipped with a power-on indicator light (red), input indicator light (green) and power output indicator light (red).

Up to 23 additional automatic reset circuit breakers for non-switched loads that are remotely switched (ie: heater fans, hood lights, etc.).

All relays and circuit breakers on the relay boards shall be pull-out/push-in replaceable.

All circuit breakers on the relay boards shall be 20 ampere automatic reset which can be doubled or tripled for 40 or 60-ampere capacity.

The system shall utilize Deutch DRC weather resistant connectors at the breaker panel, toe board and main dash connections.

All internal wire end terminals, including locking connectors, shall be mechanically affixed to the wire ends by matching terminal crimping presses to assure the highest quality terminations.

All internal splices shall be ultrasonically welded connections and all internal wiring shall be high temperature GXL type wire that is protected by wiring duct wherever possible.

All switches shall be ground controlled; no power going through any rocker switch.

Any switch controlling a relay in the breaker panel shall be capable of being set to function only when the parking brake is set. All relays shall be tagged with the function that the relay is

controlling.

BODY ELECTRIC SYSTEM

All body electrical wiring in the chassis will be XLP cross link-insulated type. Wiring is to be color-coded and include function codes every three (3) inches. Wiring harnesses will be routed in protective, heat resistant loom, securely and neatly installed. Two power distribution centers will be provided in central locations for greater accessibility. The power distribution centers contain automatic thermal self-resetting breakers, power control relays, flashers, diode modules, daytime driving light module, and engine and transmission data links. All breakers and relays are utilized in circuits which amp loads are substantially lower than the respective component rating thus ensuring long component life. Power distribution centers will be composed of a system of interlocking plastic modules for ease in custom construction. The power distribution centers are function oriented. The first is to control major truck function and the second controls overhead switching and interior operations. Each module is single function coded and labeled to aid in troubleshooting. The centers also have accessory breakers and relays for future installations. All harnesses and power distribution centers will be electrically tested prior to installation to ensure the highest system reliability.

All external harness interfaces will be of a triple seal type connection to ensure a proper connection. The cab/chassis and the chassis/body connection points will be mounted in accessible locations. Complete chassis wiring schematics will be supplied with the apparatus.

The wiring harness contained on the chassis shall be designed to utilize wires of stranded copper or copper alloy of a gauge rated to carry 125% of maximum current for which the circuit is protected without exceeding 10% voltage drop across the circuit. The wiring shall be uniquely identified by color code or circuit function code, labeled at a minimum of every three (3) inches. The identification of the wiring shall be referenced on a wiring diagram. All wires conform to SAEJ1127 (Battery Cable), SAEJ1128 (Low Tension Primary Cable), SAEJ1560 (Low Tension Thin Wall Primary Cable).

All harnesses shall be covered with moisture resistant loom with a minimum rating of 300 Degrees Fahrenheit and a flammability rating of VW-1 as defined in UL62. The covering of jacketed cable has a minimum rating of 289 degree Fahrenheit.

All harnesses are securely installed in areas protected against heat, liquid contaminants and damage. The harness connections and terminations use a method that provides a positive mechanical and electrical connection and are in accordance to the device manufacturer's instructions. No connections within the harness utilize wire nut, insulation displacement, or insulation piercing.

All circuits conform to SAE1292. All circuits are provided with low voltage over current protective devices. These devices are readily accessible and protected against heat in excess of component rating, mechanical damage, and water spray. Star washers are not used for ground connections.

BACK-UP ALARM

An Ecco model SA917 automatic self-adjusting electronic back-up alarm producing 87-112 db shall be installed at the rear between the frame rails. It shall operate whenever the transmission's reverse gear is selected.

TAIL/STOP/TURN/BACKUP LIGHTS

The tail light clusters shall incorporate the tail light/brake light, turn signal/backup light into a single 4 light cluster. The tail /brake light shall be a Whelen 600 series B/T/T; the turn signal shall be Whelen model 60A00TAR, and the Backup Light shall be a 60C00WCR; all mounted into Whelen CAST4V housing. One (1) cluster mounted on each side of the rear of the body The taillights are to be Whelen 600 LED style. The brake/tail lights to be red and exceed SAE requirements. The turn signal shall be populated in an arrow pattern, amber in color. The backup lights shall also be LED. One opening shall be open to accept a 600 series warning light.

LED ICC/MARKER LIGHTS

LED type ICC/marker lights shall be provided to meet D.O.T. requirements. This is inclusive the ICC lighting in the Pioneer Summit Light

STEP LIGHTS

Step lights shall be provided, one each side on the front compartment face at pump panels. The lights shall be Whelen 2G Series LED lights.
Each step at the rear of the apparatus shall have a light to illuminate each step and the tailboard.

GROUND LIGHTING

The apparatus shall be equipped with lighting capable of illumination to meet NFPA requirements. Lighting shall be provided at areas under the driver and crew riding area exits and shall be automatically activated when the exit doors are opened. The ground lights shall be Truck-lite® LED model #44042C. Lighting required in other areas such as work areas, steps and walkways shall be activated when the parking brake is applied, provided the ICC lights are on.

WORK LIGHTS

There shall be two (2) Unity brand AG 6" chrome plated sealed beam flood lights provided. The lights shall be securely mounted at the upper rear of the apparatus body. Each light shall be supplied with individual switches.

ENGINE COMPARTMENT LIGHT

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

FRONT SCENE LIGHT

The front of the cab shall include one (1) Whelen model Pioneer PFP2 contour roof mount scene lights installed on the center brow of the cab.

Each lamp head shall have two (2) 12 volt high intensity LED panels. Each lamp head shall draw 12.0 amps and generate 14,000 lumens total. Each lamp head will be adjustable up to 20-degrees and shall measure 4.25 inches in height X 14.00 inches in width. The lamp heads and brackets shall be powder coated white.

FRONT SCENE LIGHTS ACTIVATION

Separate activation Scene/Flood lighting shall be provided.

OPTICAL WARNING SYSTEM

The optical warning system shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right-of-way and the other mode shall signal that the apparatus is stopped and is blocking the right-of-way. Switching shall be provided that senses the position of the parking brake.

A master optical warning device switch shall be provided to energize all of the optical warning devices provided. All lights shall operate at not less than the minimum flash rate per minute as specified by NFPA.

UPPER LEVEL WARNING DEVICES

The upper level is divided into zones A, B, C and D and the approved lighting package to be provided shall be as follows:

Zone A There shall be one (1) Whelen Engineering Freedom, model FN72QLED, 72" LED lightbar installed on the chassis cab roof. The lightbar shall be equipped with two (4) forward facing linear red LED, two (2) forward facing linear white LED, four (4) corner forward facing red LEDs, and two (2) side facing linear red LED lights.

Substitutions are acceptable to meet the overall height limitation.

The light bar shall be equipped with color matching lenses. All clear LED lights in the light bar shall be deactivated in the Blocking Right of Way mode.

A GTT LED emitter assembly shall be installed in the center section on the front of the light bar. The emitter shall provide intersection control for quick response and reduced risk of accidents. The emitter shall be programmed with high priority flash rate.

Zone B (N/A)

Zone C (rear) shall have two (2) Whelen Model B6 model L31 LED beacons, with red domes. The lower light shall be 700 series Amber lenses. The amber lenses shall be the controlled together independent of the beacon control.

Zone D (N/A)

LOWER LEVEL WARNING DEVICES

The lower level is divided into zones A, B, C and D and the approved lighting package to be provided shall be as follows:

Zone A The cab front fascia shall include four (2) Whelen 600 series Super LED front warning lights. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel, in the top inboard and outboard positions.

The warning lights mounted on the cab front fascia in the inboard positions shall be red. They shall be controlled through the **SWTICH PANNEL**. This switch shall be clearly labeled for identification.

Two (2) Whelen 600 series Super LED intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors, and will be mounted in bumper pockets.

Zone B (right side) shall have Five (5) Whelen 600 Series Super LED red lights mounted one on the side of the headlight housing, one in the recessed pocket of the bumper, one at the middle of the apparatus, one on the body side at rear of apparatus.

Zone C (rear) shall have two (2) Whelen 600 Series Super LED, red lights mounted one each side of the rear of the apparatus.

Zone D (left side) shall have Five (5) Whelen 600 Series Super LED, red lights mounted one

on the side of the headlight housing, one in the recessed pocket of the bumper, one at the middle of the apparatus, one on the body side at rear of apparatus.

SCENE LIGHTS

Two (2) Whelen Pioneer slim line scene lights shall be mounted to the cab. Light mounting shall be determined in the Pre-Build Meeting

The side12 volt scene lights shall be controlled by switches located in **SWITHC PANEL** in the chassis cab and on the pump panel. The switches shall have an indicator that shall illuminate when the switch is in the “ON” position. The switch shall be labeled "LEFT SCENE and RIGHT SCENE."

A pair of Whelen M9 LED scene lights shall be installed on the rear of the body. Activation of these light will be via a switch in the cab. The lights shall also be activated when the vehicle is in "Reverse".

TRAFFIC ADVISOR

Whelen TAM 83RR eight lamp Traffic Advisor shall be attached to the rear area of the apparatus recessed or protected from damage from hose deployment. The lashing end lamps shall be red in color. The TACTL5 control head location and lighting configurations to be determined at the pre-build meeting.. .

CORROSION REDUCTION POLICY

The manufacturer shall have in place a formal corrosion reduction program and assembly procedures designed for reducing and eliminating the possibility of corrosion. It is understood that fire apparatus will operate in harsh environments. At the time of the bid the apparatus manufacturer shall show proof of a corrosion policy. Failure to submit this information could be grounds for rejection. If a formal policy is not in place explain in your bid how your firm will take the necessary steps for corrosion reduction. There will be no exception to this requirement.
In addition to a formal program the manufacture shall show proof of testing corrosion reduction processes to ASTMB117. A copy of recent test shall be included in the bid.

Frame Rails
The chassis frame rails shall be coated with a high performance, two component, reinforced inorganic zinc rich primer with a proven cathodic protection makeup preferably Cathacoat 302HB. The surface shall be clean and free of all salts, chalk and oils prior to application. Were the primer has been broken during the frame assembly process the area shall be touch up to reestablish the seal. Prior to finish paint a second primer Devran 201 shall be applied. Once the assembly of the frame is complete and the second primer is applied the entire assembly shall be covered with high quality top coat paint preferably Imron 5000 or equal. The manufacturer shall submit with the bid a copy of the product brochure and or description of the

primer to be used.

Electro Plating
Steel and Iron brackets such as the pump module bracket shall be Zinc plated to protect against corrosion. Plating shall be in accordance with ASTM B663. The apparatus manufacturer shall list all components with plating.

Fasteners
In any area that a stainless steel screw or bolt head is to come in contact with aluminum or steel, painted or non-painted, the fastener shall have the underside if the head pre-coated with nylon. The nylon coating shall act as a barrier between the fastener head and the metal or painted surface.
Screw or bolt taped into the metal shall be pre-coated with a Threadlocker type material pre-applied on the threads.

When bolting together stainless steel the manufacturer shall use a pan-head bolt with nylon coating under the head, a stainless washer with a rubber backing, and a Stover flange nut to secure the bolt.
When mounting aluminum components such as a step to the apparatus body. The manufacturer shall use stainless washers with rubber backing. All mounted components shall a barrier material between the two surfaces.

All rivet type fasteners shall be of the same material being secured.

Whenever possible, pre-drill and tap all holes for mounting components such as lights, steps and hand rails prior to the paint process to reduce the corrosion opportunity. If a hole must be drilled into a previously painted surface, re-establish the paint barrier around the hole and use a flange-type nutsert with a gasket under the flange.

Where possible, minimize the number of stainless trim screws in aluminum. Structural tape and or adhesive shall be used were possible for mounting trim to the body or cab.
If a pre-treated screw or bolt is not available, hand apply Dynatex Boltlocker or Theadlocker on the threads of the screw, bolt or nutsert. This will help seal threads from moisture and help prevent the fasteners from loosening.

If lubricant is used when tapping the hole, clean out the lubricant and the shavings before applying blue Threadlocker into the hole.

Barrier Tape
Barrier tape shall be used on the backsides of all lights, trim pieces, or other components when bolting them to the apparatus; also when attaching stainless steel over an aluminum surface or when attaching aluminum treadplate to the stainless steel. All instances of dis-similar metals contacting each other require the addition of barrier tape between the metals where contact is made.

Before applying the tape, be sure the metal surface is clean from oil or dirt by cleaning the surface with a 50/50 mix of alcohol and water pr similar solvent.

Gaskets

Gaskets shall be used under all snaps, loops and fasteners for such items as for hose bed covers. Reestablish paint seal around the mounting hole edges after drilling.

Mounting with Threadlocker coating shall be used.

Flat washers with rubber backing shall be used behind all lights that have stainless screws.

Rollup Doors

1 3/4" X 1/16” barrier tape shall be used on the frame opening to act as barrier between the aluminum door rail and the painted door opening surface.

Use a paint stick around the holes after drilling and tapping. In mounting the rails, use screws with the nylon under the head and Threadlocker on the threads for mounting the doorframes. Install barrier tape to the painted surface where the trim is located on top of the door opening.

Hinged Doors

Barrier tape shall be applied to the painted surface of the body and on the painted hinge side of the door. On the hinge side, mount tape out toward the edge to space over the barrel of the hinge, being sure to not touch the door.

Make sure the hinge fits into the extrusion frame with no corner weld beads interfering with the door fit. Do not put the hinge in a bind or cause the stainless steel hinge to touch the aluminum. Install the doors using a truss head bolt with the nylon coating under the head and Threadlocker on the threads.

Painting Steel

The manufacturer shall wipe any oil residue dry, remove any rust and remove weld slag or smoke. Clean the surface with solvent before painting. Prime with one even coat of black Color primer, and then spray a topcoat over the primer for the finish coat. After bolts are tightened to the proper torque, touch up the bolt area and ends of the bolts with primer or cold galvanizing coating.

Mounting Emergency Lights and Options

All emergency lights, accessory mountings, Kussmaul covers, and 110 outlet boxes mounted to the body should be mounted with pre-coated Threadlocker and nylon under the head screws or bolts to minimize corrosion between dissimilar metals.

Electrical Grounding

Grounding straps shall be installed consisting of a minimum 2-gauge strap bolted to the chassis frame. A ground cable from the cab to the right side frame rail

From the alternator to the right side frame rail

From the pump module frame to the right side truck frame.

From the body module to the right side truck frame.

Proper grounding will help eliminate ground loop problems throughout the truck, reducing the possibility for electrolysis and corrosion to occur. Provide clean connection points on all ground connections, (remove paint where applicable), and spray or brush on electrical sealer as necessary.

When installing foam system pump wiring the power must come from a dedicated breaker to a power solenoid, and then to the power terminal provided by FoamLogix or FoamPro. Pay particular attention to the grounding detail for wire size and good grounding practice, including removing the paint at the point of ground attachment to the chassis. Keep the length of ground wire as short as practically possible.

Salt Spray Testing
Salt spray test shall be used to confirm the relative resistance to corrosion of coated and uncoated metallic specimens, when exposed to a salt spray climate at an elevated temperature. Test specimens shall be placed in an enclosed chamber and exposed to a continuous indirect spray of neutral (pH 6.5 to 7.2) salt water solution, which falls-out on to the specimens at a rate of 1.0 to 2.0 ml/80cm²/hour, in a chamber temperature of +35C. This climate shall be maintained under constant steady state conditions.

Method
Salt fog testing shall be performed by placing samples in a test cabinet that has been designed in accordance with Paragraph 4 (Apparatus) of ASTM B117 and operated in accordance with Paragraph 10 (Conditions) of ASTM B117.
A 5% salt solution, prepared by dissolving sodium chloride into water that meets the requirements of ASTM D1193 Specification for Reagent Water, Type IV is supplied to the chamber. At the time the samples are placed into test, the cabinet should be pre-conditioned to the operating temperature of 35ºC and fogging a 5% salt solution at the specified rate. The fog collection rate is determined by placing a minimum of two 80 sq. cm. funnels inserted into measuring cylinders graduated in ml. inside the chamber. One collection device shall be located nearest the nozzle and one in the farthest corner.

Orientation
Unless otherwise agreed upon, the samples are placed at a 15-30 degree angle from vertical or tested in the “installed” position. This orientation allows the condensation to run down the specimens and minimizes condensation pooling. Overcrowding of samples within the cabinet should be avoided. An important aspect of the test is the utilization of a free-falling mist, which uniformly settles on the test samples. Samples should be placed in the chamber so that condensation does not drip from one to another.

Test durations
Test durations shall be 500 hours except for sample rotation and daily monitoring of collection rates, the cabinet should remain closed for the duration of the test.

PAINTING

All exposed metal surfaces not chrome plated, polished stainless steel or bright aluminum tread plate shall be thoroughly cleaned and prepared for painting. All irregularities in painted surfaces shall be rubbed down and all seams shall be caulked before the application of the finish coat.

All removable items such as brackets, compartment doors, door hinges, trim, etc. shall be removed and painted separately to insure finish paint behind all mounted items. Body assemblies that cannot be finish painted after assembly shall be finish painted before assembly. Both aluminum and steel surfaces to be painted shall be primed with a two (2)-component primer which is compatible with the finish coat. The apparatus shall be finish painted with a polyurethane base/clear system. “No Exception”

Utilizing the stainless steel body fabrication, the interior of all compartments, inside hose bed, and surrounding areas adjacent to compartments doors shall remain a #4 brushed stainless steel finish. This practice shall eliminate the possibility of paint chipping, and electrolysis of aluminum which can cause corrosive action between dissimilar metals. Chassis shall be painted the color indicated.

Amdor compartment doors shall be painted to match the body (no Paint)

Prior to reassembly and reinstallation of lights, handrails, door hardware and any miscellaneous items, an isolation tape or gasket material shall be used to prevent damage to the finish painted surfaces. A nylon washer shall be installed under each acorn nut or metal screw that is fastened directly to a painted surface.

The following paint process shall be utilized:
Surface Preparation:

1. Wash surface thoroughly with mild detergent.
2. Clean and de-grease with Prep-Sol 3812S.
3. Sand and feather edge using 400 grit or finer on a dual action sander.
4. Remove sanding dust with a cleaner compatible with polyurethane base coat/clear coat final finish. Substrate treatment:
5. Use a Metal Conditioner followed with a Conversion Coating product. Priming:
6. Use a priming 615S pretreatment.
7. Use a self etching primer applied to achieve a 1.5 mil dft minimum.
8. Use Prime N Seal sealer compatible with polyurethane base coat. Color Coat:
9. Apply polyurethane base coat 1-2 mil dft minimum. Clear coat:
10. Apply polyurethane clear coat 2 mil dft minimum.

Cab paint exterior

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.

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

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper, the seams shall be sealed with SEM brand seam sealer and painted with two (2) to four (4) coats of an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene.

The cab shall then be painted with the upper and lower colors specifically designated by the customer with a minimum thickness of two 2.00 miles of paint, followed by a clear top coat not to exceed 2.00 mils. The entire cab shall then be baked at 180 degrees for one (1) hour to speed the curing process of the coatings.

Cab paint manufacturer

The cab shall be painted with PPG Industries paint.

Cab paint primary/lower color

The lower paint color shall be PPG Delfleet 90601 Dark red.

Cab paint secondary/upper color

The secondary/upper paint color shall be PPG Delfleet 35913 Silver Blue Metallic.

Cab paint exterior breakline

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

Cab paint pinstripe/molding

Where the upper and lower paint colors meet a 0.50 inch wide black molding or pinstripe shall be applied over this break line to offer a more finished look.

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.

Cab paint interior

The visible interior cab structure surfaces shall be painted with a Zolatone #20-72 silver gray texture finish.
Painted frame

The frame rails, fuel beam, and body subframe shall be painted glossy black.

Air conditioning condenser

The air conditioning condenser shall be painted to match the cab roof.

The compartments shall be finished with Zolatone spatter coating (interior)

For each color, one (1) two-ounce bottle of acrylic enamel touch-up paint or two (2) touch up paint pens, if color is available, shall be supplied.

REFLECTIVE LETTERING (CONFORMING TO DEPARTMENT CURRENT FLEET)

Door shield decals shall be supplied for instillation
"ENGINE" shall be installed on an arc, on each door. The letters shall be approximately 3" tall in gold, with black outline and shadow.

The number "1" shall be installed in the center of the arc. The number shall be approximately 5" in height gold, with black outline and shadow.

"Southwest Meriden" shall be installed (centered) on the bumper. The letters shall be approximately 3" tall, gold with black outline and shadow.

"City of Meriden (in script) shall be installed above the windshield this shall be black lettering with no accent or shadow.

"Mission first – People ALWAYS" shall be attached to each side of the cab in a location to be determined. Color shall be gold with not accent or shadow.

"The Silver City" shall be installed below the supplied door decals. This shall be silver in color

A company patch decal shall be provided to be applied to the rear of the apparatus, size and location to be determined.

STRIPING

Black Reflective striping shall be applied to the exterior of the apparatus in a manner consistent with the National Fire Protection Association Pamphlet 1901, latest edition. It shall consist of a 1", 6", and a 1" wide stripe low across the front of the chassis and along the sides up to the first compartment on each side where it shall angle up and back to a point below the upper compartments where it shall then run level to the back edge of the body. There shall be a 1" gap provided between each of the stripes.

CHEVRON STRIPING, REAR BODY OUTBOARD, ORAFOL REFLEXITE

The chevron striping shall consist of 3M part numbers 1172 EC, red and 3983, fluorescent yellow-green.
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 that uses glass bead lenses. It is intended to also provide high sign brightness in the legibility distance where other sheeting does not.

CHEVRON STRIPING, FRONT BUMPER, ORAFOL REFLEXITE

The angled and side portions of the bumper shall have Scotchlite reflective trim attached at a 45 degree angle to the ground in the same color as the trim of the

MISCELLANEOUS EQUIPMENT FURNISHED

A bag of stainless steel nuts and bolts, as used in the construction of the apparatus.

WHEEL CHOCKS

Two (2) Ziamatic #SAC-44 folding wheel chocks with SQCH-44H holders shall be provided. The wheel chocks shall be located in an area close to the rear axles easily accessible from the side of the apparatus.

PIKE POLE STORAGE

Three (3) storage tubes shall be recessed in the upper right corner of the driver's side body for pike pole storage. A spring-loaded clip shall be installed near each tube to secure the head of a standard pike pole.

OPERATION AND SERVICE MANUALS

Complete "Operation and Service" manuals shall be supplied with the completed apparatus, one (1) printed copy and one (1) CD. Service manual instructions shall include service, maintenance and troubleshooting for major and minor components of the truck. The apparatus manufacturer shall supply part numbers for major components (i.e. Engine, Axles, Transmission, Pump, etc.). A table of contents, hydraulic, air brake and overall apparatus wiring schematics shall be included.

A video demonstration DVD on the operation of the truck shall be supplied with the manuals.

DELIVERY

The custom built fire apparatus shall be driven from the manufacturing facility to the community by a factory trained delivery engineer who shall thoroughly demonstrate the complete apparatus operation and maintenance to the fire department designated personnel.

CAB EXTERIOR PROTECTION

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

FIRE EXTINGUISHER

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

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 manual door locks.

WARRANTIES

The following warranties shall be supplied:

1. The apparatus shall be warranted to be free from mechanical defects in workmanship for a period of two (2) years or 30,000 miles, whichever comes first. The apparatus shall be covered for parts and labor costs associated with repairs for a period two (2) years or 30,000 miles, whichever comes first.
2. Life-time warranty on the frame.
3. Ten (10) year warranty on paint.
4. Ten (10) body structural warranty

5. Ten (10) year cab structural warranty
6. Ten (10) year air suspension system warranty
7. Manufacturers Warranties for all major components.

Detailed warranty documents shall be included for complete coverage on each of these warranties.

MANUFACTURING & LOCATIONS

The apparatus will be manufactured in facilities wholly owned and operated by the company. A complete stock of service parts, and service shall be provided on a 24 hours around the clock basis. The company shall maintain parts and service for a minimum period of twenty (20) years on each apparatus model manufactured.

NOTES: