City of Salem

Invitation for Bids

R-18

Fire Apparatus

August 19, 2015

BIDS DUE:

Thursday, September 3, 2015, 2:00 PM

*Late bids will be rejected

Whitney C. Haskell
Purchasing Agent
93 Washington Street, 2nd Floor
Salem, MA 01970
whaskell@salem.com
(978) 619-5695

FIRE APPARATUS
R-18
COVER SHEET

Proposer: _____

Street Address: _____ _____ _____ _____
(Number and Street) (City) (State) (Zip)

Taxpayer Identification No: _____ _____
(Social Security Number) (Federal Identification Number)

Contact Name: _____

Telephone: _____

Email Address: _____

Fax: _____

Authorized Signature: _____

Name: _____

Title: _____

Date: _____

FIRE APPARATUS
R-18
CHECKLIST

Submission Requirements:

☑ **Please Check:**

❒ Completed Cover Sheet

❒ Bid Form

❒ Specification Checklist

❒ Signed Certificate of Non-Collusion

❒ Signed Tax Compliance Certification

❒ Certificate as to Corporate Bidder

❒ Copy of Proposed Contract

❒ Company Information

❒ Payment Terms

❒ Other Required Information

❒ Acknowledgement of Addenda: _____ (*if applicable*)
(#s)

FIRE APPARATUS
R-18
BID FORM

Bidder agrees to furnish and deliver the vehicle described in these specifications for the total price of:

$_____
(figures)

_____ DOLLARS AND _____

_____ CENTS.
(written)

_____
SIGNATURE OF AUTHORIZED REPRESENTATIVE

_____
NAME (PRINTED)

_____
DATE

FIRE APPARATUS
R-18
CERTIFICATIONS

FORM A
NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

_____
(Signature of authorized individual submitting proposal)

_____
(Printed Name)

_____
(Name of Bidder)

_____
(Federal Tax Identification or Social Security Number)

_____
(Date)

FORM B
TAX COMPLIANCE

Pursuant to M.G.L. c. 62C, §49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

_____
(Signature of authorized individual submitting proposal)

_____
(Printed Name)

_____
(Name of Bidder)

_____
(Federal Tax Identification or Social Security Number)

_____
(Date)

FORM C
CORPORATE BIDDER *(if applicable):*

I, _____ certify that I am the _____ of the corporation named as Bidder in the Bid included herein, that _____, who signed said Bid on behalf of the Bidder was then _____ of said corporation, that I know his signature, that his signature thereon is genuine and that said Bid was duly signed, sealed and executed for and in behalf of said corporation by authority of its governing body.

(Corporate Seal)

_____
(Secretary-Clerk)

_____
(Signature of authorized individual submitting proposal)

_____
(Printed Name)

_____
(Name of Bidder)

_____
(Federal Tax Identification or Social Security Number)

_____
(Date)

PART 1. GENERAL INFORMATION

1.1 PROCUREMENT DESCRIPTION

The City of Salem is seeking bids for the furnishing of all necessary labor, equipment and material for the Fire Apparatus, and other equipment as outlined in the following specifications.

The body is to be completely built, painted, and installed by the prime body manufacturer, which minimizes third party involvement on engineering, design, service, and warranty issues. Apparatus using a subcontracted body will not be acceptable.

1.2 APPLICABLE LAW

This procurement will be conducted pursuant to Massachusetts General Laws Chapter 30B, Section 5.

1.3 APPROVAL

Any contract that may result from the procurement shall be subject to the approval of the Mayor of the City of Salem.

1.4 INCORPORATION BY REFERENCE

All requirements, specifications, terms and conditions described in this Invitation for Bids shall be incorporated by reference into any contract that may result.

1.5 TIME FOR AWARD

Any contract that may result from the procurement shall be awarded within thirty (30) days after the bid opening. The time for award may be extended for up to 45 days by agreement between the City and apparent low bidder.

1.6 RIGHT TO CANCEL/REJECT

The City reserves the right to cancel this Invitation for Bids or reject in whole or in part any and all bids if the City determines that cancellation or rejection serves the best interests of the City.

1.7 TAXATION

Purchases made by the City are exempt from the payment of Federal excise tax and the payment of Commonwealth of Massachusetts sales tax and any such taxes must not be included in the bid pricing.

Copies of the City's tax exempt paperwork shall be available upon request of the selected contractor.

1.8 OBTAINING THE INVITATION FOR BIDS

The Invitation for Bids shall be available beginning, August 19, 2015.

The Invitation for Bids and related documents shall be available for free download from the City's Purchasing Department website at http://salem.com/Pages/SalemMA_Purchasing/index under the link titled "IFBs, RFPs, RFQs."

Hardcopies of the Invitation for Bids and related documents may be obtained at the Office of the Purchasing Agent, 120 Washington Street, 3rd Floor, Salem, MA 01970, between the hours of 8:00 AM-4:00 PM on Monday-Wednesday, 8:00-7:00 PM on Thursday, and 8:00 AM-12:00 PM on Friday.

PART 2. INSTRUCTIONS TO BIDDERS

2.1 REQUIREMENTS AND SUBMISSIONS

Below please find a description of the requirements and submissions that must be included as part of a bid. Bids must be sealed and marked as noted.

2.1.1 BID PRICING FORM

Every bid must include a completed 'Bid Form'. See attached. All material, equipment and labor is F.O.B. City of Salem.

2.1.2 BID DEPOST

Each bid must be accompanied by a deposit equal to five percent (5%) of the amount of the bid. The bid deposit may be in the form of a certified treasurer's or cashier's check payable to the City of Salem from a responsible back or trust company; cash; or a bid bond.

2.1.3 NON-COLLUSION

Every bid must include a certification of good faith, certifying that the bid was made in good faith and without collusion or fraud. See 'Non-Collusion Form' attached.

2.1.4 TAX COMPLIANCE

Every bid must include a written certification that the bidder has complied with all state laws relating to taxes, reporting of employees and contractors, and child support. See 'Tax Compliance Form' attached.

2.1.5 CORPORATE BIDDER

If the bid is being submitted by a corporation, the bid must include a certification that the individual submitting the bid has been authorized to bind the corporation. See 'Certificate of Corporate Authority' attached.

2.1.6 SUBMISSIONS:

CONTRACT

Each bidder will submit a copy of his proposed contract form. The purchaser reserves the right to reject a bid based on unacceptable provisions of a bidder's contact and does not obligate itself to accept the lowest or any bid.

COMPANY INFORMATION

A written review of the company, in chronological order, detailing the background of the manufacturer shall be provided as part of the Bid proposal.

PAYMENT TERMS

All bidders will be required to detail in exact terms the payment for said apparatus in their fire apparatus proposal.

OTHER REQUIRED INFORMATION

- The fire apparatus and equipment to be furnished in meeting these specifications must be the product of an established reputable fire apparatus manufacturer of ten-(10) years or more. Each bidder will furnish satisfactory evidence of the manufacturer's ability to construct, supply service, parts and technical assistance for the apparatus specified. The bidder must state the location of the factory and full service center.
- The general construction of the apparatus will give due consideration to the nature and distribution of the load to be sustained and the general character of the service to which the apparatus is to be subjected when placed in service. The body will be modular in design and construction of the latest modern type, for transfer of body to another chassis without cutting or welding.
- Each bidder must submit a detailed proposal, which accurately specifies the construction method to be used in the apparatus. The purchaser will utilize this proposal to compare the unit proposed with the specifications. To facilitate comparison all bid proposal specifications will be submitted in the same sequence as the advertised specification. Any bidder who fails to submit a set of construction specifications, or who photocopies and submits these specifications as their own construction details will be considered non-responsive. Thus, render such proposal ineligible for award.
- For the purpose of evaluation of the construction methods, components, and materials from various vendors the make up the apparatus body, the Fire Department may request each bidder to supply a cross section of a side body compartment no smaller the 1/4" in scale using full size components including the compartment door and hardware.
- Sample will remain with the fire department for a minimum of fourteen-(14) days after the bid opening.

2.2 BID DELIVERY

Below please find a description of the manner in which sealed bids must be submitted.

2.2.1 DUE DATE AND TIME

Bids shall be received by the Office of the Purchasing Agent on or before **2:00 PM, September 3, 2015.**

Any bid received after that time shall be rejected as non-responsive.

2.2.2 ADDRESS

Sealed bids shall be delivered to the Office of the Purchasing Agent, 93 Washington Street, 2nd Floor, Salem, MA 01970.

2.2.3 HOURS OF OPERATION

Bids must be delivered during the normal hours of operation of the City of Salem:

Monday-Wednesday:	8:00 AM-4:00 PM
Thursday:	8:00 AM-7:00 PM
Friday:	8:00 AM-12:00 PM

2.2.4 COPIES

Bidders must submit one (1) original and one (1) copy of the bid.

2.2.5 LABELING

The outside of the envelope containing the sealed bid must be labeled with 1) the bid number 2) the bid opening date and time and 3) the name of the bidder.

2.3 SIGNATURES

A bid must be signed as follows: 1) if the bidder is an individual, by her/him personally; 2) if the bidder is a partnership, by the name of the partnership, followed by the signature of each general partner; and 3) if the bidder is a corporation, by the authorized officer, whose signature must be attested to by the clerk/secretary of the corporation, and with the corporate seal affixed.

2.4 QUESTIONS, CHANGES, MODIFICATIONS AND WITHDRAWALS

2.4.1 QUESTIONS/REQUESTS FOR CLARIFICATION

Questions concerning this Invitation for Bids must be submitted in writing to: Whitney Haskell at whaskell@salem.com at least five (5) days prior to the bid opening date. Written responses will be mailed to all bidders on record as having picked up the Invitation for Bids.

2.4.2 CHANGES

If any changes are made to this Invitation for Bids, addenda will be issued. Addenda will be posted in the Office of the Purchasing Agent, on the website and e-mailed to all bidders on record as having picked up the Invitation for Bids.

2.4.3 MODIFICATIONS AND WITHDRAWALS

A bidder may correct, modify, or withdraw a bid by written notice received by the City of Salem prior to the time and date set for bid opening.

Modifications must be submitted in a sealed envelope clearly labeled "Modification No.__" to the address listed in part one of this section. Each modification must be numbered in sequence, and must reference the Invitation for Bids.

After the bid opening a bidder may not change any provision of the bid in a manner prejudicial to the interests of the City or fair competition. Minor informalities will be waived or the bidder will be allowed to correct them. If a mistake and the intended bid are clearly evident on the face of the bid document, the mistake will be corrected to reflect the intended correct bid, and the bidder will be notified in writing; the bidder may not withdraw the bid. A bidder may withdraw a bid if a mistake is clearly evident on the face of the bid document, but the intended correct bid is not similarly evident.

2.5 UNFORESEEN OFFICE CLOSURES

If, at the time of the scheduled bid opening, 93 Washington Street, 2nd Floor, Salem, MA 01970, is closed due to uncontrolled events such as fire, snow, ice, wind, or building evacuation, the bid opening will be postponed until 2:00 PM on the next normal business day. Bids will be accepted until that date and time.

2.6 BID OPENING PROCEDURE

At the time and place fixed for opening of bids, the City will cause to be opened and publicly read aloud every bid received within the time set for receiving bids, irrespective of any irregularities therein. Bidders and other persons properly interested may be present, in person or by representative.

PART 3. SPECIFICATIONS

All specifications herein contained are considered as minimum. No exceptions to these minimum standards will be allowed relating to gauge, alloy, and type of metal, size of compartments and overall design. Bidders must state the brand of any item provided which is a substitute for the brand or model specified for evaluation by the bidder. The buyer reserves the right to require a bidder to provide proof in each case that a substituted item is equal to that specified. The buyer will be the sole judge in determination of acceptable substitutes.

Submit only one (1) bid that meets or exceeds the minimum specifications. No substitutes, stock units, or alternates will be permissible unless such units are requested later in the specifications. If this is done, the bidder will be automatically disqualified.

This apparatus will conform to the current edition of the National Fire Protection Association Pamphlet No. 1901.

These specifications are based upon design and performance criteria, which have been developed by the fire department because of extensive research and careful analysis. Subsequently these specifications reflect the only type of fire apparatus that is acceptable at this time. Therefore, major exceptions to specifications will not be accepted.

The bidder will make accurate statements as to the apparatus weight and dimensions. All bids will include a complete set of detailed manufacturer's specifications. The Purchaser's standards for bidding Automotive Fire Apparatus must be strictly adhered to, and all bid forms and questions must be complete and submitted with the bid. Omissions and variations will result in immediate rejection of the bid.

Certified engineering performance information and thickness of materials used will be furnished in the bidder specifications.

To the right side of each paragraph of the fire department specifications, the bidder will state "YES" or "NO" indicating compliance with the specifications. All deviations, no matter how slight, will be clearly explained on a separate cover sheet entitled "EXCEPTIONS TO SPECIFICATIONS". Any exceptions or variations to these specifications must be set forth on separate sheets, indicating page number (s) of the specifications, and must be submitted with the bid. Any bids deemed as taking total exception to these published specifications will result in immediate rejection of the bid.

Proposals that are found to have deviations without listing them will be rejected. No Exceptions

No prototype apparatus will be considered and all design, operational and material features must fully comply with the State and Federal Motor Vehicle Safety Standards.

	Complies	
	Y	N
VEHICLE STABILITY A. The height of the fully loaded vehicle center of gravity will not exceed the chassis		

manufacturer maximum.

B.
The front to rear weight distribution of the fully loaded vehicle will be within the limits set by the chassis manufacturer. The front axle loads will not be less than the minimum axle loads specified by the chassis manufacturer, under full load and all other loading conditions.

C.
The difference in weight on the end of each axle, from side to side, when the vehicle is fully loaded and equipped shall not exceed 7%.

PERFORMANCE TEST AND REQUIREMENTS

A.
The apparatus will meet the performance requirements at elevations of 2000 feet (610m) above sea level.

B.
The apparatus will meet the performance requirements while stationary on any grade of up to and including 6% in any direction.

C.
From a standing start, the vehicle will attain a true speed of 35 mph (56 km/h), within 25 seconds on a level road.

D.
The apparatus will obtain a minimum top speed of 50 mph (80 km/h) on a level road.

E.
The apparatus will be able to maintain a speed of at least 20 mph (32 km/h), on any grade up to and including 6%.

F.
The apparatus will be tested and approved by Underwriters Laboratories Incorporated in accordance with the standard practices for pumping engines.

ROAD TEST

Each manufacturer will conduct road test to verify that the complete apparatus is capable of compliance:

A.
The test will be conducted on a dry, level, paved road that is in good condition. The engine will not operate in excess of the maximum no load governed speed.

B.
Acceleration test will consist of two runs in opposite direction over the same route.

C.
The vehicle will attain a true speed of 35 mph (56 km/h) from a standing start within 25 seconds.

D.
The vehicle will attain a minimum top speed of not less than 50 mph (80 km/h).

E.
If the apparatus is equipped with an auxiliary braking system, the apparatus manufacturers will road test the system to confirm that the system is functioning as intended by the auxiliary braking system manufacturer.

F.
The service brakes will bring the fully laden apparatus to a complete stop from an initial speed of 20 mph (32 km/h) in a distance not exceeding 35 feet (10.7M) by actual measurement, on a substantially hard, level surface road that is free of loose material, oil, or grease.

FAILURE TO MEET TEST

In the event the apparatus fails to meet the test requirements of these specifications on the first trials, second trials may be made at the option of the manufacturer within thirty-(30) days from the date of the first trials. Such trials will be final and conclusive and failure to comply with changes, as the purchaser may consider necessary to conform to any clause of the specifications within thirty-(30) days after notice is given to the manufacturer of such changes will also because of rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use with the permission of the manufacturer will not constitute acceptance.

PRODUCT LIABILITY

Each bidder will supply proof of product liability and facility insurance equal to or exceeding $26,000,000.00.

INFORMATION/CERTIFICATIONS

The following information and original certifications will be required at time of delivery. The apparatus manufacturer will supply this information:

(1) The manufacturer's record of apparatus construction details, including the following information:

(a) Owner's name and address

(b) Apparatus manufacturer, model, and serial number

(c) Chassis make, model, and serial number

(d) GVWR of front and rear axles

(e) Front tire size and total rated capacity in pounds (kilograms)

(f) Rear tire size and total rated capacity in pounds (kilograms)

(g) Chassis weight distribution in pounds (kilograms) with water and manufacturer mounted equipment (front and rear) (h) Engine make, model, and serial number, rated horsepower, related speed, and governed speed (i) Type of fuel and fuel tank capacity (j) Electrical system voltage and alternator output in amps (k) Battery make, model, and capacity in cold cranking amps (CCA) (1) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio (m) Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number (n) Pump transmission make, model, serial number, and gear ratio (o) Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number (p) Water tank certified capacity in gallons or liters (q) Aerial device type, rated vertical height in feet (meters), rated horizontal reach in feet (meters), and rated capacity in pounds (kilograms) (r) Paint manufacturer and paint number(s) (s) Company name and signature of responsible company representative (2) Certification of slip resistance of all stepping, standing, and walking surfaces (3) If the apparatus has a fire pump or an industrial supply pump, the pump manufacturer's certification of suction capability (4) If the apparatus has a fire pump or an industrial supply pump, a copy of the apparatus manufacturer's approval for stationary pumping applications (5) If the apparatus has a fire pump or an industrial supply pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed (6) If the apparatus has a fire pump or an industrial supply pump, the pump manufacturer's certification of the hydrostatic test (7) If the apparatus has a fire pump or an industrial supply pump, the certification of inspection and test for the fire pump or the industrial supply pump (8) If the apparatus has an aerial device, the certification of inspection and test for the aerial		

device (9) If the apparatus has an aerial device, all the technical information, required inspections to comply with NFPA 1914, Standard for Testing Fire Department Aerial Devices (10) If the apparatus has a fixed line voltage power source, the certification of the test for the fixed power source (11) If the apparatus is equipped with an air system, test results of due air quality, the SCBA fill station, and the air system installation (12) Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus (with the water tank full but without personnel, equipment, and hose) (13) Written load analysis and results of the electrical system performance tests required in Chapter 13 (14) When the apparatus is equipped with a water tank, the certification of water tank capacity The Fire Apparatus Manufacture will also provide documentation of the following items for the entire apparatus and each major operating system or major component of the apparatus: (1) Manufacturer's name and address (2) Country of manufacture (3) Source for service and technical information (4) Parts replacement information (5) Descriptions, specifications, and ratings of the chassis, pump (if applicable), and aerial device (if applicable) (6) Wiring diagrams for low voltage and line voltage systems to include the following information: (a) Pictorial representations of circuit logic for all electrical components and wiring (b) Circuit identification (c) Connector pin identification (d) Zone location of electrical components (e) Safety interlocks (f) Alternator-battery power distribution circuits (g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing		

systems

(7) Lubrication charts

(8) Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems

(9) Precautions related to multiple configurations of aerial devices, if applicable

(10) Instructions regarding the frequency and procedure for recommended maintenance

(11) Overall apparatus operating instructions

(12) Safety considerations

(13) Limitations of use

(14) Inspection procedures

(15) Recommended service procedures

(16) Troubleshooting guide

(17) Apparatus body, chassis, and other component manufacturer's warranties

(18) Special data required by this standard

(19) Copies of required manufacturer test data or reports, manufacturer certifications, and independent third-party certifications of test results

(20) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus

The Fire Apparatus Manufacture will deliver with the apparatus all manufacturers' operations and service documents supplied with components and equipment that are installed or supplied.

LETTER OF AUTHORIZATION

If the bid is submitted by a dealer/agent in the name of a particular manufacturer submits the bid, the bidder will include in the bid proposal, a copy of the appropriate Letter of Authorization, authorizing the dealer/agent to sign on behalf of the manufacturer.

LICENSES

Each proposal must have all current licenses required by State law to do business in the State. This is to include BOTH the automotive manufacturer and automotive dealer licenses if required by State law. If the proposed is a manufacturer, bidding direct and not through a dealer or distributor, then the proposal will include copies of their manufacturer and automotive dealer licenses. If the proposed is a dealer or distributor, then they will submit a copy of the appropriate dealer license. Proposals failing to meet this legal requirement cannot

be considered.

LIABILITY

The bidder, if his bid is accepted will defend against all suits, and assume all liability for the use of any patented process, advice or article forming a part of the apparatus of any appliance furnished under contact.

PAYMENT TERMS

Full payment shall be made upon delivery and acceptance of the apparatus. The vehicle(s) shall not be released to the BUYER until payment is made. If the selling price is subject to any taxes, the taxes added will be that which are prevailing at the time of delivery.

Payment shall be made directly to the manufacturer payment shall be made in United States Currency. No checks or any other form of payment shall be made to any sales representatives, dealer, agents, etc.

BID BOND

A bid bond for 5% of the total bid amount shall be furnished with your bid. The manufacturer of the apparatus shall provide all bonds. The appropriate Surety agent shall countersign the bond.

SINGLE SOURCE MANUFACTURER

To provide the customer with a single point of contact for service, warranty, and parts, proposals shall only be accepted from manufacturers who assemble the complete apparatus in their own facility. Local dealer service facility shall be within 90 miles of Salem Fire Department, Station 1, 48 Lafayette Street Salem Ma. 01970.

VIRTUAL MANUFACTURING

The manufacturer shall have access available for the customers to see their unit being produced. The site shall be updated a minimum of one time per week.

The web site shall also include documentation of cab and body crash tests, take a virtual tour of the production facility, videos of both current and new innovative products, updates on trade shows, photos of new deliveries and the opportunity to include customer 'Action Photo's'.

Customer shall be able to access the web site without the requirement of a password.

CERTIFIED WELDERS

The manufacturer shall employ individuals that are certified aluminum and stainless steel welders. The welders shall be certified by an outside testing laboratory. The certifications shall be available for viewing through the Human Resources office upon request.

DRAWING, PROPOSAL

There shall be a proposal drawing submitted to the Fire Department. This drawing shall be a visual interpretation of the apparatus proposed.

DRAWING, APPROVAL

Prior to construction, the successful bidder shall provide three-(3) approval drawings of the apparatus for the fire department's review. The drawings shall show such items as the chassis being utilized, lights, horns, sirens, pump panels, and all compartment locations and dimensions. The blueprint shall be a visual interpretation of the unit as it is to be constructed. The buying authority shall sign all drawings. One-(1) print shall be retained by the Fire Department, the dealer/sales representative shall retain one-(1) print, and one-(1) print shall be returned to the manufacturer.

TRANSPORTATION

To insure proper break-in of all components while still under warranty, the apparatus shall be delivered over the road under its own power (Rail and/or truck freight shall not be acceptable).

DELIVERY

The manufacturer will deliver the completed apparatus in Three Hundred (300) calendar days from the pre construction meeting. The pre construction meeting shall take place within 30 days from receipt of an order.

The manufacturer shall not be held liable for changes arising from its failure to make or delay in making delivery because of fire, flood, strike, riot, chassis shortage, accidents, acts of God, or any circumstances beyond our control.

CUSTOM CHASSIS

It is the intent of the technical specifications contained herein to ensure the custom cab and chassis specified shall be engineered, designed, and manufactured exclusively for heavy-duty continuous use in extreme environments and rigorous adverse conditions.

Each custom cab and chassis shall be manufactured in strict compliance with all applicable requirements as set forth in the current edition of the NFPA (National Fire Protection Association) pamphlet 1901 with maximum safety as the key focus throughout the design and development phase of each fire and rescue chassis.

PRE-CONSTRUCTION CONFERENCE

A pre-construction conference will be held at the factory prior to the actual construction of the vehicle(s). The conference will be held in the manufactures facility with three (3) representatives of the Fire Department and appropriate representatives of the manufacture.

Transportation, lodging and meals will be the responsibility of the manufacturer.

FINAL INSPECTION TRIP

There will be a final inspection for Three (3) representatives of the buying authority at the facility where the apparatus is being constructed. The inspection trip will be completed when the chassis is complete. Factory and Sales representatives will be available at the time of inspection.

Transportation, lodging and meals will be the responsibility of the manufacturer.

FRONT BUMPER

There shall be an 80,000 psi high tensile strength painted steel bumper provided fabricated from 10-1/2" x 3-1/2" x .375 steel channel bolted to the chassis frame rails utilizing grade 8 hardware protecting the front of the apparatus during head-on or angled collisions.

The bumper shall be painted job color.

BUMPER GUIDE POLES

Two-(2) chrome guide poles shall be installed, one-(1) each side of the front bumper wired to the chassis running lights.

FRONT TOW HOOKS

Two-(2) painted tow hooks shall be mounted to the bottom of the front bumper frame extension rails. The tow hooks shall be attached with Grade 8 bolts.

FRONT BUMPER EXTENSION

There shall be an eighteen inch (18") frame extension provided. The extension shall be made from heavy-duty steel in both C-channel and tubular shapes. The frame rail extension material shall measure 7" high x 3-1/2" wide x .375" wall thickness.

Extension shall be bolted to the chassis frame rails through reinforcement plates, backed by the engine mounting crossmember. Fasteners utilized shall be Grade 8 bolts.

GRAVELSHIELD

A gravelshield constructed of 1/8" (.125") embossed aluminum tread plate shall be installed above the frame extension between the bumper and the front face of the cab. Plate shall be finished with a black textured coating.

BUMPER COMPARTMENT, CENTER

There shall be a compartment provided in the front bumper gravelshield, centered between the frame rails fabricated of 1/8" (.125) smooth aluminum plate with drain holes to promote airflow.

COVER, CENTER FRONT BUMPER COMPARTMENT

The center bumper compartment shall have a hinged aluminum tread plate cover to secure the contents. The cover shall be secured in the closed position with a stainless steel latch. The cover shall be cut-out for access. Cover shall be finished with a black textured coating

MECHANICAL SIREN

One (1) Federal Signal Q2B siren model #Q2B-012PSD electro-mechanical siren shall be mounted in the extended front bumper, in the best available location. The Q2B siren shall be a streamlined, chrome plated siren designed to provide reliable and long-life operation. The electro-mechanical siren shall produce the distinctive Q2B sound that is a registered trademark of Federal Signal, and shall be provided with a heavy duty clutch and an electric brake.

The Q2B siren shall measure 10.5" high x 14" long x 10" deep and shall produce 123 decibels

at ten feet. The siren shall operate off the vehicles 12V system. The Q2B siren shall be flush mounted in the front of the emergency vehicle.

The siren brake switch shall be located within reach of the driver.

SIREN WIRING

The siren activation switch shall be wired thru the chassis park brake and operate in the "Response Mode" only.

SIREN FOOT SWITCH

A foot operated switch shall be installed on the driver's side wired to the mechanical siren.

SIREN DASH SWITCH, OFFICER'S SIDE

A dash mounted switch shall be installed on the officer's side wired to the mechanical siren.

SWITCH, HORN/SIREN SELECTOR

A driver controlled horn/siren selector switch shall be installed in the cab and operate either the mechanical siren or chassis electric horn through the horn ring button.

AIR HORN, PASSENGER'S SIDE

There shall be one-(1) 24" long Grover air horn installed in compliance with NFPA thru the front bumper, passenger's side, outboard of the frame rail. The air horn shall be plumbed to the chassis, air supply system thru an air protection valve, and manufactured from spun brass material with an easily separated die cast sounding unit for serviceability.

AIR HORN, DRIVER'S SIDE

There shall be one-(1) 24" long Grover air horn installed in compliance with NFPA thru the front bumper, driver's side, outboard of the frame rail. The air horn shall be plumbed to the chassis, air supply system thru an air protection valve, and manufactured from spun brass material with an easily separated die cast sounding unit for serviceability.

SPEAKER, DRIVER'S SIDE

There shall be one-(1) speaker shall be installed thru the front face of the bumper, driver's side, outboard.
The speaker shall be a Cast Products, 100-watts wired to the electronic siren.

AIR HORN WIRING

The air horns shall be active in both the "Scene" and "Response Mode".

VALVE, AIR HORN SHUT OFF

The chassis shall be equipped with an air horn manual shut off valve. The valve shall be located in the driver's step well.

FRONT AXLE

The front axle shall be a Meritor MFS-18 with 18,000-pound capacity equipped with oil seals and transparent cover for oil level inspection.

CHASSIS WHEELBASE

The chassis wheelbase shall be less than 175 inches.

CHASSIS FRAME RAILS

The chassis frame rails shall be constructed of at least110,000-PSI minimum yield steel that has been formed into a "C" channel shape with a minimum dimension of 10.50" x 3.50" x .375 inches.

The frame rails shall be powder coated insuring superior paint adhesion. Frame cutouts for the engine shall be made with a plasma torch minimizing the heat-affected zones.

The resulting frame system shall have a minimum section modulus of 18.34 cubic inches with a resisting bending moment of 2,017,400-inch pounds per rail. All frame-mounted components shall be secured with Grade eight bolts, hardened washers, and distorted thread lock nuts. Flanged head bolts with nylon locking nuts, or huck bolts shall not be acceptable.

PAINT, FRAME RAIL

The chassis frame rails, cross members, fuel tank and air reservoirs shall be completely encapsulated in a ruggedized, protective coating. The air reservoirs, reservoir hanger straps and fuel tank shall all be treated separately prior to assembly. The frame, cross members, bumper backing reinforcement plate, radiator skid plate, spring hangers, cab lock mounts and required bolts shall all be in place prior to treatment to ensure complete coverage.

STEERING SYSTEM

The steering system shall be a package certified for the application. All components between the steering column and the front axle shall be manufactured by the same manufacturer.

CHASSIS ALIGNMENT

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer. Cramp angle is set to achieve the greatest turning radius possible with the selected components of the vehicle. Each front wheel is set to zero degrees. The wheel is then turned until it reaches the steering stops. This measurement is the cramp angle.

FRONT SUSPENSION

The front suspension shall be parabolic (taper leaf) spring type, with a minimum 18,000 pounds capacity. The leaves shall be a minimum of 4" wide x 54" long (flat), with grease fittings for lubrication installed in the spring pins. Axle stops with energy absorbing jounce bumpers shall be supplied on the spring top pad. Double acting shock absorbers shall be provided on the front suspension.

FRONT BRAKES

The front axle shall be equipped with EX-225 air operated disc brakes and ventilated rotors.

CRAMP ANGLE

The cramp angle of the front axle shall be 45 degrees.

FRONT TIRES

The front tires shall be all-weather treads with a capacity rated for the application.

FRONT WHEELS

The front axle wheels shall be steel discs with a 10-hole pattern.

FRONT WHEEL FINISH

The wheels shall be painted to match the job color.

MUD FLAPS, FRONT

The front axle mud flaps shall be constructed from hard black rubber and installed behind the front axle.

REAR AXLE

The rear axle shall be a Meritor RS-25-160 with a 27,000-pound service rating. The axle shall be equipped with oil seals.

REAR SUSPENSION

The rear axle suspension shall leaf spring type rated at 31,000 pounds capacity. The suspension shall be a torque leaf, variable rate, self-leveling slipper type.

REAR AXLE DIFFERENTIAL

The Meritor RS series rear axle shall have a standard differential.

VEHICLE TOP SPEED

The rear axle shall be geared for a top speed of 60-62 MPH at governed engine speed.

REAR BRAKES

The rear axle shall be equipped with EX-225 air operated disc brakes and ventilated rotors.

REAR TIRES

The rear tires shall all season traction treads with a rated capacity for the application

REAR WHEELS

The rear axle wheels shall be steel disc with a 10-hole pattern.

REAR WHEEL FINISH

The wheels shall be painted to match the job color.

AUTOMATIC TIRE CHAINS

The rear axle shall be equipped with an ON-SPOT automatic tire chain system. The system shall provide instant traction at the touch of a button, without having to stop the vehicle.

The driver's dash shall have an electric control switch, clearly labeled for operation of the tire chains. The switch shall be provided with a guard to prevent accidental deployment of the tire chains. The switch when activated shall open a frame mounted solenoid, allowing air from the chassis air system to enter the spring loaded air cylinder and lower the chain wheel. The rubber covered chain wheel shall contact the inside of the tire causing the chain wheel to rotate and deploy the chains. The ON-SPOT automatic chains shall have six (6) lengths of

chain, spaced at 60-degree intervals on the chain wheel, ensuring two chains between the tire and road surface for instant traction in slippery conditions whether accelerating, braking, or in a wheel lock up condition. The ON-SPOT chains shall be operable in either forward or reverse.

When the chains are no longer needed the process is reversed, the dash board switch is turned of and the air is exhausted from the cylinder. The return springs in the air cylinder brings the chain wheels back to their resting position.

HOSE AND HARNESS ROUTING

Battery cables, hydraulic hoses and air lines shall be routed through the vertical face of the chassis frame rails using bulkhead connectors. The use of grommets through frame rails, as well as running hoses or cables under, over or ahead of the chassis frame rails to achieve positive connections shall not be acceptable.

For ease of maintenance, the wiring harnesses, hydraulic hoses and air hoses shall be divided down each frame rail. The hydraulic and air hoses shall be run, primarily, down the inside of the right side frame rail, while the electrical harnesses shall be run, primarily, down the left side frame rail. Harnesses and hoses shall be mounted using rubber coated, stainless steel holders and, where necessary, heat resistant zip loom.

AUTOMATIC CHASSIS LUBRICATION SYSTEM

A Vogel automatic lubrication system shall be provided. The lubrication shall be supplied while the vehicle ignition is active to allow a uniform application of grease to the locations listed. The electronic control unit that forms part of the system shall activate the pump after an adjustable interval time. The unit shall control and monitor pump operation and report ant faults via an indicator light on the driver dashboard of the cab.

The lubrication system reservoir shall be located with easy access for filling on the apparatus.

Greasing locations to include:
-Steering system (tie-rods, drag links, kingpins)
-front and rear suspension systems (spring pins, shackle pins)

AIR BRAKE SYSTEM

The air brake system shall meet the requirements of FMVSS-121. The system shall consist of three-(3) reservoirs with a total capacity of 5100 cubic inches. The system shall be of dual circuit and quick build up design powered by an engine mounted gear driven air compressor. The system shall be protected by a heated air dryer with heated automatic moisture ejector on the wet tank and quarter turn brass drain valves on the other tanks.
The system shall be plumbed using color-coded nylon airlines with brass push-lock fittings.

ANTI-LOCK BRAKES W/ATC & ELECTRONIC STABILITY CONTROL

The apparatus shall have a Wabco ABS-based Electronic Stability Control (ESC), which offers another level of vehicle control. This automatic braking management system reduces the possibility of a side rollover and assists in the directional stability of apparatus. Upon reaching critical lateral acceleration thresholds, the system intervenes to regulate the vehicles deceleration and braking functions. Reducing the engine's RPM by overriding the foot throttle input and applying the engine retarder (if equipped) to slow the apparatus giving the driver added control and maneuverability. The ESC shall also apply braking power to

selective wheel of the front and rear axles to assist in stabilizing the apparatus to its intended direction. This selective braking application and reduction of speed and torque reduces the possibility of spinouts and side rollovers even in adverse conditions.

The system includes a Wabco 4-channel Anti-Lock Braking System shall be installed which includes four-(4) wheel sensors and four-(4) modulators to control and compensate braking force at each wheel. This system shall monitor all wheel ends regardless of suspension type, and which axle it sees braking forces first.

An ABS warning light shall be installed on the driver's dash that remains illuminated until the vehicle is moving at least four-(4) miles per hour. An ABS test switch shall be installed in the "Diagnostic Information Panel" that when pressed, sends the system into diagnostic mode causing the ABS light to blink (I/O) indicating a flash code. A listing of flash code definitions is listed in the Wabco Owner's Manual.

Automatic Traction Control (ATC) shall be installed to sense wheel slip, apply air pressure to brakes, and reduce engine torque to provide improved traction. An ATC indicator light shall illuminate when the system is active.

A mud and snow switch shall be provided. When the switch is in the "ON" position, it shall allow momentary wheel slip to obtain traction under extreme mud and snow conditions.

The system also includes a Steering Angle Sensor (SAS), which informs the system of the degree in which the steering is turned to one side or the other. Along with the SAS, an ESC module is mounted mid frame at the rear of the chassis cab to detect roll, pitch, and yaw angles and computes which wheel(s) brake(s) shall be acted upon.

AIR DRYER

The air system shall include a Bendix AD-9 air dryer with integral 12-volt heated moisture ejector. The air dryer shall have a desiccant cartridge and incorporate an integral turbo cutoff valve. The turbo cutoff allows the air dryer to purge water and contaminants without any loss of turbo boost or engine horsepower.

ENGINE

The vehicle shall be equipped with a Cummins ISL 450 turbocharged diesel engine. Standard features include an electronic governor, electronically controlled unit injectors, Farr air cleaner, a 12-volt starter Delco 39 MT, and an 18.7 CFM compressor. The oil filter shall be a full flow and bypass design.

This engine conforms to the US 2013 EPA regulations for heavy-duty diesel engines.

ENGINE SPECIFICATIONS

PART 1 - Model: ISL
PART 2 - Number of Cylinders: Six (6)
PART 3 - Bore and Stroke: 4.49" X 5.69"
PART 4 - Displacement: of 8.9 L
PART 5 - Rated Horsepower: 450 @ 2100 RPM
PART 6 - Peak Torque: 1250 @ 1400 RPM
PART 7 - Governed Speed: 2200 RPM

TRANSMISSION

The chassis shall be equipped with an Allison 3000 EVS automatic transmission. It shall have 4th gear operating controls and programmed for Fire Apparatus vocation. An electronic oil level indicator shall be provided as well as a diagnostic reader port connection. The transmission shall be geared to provide one-to-one ratio in fourth gear for fire pump applications. This dedicated "lockup" circuit is provided for pump operation. The transmission fifth gear shall be an overdrive ratio, permitting the vehicle to reach its top speed at the governed engine speed.

The transmission shall be equipped with an automatic neutral feature. Applying the parking brake shall command the transmission to neutral, regardless of drive range requested on the shift selector which shall require re-selecting the drive range to shift out of neutral.

The transmission shall be equipped with dual PTO ports with engine speed capabilities. The transmission shall be cooled by the radiator-mounted heat exchanger. The transmission fluid shall meet Allison specification TES-295.

TRANSMISSION SHIFTER, PUSH BUTTON

The transmission shall be controlled by an Allison push button shifter internally illuminated for night operation. The shifter shall be mounted on the dash to the right of the steering column. The transmission shall be capable of five-(5) speed operation.

The transmission shall be equipped with the oil level sensor (OLS); this sensor shall allow the operator to obtain an indication of the fluid level the shift selector. The sensor display shall provide the following checks, correct fluid level, low fluid level and high fluid level.

DRIVELINES

The chassis shall be equipped with drive shafts with full round yokes and universal joints. The driveshaft tubing shall be a minimum of 4.00" diameter with .134" wall thickness. The drivelines shall be balanced at a minimum of 3000 RPM.

FIRE PUMP MOUNTING

Extra heavy-duty mounting brackets shall be bolted to the chassis frame rails for the installation of the fire pump. The mounting brackets shall be positioned aligning the pump insuring the angular velocity of the driveline joints are the same at each end allowing for full capacity performance with minimal vibration.

ENGINE COMPRESSION BRAKE

The engine shall come equipped with a an auxiliary engine braking system controlled by two-(2) switches located in the cab, an on/off and low/medium/high. The compression brake shall interface with the anti-lock brake controller to prevent engine brake operation during adverse braking conditions.

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

ENGINE COOLING SYSTEM

The engine cooling system shall have the capacity to cool the engine according to the engine

manufacture's requirements.

RADIATOR

The engine radiator shall be of a bolted design.

The top tank shall include an integral deaeration tank, which removes air from the engine water. The top tank shall include a sight glass for coolant level inspection without removing the radiator cap. A low coolant warning shall be incorporated to alert the driver.

The bottom tank of the radiator shall incorporate oil to water plate-type cooler for the transmission. The cooler is designed to cause a turbulent flow of the transmission oil through the core to force heat transfer. The cooler shall be sufficient to cool an Allison Transmission without output retarders.

To minimize stress from road and engine vibrations on the radiator, a shock mount shall be used. This mounting system shall consist of .375" outside diameter long threaded rods, washers and bolts plus heavy rubber shock absorbers.

A high efficiency fan shall be surrounded by a formed welded fan shroud. The sweep of the fan shall not exceed the width of the radiator core. Fan diameters that exceed the width of the radiator core shall not be acceptable.

CHARGE AIR COOLER

The charge air cooler shall be constructed of aluminum with cast, aluminum side tanks. The cooler shall have a frontal core area of not less than 1033 square inches.

The charge air cooler shall be mounted directly ahead of the radiator and to the radiator headers. Rubber isolators shall be used at the mounting points to reduce transmission of vibrations.

The piping between the charge air cooler and engine shall use four-(4) ply silicone woven Nomex hoses with stainless steel bands. The bands are used to maintain the shape of the hose during changing turbo boost pressures. The hoses shall be attached with stainless steel constant tension hose clamps.

COOLING SYSTEM FAN

The engine cooling system shall incorporate a thermostatically controlled fan clutch. When the fan clutch is disengaged, the vehicle shall have improved vehicle performance, cab heating in cold climates, and fuel economy, while eliminating the potential dangers associated with a fan going from non-rotating to rotating as found with other style fan clutches.

The fan shall automatically lock-up when the vehicle is placed in pumping mode.

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

RADIATOR COOLANT, LONG LIFE

The coolant system shall contain a mixture to keep the coolant from freezing to a temperature of -34 degrees F.

The coolant supplied shall be Long Life Coolant compatible with the engine manufacturer's requirement.

COOLANT HOSES

The chassis shall be equipped with silicone hoses for the radiator and heater circuits.

COOLANT HOSE CLAMPS

Gates PowerGrip clamps shall be provided for all coolant and heater hoses. The maintenance-free clamps retain dynamic tension and never need retightening. These clamps stop leaks, even on out-of-round applications. The clamps are made from a heat sensitive thermoplastic with memory to prevent over or under tightening. The clamps shall have a temperature range of -40 degrees F to -302 degrees F.

AUXILIARY ENGINE COOLER

The cooling system shall have a tube and bundle engine cooler mounted in the upper radiator water pipe. Water from the fire pump shall be circulated through 1/2" tubing to the cooler. A valve located on the pump panel shall control the cooling circuit.

FUEL TANK

The chassis shall be equipped with a rear mounted fuel tank with no less than a fifty(50) gallon capacity. The tank shall be constructed of 12-gauge steel with stainless steel mounting straps and rubber isolators secured to the bottom flange of the chassis frame rails. The tank shall be baffled to prevent sloshing, vented, and have a drain plug installed on the bottom.

The tank shall be certified to meet FMCSR 393.65 and 393.67.

FUEL LINES

The fuel lines shall be wire braid reinforced fuel grade hose. They shall have reusable fittings and be routed along the inside of the frame rails. Fuel lines shall be protected against chaffing by non-conductive, frame mounted standoff fasteners and, where necessary, with heavy-duty plastic zip loom.

FUEL SHUTOFF VALVE(S)

One (1) fuel shutoff valve(s) shall be installed in the suction side of the fuel lines near the fuel filters to prevent the loss of prime during fuel filter maintenance.

FUEL FILTER

The Cummins engine shall be supplied with a fuel water separator with a bottom drain valve.

EXHAUST SYSTEM

The apparatus shall contain a particulate filter and SCR (Selective Catalytic Reduction) device downstream of the engine's turbo. This filter and SCR device are required to maintain US 2010 EPA Emissions. This filter and SCR device replaces the conventional style filter. The location has been engineered, tested, and set to allow for proper regeneration. Therefore, this filter cannot be removed, altered, or relocated.

An indicator light panel for this system shall be located in the cab informing the driver of the systems status. At times a forced regeneration may be required, which would be indicated by a combination of illuminating and/or flashing lights depending on the engine model.

A momentary switch labeled "Regen" shall be located within reach of the driver's seated position. The regeneration switch initiates the forced regeneration. A momentary DPF inhibit switch prevents the vehicle from having the ability to regenerate. Once the inhibit feature has been activated the ignition switch must be cycled off/on to return the vehicle to normal Regen. All vehicles equipped with pumping applications shall allow for passive regeneration whenever the system requires and the engine is at its proper parameters unless inhibited by the DPF inhibit switch. In no way shall this feature affect the RPM of the engine being controlled by the pump operator.

The engine exhaust system shall be horizontal in design using stainless steel tubing mounted under the frame rail right side extending forward of the rear wheels.

An exhaust temperature mitigation device shall be installed. The temperature mitigation device shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.

TAIL PIPE ADAPTER

There shall be a Plymovent Tailpipe Adapter installed on the apparatus. The apparatus exhaust system shall be modified to accept the collar.

ALTERNATOR

The alternator shall be rated for a minimum of 320 amps. The alternator shall be engine driven via a poly-groove power belt and tensioned by a threaded rod. The alternator shall meet all current applicable NFPA 1901 Edition requirements for performance.

BATTERY SYSTEM

The battery system shall be a single system consisting of six-(6) Group 31, 12-volt DC, heavy-duty, high cycle automotive batteries. The battery bank shall have a minimum group rating of 3750 cold cranking amperes (CCA) and a reserve of 1,080 minutes at 80 degrees Fahrenheit.

All battery wiring shall be welded battery cable capable of handling 125% of the actual load. It shall be run through a heat resistant flexible nylon "HTZL" loom rated at a minimum of 300 degrees Fahrenheit. All cable connections shall be machine crimped and soldered.

BATTERY BOXES

The chassis batteries shall be mounted in welded and bolted stainless steel battery box. The battery hold-downs shall be made of structural, stainless steel angle. Painted carbon steel battery boxes shall not be acceptable.

STAINLESS STEEL BATTERY BOX COVERS

Each battery box shall include a stainless steel cover which protects the top of the batteries from road spray. Each cover shall include flush latches which shall keep the cover secure as well as a handle for convenience when opening.

BATTERY JUMPER STUDS

One-(1) set of battery jumper studs shall be provided on the chassis. The studs shall be connected to the chassis batteries with 1/0 color coded cables, red for the positive cable and black for the negative cable. The studs shall be protected with color coded plastic covers

when not being used. The studs shall be accessible with the cab in the lowered position.

A tag shall be provided for positive/negative terminals.

SWITCH, MASTER BATTERY DISCONNECT

The chassis batteries shall be wired in parallel to a single 12-volt electrical system, controlled through a heavy-duty, rotary type, master disconnect switch. The master disconnect switch shall be located within easy access of the driver upon entering or exiting the cab. All electrical circuits shall be disconnected when the switch is in the "OFF" position.

TOTAL SYSTEM LOAD MANAGER W/HIGH IDLE

The apparatus shall be equipped with a Class 1 Total System Manager (TSM) for performing electrical load management. The TSM shall have two-(2) modes of operation, a "Calling Right of Way" and a "Blocking Right of Way". The "Blocking Right of Way" mode is activated only when the park brake is set. Load shedding shall "only" occur when the apparatus is in the "Blocking Right of Way" mode or when the battery voltage level reaches your programmed shed level.

Outputs 1-12 shall be independently programmable to sequence on with the ignition or master warning switch. Outputs 1-12 shall also be programmable to be activated during the "Calling Right of Way" mode and or the "Blocking Right of Way" mode. Output 13 is user configurable output and is programmable for activating between 10.5 and 15 volts. Output 14 shall provide a low voltage warning for an isolated battery. Output 15 shall be designated to activate a fast idle system. Output 16 shall provide a low voltage alarm that activates at the NFPA required 11.8 volts.

The Total System Manager shall have an internal digital display to indicate systems voltage is in normal operation mode and indicates the output configuration during programmable mode.

The Total System Manager shall be protected against reverse polarity and shorted outputs, and be enclosed in a metal enclosure to enhance EMR/RFI protection.

BATTERY CHARGER

A Kussmaul automatic charging system shall be mounted in the vehicle to maintain the chassis electrical system.

The onboard automatic battery charger shall sense battery voltage drop and recharge the batteries to full capacity. The state of charge shall be indicated by the bar graph located on the front of the unit.

SPECIFICATIONS

Input:	120 volts, 60 Hz, 10 amps
Output:	12 volts DC
Battery Charger:	12 volts DC @ 40 amps
Input Fuse:	15 amps
Voltage Sense:	Remote Electronic

Indicators:

SCHEDULE 0 - Power - Indicates input power applied

SCHEDULE 1 - Bar Graph - Remotely located indicates state of charge of batteries

20 AMP SUPER AUTO-EJECT(S)

There shall be provided one (1) super auto-eject type receptacle(s) model 091-55-20. A solenoid wired to the vehicle starter is energized when the engine is started. This instantaneously drives the plug from the receptacle. The receptacle shall be provided with a weatherproof cover. The cover shall be spring loaded to close, preventing water from entering when the shoreline is not connected. The super auto eject receptacle shall be mounted in a location specified by the department and is designed to accept a 120V AC from a shoreline plug.

The UL maximum allowable amperage draw on receptacles is generally 80% of their listed rating, for example, the 20-amp receptacle should not carry more than 16-amp continuous load. When adding the different amperage draws of the components being installed on the chassis, be sure to figure in whether the components shall draw a continuous load or intermittent load.
The Auto Eject cover(s) shall be a Kussmaul 091-55YW, yellow in color.

SHORE POWER INLET PLATE

A shore-power "Inlet Plate" shall be permanently affixed at or near the power inlet.

The plate shall indicate the following:

PART 8 - Type of Line Voltage
PART 9 - Current Rating in Amps
PART 10 - Power Inlet Type (DC or AC)

UREA STORAGE TANK

There shall be an appropriately sized urea tank installed on the apparatus. A urea level gauge shall be provided in the cab on the main instrument panel.

There shall be a DEF fuel fill assembly mounted and equipped with fuel fill cap with retention ring. The assembly shall be properly labeled "DIESEL EXHAUST FLUID ONLY".

Tank fill door finish will be job color matching finish in area door is installed.

CUSTOM CAB

The cab shall be an engine forward extended, medium four-door, (raised roof) full tilt. The cab shall be an "Open Interior" roll cage design requiring no inner walls or vertical interior supports. The cab roof shall be raised 8 inches providing additional headroom above the crew area. The raised. The cabs seating capacity for emergency personnel shall be four(4).

All storage areas inside the cab shall fully comply with NFPA 1901 restraint requirements of 9G’s.

CRASH TEST

The cab shall exceed the strict and detailed requirements of the Economic Commission for Europe Structural Standard, ECE-29R. The test shall consist of an impact load test and a vertical load test to the cab.

The cab shall have a frontal impact tests via pendulum, with an impact load in excess of 127% of the ECE-29R Standard. The estimated speed of the 3736-lb (1698-kg) pendulum shall be a minimum of 18.2 mph. The cab doors shall be closed during the impact test but be able to open after impact. There shall be no passenger intrusions or any structural component failures. The cab shall meet or exceed all criteria of this portion of the test.

In conjunction with the frontal impact test, a vertical load test shall be implemented to the cab. The cab roof shall be loaded with a minimum of 65,979 lbs. (29.53 metric tons). There shall be no failure to the cab structure or mountings, any passenger compartment intrusion or degradation of occupant survival space, or any other structural failure. The cab shall meet or exceed all criteria of this portion of the test.

A complete photographic, video, data, and dimensional record of these tests shall be available and placed on record for customer evaluations.

CAB MATERIALS

The cab shall be constructed entirely of aluminum alloy extrusions and 3/16" (.188) thick, 5052-H32 alloy, marine grade aluminum sheets. The corner posts, door slam posts, roof rails and doorframes shall be made of custom extrusions designed specifically for this cab with slots for inserting the skin. The rear wall and roof shall be reinforced with a grid of rectangular extrusions, which are welded to the overall cab extrusion framework. The front corner caps shall consist of castings designed specifically for this cab with relief areas cast in place for attachment of roof skin and intersecting structural extrusions. Overlapping formed corner caps are not acceptable.

CAB DIMENSIONS

PART 11 - Overall width skin to skin: 96 inches
PART 12 - Overall vehicle width: 120 inches (w/standard mirrors)
PART 13 - Overall length: 136 inches
PART 14 - Cab Height Front: 87 inches
PART 15 - Cab Height Rear: 95 inches
PART 16 - Center of front axle to back of cab: 62 inches
PART 17 - Windshield area: 4100 square inches
PART 18 - Front grill opening: 470 square inches
PART 19 - Side grill opening: 105 square inches
PART 20 - Cab full tilt angle: 45 degrees
PART 21 - Cab full tilt height: 187 inches
PART 22 - Floor to ceiling in front: 60 inches
PART 23 - Floor to ceiling in rear: 66 inches
PART 24 - Engine cover height: not to exceed 27-1/2" front-to-back and side-to-side
PART 25 - The Driver shall have no less than 24-1/4" of hip room
PART 26 - The Officer shall have no less than 23-1/4" of hip room

DOUBLE WALL CAB FACE

The cab front shall be of double wall construction resulting in a sealed firewall. The inner and outer shall both be formed from 3/16" thick, 5052 H32 alloy aluminum with structural aluminum reinforcements. This design provides for increased structural integrity, crew safety,

and reduced road noise in the passenger area. The outer wall is used for mounting forward lighting, grill and windshield wipers. The inner portion shall be treated with a heavy black undercoating material for corrosion prevention.

SEALED ENGINE TUNNEL

The engine tunnel shall be a structural part of the passenger cab, constructed from welded 3/16" aluminum plate and reinforced with aluminum extrusions. The rear of the engine tunnel shall be no less than 57" inches from the rear wall of the cab, allowing maximum legroom for forward facing passenger. After welding, the seams shall be completely sealed with silicone caulking.

Engine enclosures that are not an integral part of the cab structure are not acceptable.

The interior of the engine tunnel shall be insulated with 1" thick foil backed insulating foam, attached with stud and button method. A cross-section analysis of the insulation shall reveal a 1/8" thick barrier material for additional noise and heat insulation.

CAB FLOORS

Cab floors shall be constructed from an aluminum extruded frame and 3/16" thick aluminum plate. Floor mats and insulation are detailed later in this specification.

The forward cab floor shall be as large as possible for both the driver and officer. Floorboards shall extend in width from the side of the engine tunnel, all the way to the cab door inner panel. They shall extend forward from the seat riser to the inner portion of the double wall cab face. The officer shall have approximately 28" of foot room.

The entire rear floor of the cab, to reduce trip and fall hazards, shall be a single plane. In applications requiring the use of a top-mounted PTO, a raised area in the floor may be required.

For maximum crew comfort and eliminate leg fatigue during emergency responses, the floor beneath the rear facing jump seats shall be large enough for a seated firefighter to rest both feet side-by-side. Cab floor designs that are wide enough for only one foot shall not be accepted.

CAB CORROSION PROTECTION

A corrosion preventative material shall be applied during cab construction. A ten-(10) year warranty against corrosion perforation shall be provided for the cab.

WHEEL WELL LINERS

Full wheel well liners shall be installed beneath the cab to protect the bottom of the cab from road splash. The liners shall be constructed of aluminum and be full width.

The wheel well liners shall be attached with threaded fasteners and be easily removable for service.

FENDERETTES

Black rubber fenderettes shall be installed at the wheel well openings.

WINDSHIELD

The windshield shall have approximately 4100 square inches of unobstructed viewing area. It shall be a two-(2) piece design with tinted automotive safety glass, with a wraparound design. A .030-inch thick vinyl layer shall separate the laminated glass.

All other cab glass shall be tinted and tempered.

INTERMITTENT WINDSHIELD WIPERS

Two electric "Pantograph" style windshield wipers shall be installed on the front face of the cab. The motors shall operate through a 72-degree sweep and include 24-inch blades to give superior wiper coverage. A washer reservoir of not less than 70 ounces shall be mounted a latched door recessed in the officer's step.

A switch located on the turn signal control arm shall operate the intermittent wipers.

EXTERIOR GRAB HANDLES

Aluminum handrails with a knurled, slip-resistant finish shall be positioned behind each cab door. Grab rails shall be minimum 24” in length. Molded rubber gasket shall be mounted between the grab handles and the cab in order to prevent corrosion due to dissimilar metals being in contract.

EXTREME DUTY CAB INTERIOR

Cab floors shall be covered with a pebble grain rubber matting with barrier type insulation. Edges of the insulation shall be trimmed with extruded aluminum angle for a pleasing appearance.

An insulated covering shall be fitted over the engine tunnel. Made from the same material as the cab floor insulation, this covering shall insulate the cab from engine heat and noise. A door on top of the engine tunnel shall provide access for fluid checks.

The cab shall have a custom built, smooth aluminum plate dashboard, overhead console, glove box, instrumentation panel and switch panel. The front overhead shall include room for the three sun visors and the door open indicator light.

The front door posts shall be trimmed with styled aluminum covers that conceal any wiring, as well as including a mounting area for rubberized grab handles. The center windshield post shall be paint finish.

Headliner and rear wall padding shall be installed.

These covers serve to finish the interior, cover wiring harnesses and insulate the interior from sound and heat.

SUN VISORS

The cab shall be equipped with a minimum of two(2) sun visors. The visors shall be installed on the overhead panel and provide approximately 90 per cent coverage across the width of the cab. The visors shall be approximately 26 inches wide and six (6) inches tall. Visors shall be equipped with retainers to secure into the stowed position

GLOVE BOX

The glove box shall be an integral part of the welded aluminum dashboard assembly and located on the officer side of the cab. The storage area of the glove box shall bolt in place for easy service access. The door shall be drop down style and constructed from brushed stainless steel with a recessed latch. The area above the glove box shall be flat for a work surface or optional MDT mounting.

CAB STEPS

All cab steps shall be of a stationary, fixed design that use no moving parts and requires no periodic maintenance other than cleaning.

There shall be an open-grip, black textured finish step at each cab door opening. The area under the step shall be enclosed to prevent road dirt from entering the cab. There shall be provisions made at the front of the step for easily flushing out any dirt accumulation.

At each door, opening there shall also be an intermediate cab step. Intermediate steps shall be full width of the doorstep area and constructed from embossed aluminum tread plate with black textured finish.

CAB STEP HEIGHTS

The distance from level ground to the first cab step shall be 19-21 inches (24" with Independent Front Suspension), without using swing-down style or under-cab "stirrup" auxiliary steps.

The distance from first cab step to intermediate step shall be approximately 12.5 inches front and rear.

The distance from intermediate step to cab floor shall be approximately 9.5 inches in the front and 12 inches in the rear.

CAB DOORS

All cab doors shall be "Barrier Type" and designed not cover the step well area. Each cab door shall be flush type with a minimum opening of 85 degrees.

The front doors shall be approximately 40" inches wide by 67" inches tall. The doors shall have a two-piece window, one operational and one fixed. The combined viewing area shall be approximately 796 square inches. For added safety, the front door windows shall slant down for maximum visibility.

The rear doors shall be approximately 34" inches wide by 75" inches tall. The doors shall have a two-piece window, one operational and one fixed. The combined viewing area shall be approximately 867 square inches. There crew area windows shall have a dark tint applied.

The doors shall include a bulb style rubber seal around the perimeter of each door frame

ensuring a weather tight fit.

The cab doors shall use internal and external paddle latches with a rubber gasket isolating the latch from the painted outside surface. The external latch shall have a black painted finish and the interior stainless steel. Both latches shall be oversized for easy access with a gloved hand.

Dovetail catch assemblies shall be installed in the doorjamb. The dovetail catch shall be V-shaped providing a positive catch and release system.

CAB DOOR LOCKS

There shall be individual manual twist type door locks at each door handle. In accordance with FMVSS 206, all exterior door locks shall be keyed alike.

WINDOW REGULATORS

All cab door windows shall be manually operated.

FIXED CAB WINDOW, LEFT SIDE

A window of not less than 16-1/2" wide by 33-1/2" high shall be installed in the left sidewall of the cab between the front and rear door. The glass shall be tempered and retained with one-piece triple locking rubber lacing dark tint.

FIXED CAB WINDOW, RIGHT SIDE

A window of not less than 16-1/2" wide by 33-1/2" high shall be installed in the right sidewall of the cab between the front and rear door. The glass shall be tempered and retained with one-piece triple locking rubber lacing dark tint.

CAB TILT LOCK

The cab shall be supported at four points. At the front, there shall be two center bonded bronze bushings. At the rear, there shall be two hydraulic locking latches.

The cab shall tilt 45 degrees by means of a pair of hydraulic cylinders driven by the electric pump. The tilt system geometry shall be designed in such a way that the maximum hydraulic pressure in the system does not exceed one-half the pressure rating of the cylinders or pump when the cab is empty. This allows the Fire Department to leave some equipment in the cab when maintenance is required (although this equipment must be secured).

Once the cab is fully tilted, a safety latch shall automatically engage and act as a positive lock. The lock is released by a pull cable. The hydraulic cylinders shall be equipped with velocity fuses to prevent the cab from falling, should the hydraulic system fail.

The front of the cab pivots and rides on the center bonded bushings by means of lubricated pivot pins that retain the cab yoke in the bushings. The bushings allow limited movement of the cab, and isolate the cab from noise and vibration.

The rear mounts consist of a pair of hydraulic cab latches mounted on rubber cushioned mounting brackets. Latches release when the pressure in the tilt system exceeds 500 PSI.

An ignition interlock system shall be installed for cab tilt operation. Cab tilt operation requires the master battery switch to be in the on position with the parking brake applied.

CAB TILT PUMP

An electric over hydraulic cab lifting pump shall be provided to tilt the cab for engine and transmission service. The pump shall be operated by a remotely wired control box with coiled cord, weather resistant plug, and receptacle. An interlock shall be provided preventing the cab from inadvertently rising until the transmission is placed in the neutral position and the parking brake is set.

An auxiliary manual pump shall be installed.

HEATING/AIR CONDITIONING SYSTEM

The apparatus shall be equipped with heater-air conditioner units.

Heaters shall be plumbed with a shut off valve at the engine.

Roof top condenser housings shall be black in color.

SEAT MATERIAL

The seats shall be covered with durable wear material.

SEAT COLOR

The cab seats shall be black in color.

DRIVER'S SEAT

The driver's seat shall be a high-back with air ride suspension. The seat shall have 4-way adjustability by the driver in accordance with SAE J1517. The seat shall be equipped with an integrated 3-point seat belt with an automatic retractor. The belt shall be red in color to meet current NFPA requirements. Embroidered with Salem Fire Patch.

OFFICER'S SEAT

The officer's seat shall be a SCBA non-suspension seat. Seat back shall include a spring-loaded flip-up headrest. The seat shall be equipped with an integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The belt shall be red in color to meet current NFPA requirements. Embroidered with Salem Fire Patch.

Seat shall be equipped with a SCBA mounting system.

CREW SEAT, REAR SIDE REAR FACING

None to be installed

COMPATRMENT, DRIVERS SIDE OUTBOARD REAR FACING

One EMS compartment constructed of 1/8' aluminum shall be mounted in the cab. It shall be painted to match the cab interior. The compartment shall be fitted with a Amdor roll up door, non-locking. This shall be a full height cabinet having 4 shelves with LED lighting strips provided on both sides controlled by an automatic door switch. This compartment shall be wired to accommodate charging units for flashlights, TI camera, multi gas meters while on shore power.

COMPARTMENT PASSANGER SIDE OURBOARD REAR FACING

This shall be a half height compartment 30" high. The compartment shall be fitted with radius track door traveling over the top and down the rear of the compartment. This compartment shall 2 shelves with LED lighting strips provided on both sides controlled by an automatic door switch. A shield shall be installed to keep articles from being caught in the door track and jamming the roll up door.

CREW SEATS, INBOARD FORWARD FACING

Two-(2) inboard, forward facing seats shall be installed in the crew area. The seats shall be SCBA non-suspension seats. Seat backs shall include spring-loaded flip-up headrest. The seat shall be equipped with a 3-point seat belt. The belts shall be red in color to meet current NFPA requirements. Embroidered with Salem Fire Patch.

Seats shall be equipped with a SCBA mounting system.

FRONT GRILLE

The front grille shall be a cast aluminum assembly with 430 square inches of open area. The grille shall be backed with an aluminum honeycomb mesh to protect the radiator.
Grille shall be finished black.

SIDE INTAKE GRILLES W/EMBER SEPARATOR

Black finished stainless steel grilles shall be installed approximately 70" above ground level one-(1) each side cab between the front and rear cab doors. The grilles shall have a minimum open area of not less than 119 square inches serving as an air intake and warm air dispersant system.

An Ember Separator shall be installed between the stainless steel grill and the air filter system allowing fresh air to pass through to the engine while preventing particles of .039 inches (1.0 mm) or larger from entering the system in accordance with the latest version of NFPA easily accessible through the exterior stainless steel grille.

HEATED/REMOTE CAB MIRRORS

West coast style mirrors shall be installed on the cab front doors. The convex mirror shall be mounted above the flat lens assembly. Mirrors shall be finished black

EXTERIOR TRIM, REAR CAB STEP WELL

The rear cab door stepping surfaces shall be trimmed with aluminum tread plate with a black texture coat. There shall be tread plate covers that provide access to the chassis battery system.

TREAD PLATE BACK OF CAB

The entire back wall of the cab shall be covered with 1/8" (.125") thick aluminum tread plate. The tread plate shall be coated with black texture coat and fastened to the cab with stainless steel fasteners. A bead of caulking shall be applied to the perimeter of the tread plate.

INTERIOR CAB FINISH

The interior of the cab shall be painted dark gray. The cab metal finish shall be covered with a

coat of adhesion promoting primer.

The headliner (front and rear) and rear wall (if applicable) shall be covered with heavy-duty gray vinyl.

FLOOR MATS/ENGINE TUNNEL COVERING

The floor mats and engine tunnel shall be covered with gray pebble grain vinyl with 1/4" (.250") foam backing. The edges of the floor mats shall be trimmed with black aluminum angle.

CAB GRAB HANDLES, INTERIOR

Two-(2) interior grab handles installed in the cab on the "A" posts, one-(1) each side. The grab handles shall be constructed of rubberized steel.

Four-(4) interior grab handles installed in the cab, one-(1) each side on top of the front door panels adjacent to fixed window and one-(1) each side on the rear door panels. The grab handles shall be constructed of 1-1/4" knurled stainless steel. The gab rails shall be mounted with chrome plated end stanchions.

There shall be one-(1) interior grab handle installed on the inside of each rear cab door. The handles shall extend horizontally with width of the window just above the window sill. The grab handles shall be constructed of bright stainless steel.

UPPER DOOR PANELS

There shall be four-(4) interior upper front and rear door panels installed extending from the window down to the lower kick plate. The color of the panels shall match the interior of the cab unless otherwise specified.

LOWER DOOR PANELS

There shall be four-(4) interior lower front and rear door panels installed extending from the window down to the lower kick plate. The color of the panels shall match the interior of the cab unless otherwise specified.

DOOR OPEN WARNING LIGHTS

There shall be four-(4) flashing amber LED lamps installed in the cab, one-(1) on the lower door panel of each cab door. These lamps will activate when cab doors are open and parking brake is activated.

ENGINE TUNNEL EQUIPMENT MOUNTING PLATE

There shall be one-(1) equipment mounting plate installed on the engine tunnel.

INSTRUMENTATION

For easy viewing, gauges shall be white faced with black lettering and adjustable intensity, LED backlighting. In order to reduce replacement and maintenance costs, the gauges provided shall be separate from one another and not in a cluster or arrangement. The gauges shall meet SAE J-1939 protocol to eliminate redundant sending units. Gauges must be fully sealed to 6 psi. Gauges shall have an operating temperature range of -40F to 185F. The gauge crystal shall be polycarbonate, anti-fog, and anti-scratch coated. The panels shall be divided into groups of instruments that make identification sensible and easy to view.

The following panels shall be included:

PART 27 - One driver side hinged gauge panel
PART 28 - One driver side message center and indicator light panel
PART 29 - Driver side pump shift panel (if required)
PART 30 - Driver side park brake panel
PART 31 - Driver side diagnostic connector
PART 32 - Driver side ignition/climate control panel
PART 33 - Center mounted rocker switch and siren panel, with a maximum capacity of 20 switches
PART 34 - Officer side information panel

The following instruments shall be included:

PART 35 - Dial Type speedometer with digital odometer and trip odometer that is active when pumping
PART 36 - Dial Type tachometer with digital hour meter and trip hour meter along with a digital, four-line diagnostic display
PART 37 - Dial Type engine oil pressure gauge with warning light and alarm
PART 38 - Dial Type water temperature with warning light and alarm
PART 39 - Dial Type transmission temperature with warning light and alarm
PART 40 - Dial Type front air pressure gauges with warning light and alarm
PART 41 - Dial Type rear air pressure gauge with warning light
PART 42 - Dial Type voltmeter
PART 43 - Dial Type fuel level gauge with low fuel indicator level

- Dial Type Diesel Exhaust Fluid gauge with low level indicator
- Air cleaner restriction light
- High beam indicator
- Parking brake indicator
- Turn signal indicators
- Diagnostic indicators for airbag, engine, transmission, and ABS

An anti-lock braking system (ABS) test switch and parking brake control valve shall be located to the right of the steering column.

SERVICE ACCESS

The driver's instrumentation area shall be made of textured black non-glare panels affixed to the aluminum dash. There shall be a single gauge panel. Access to the gauge clusters shall be accomplished simply by releasing the hardware without use of tools and pulling the panel outward. Other gauge access designs are not acceptable.

The chassis electrical panel shall be located in the center of the aluminum dash, between the switch panel and the windshield. There shall be a lift up cover, with two (2) recessed lift-and-turn latches for quick access to the panel. The underside of the panel shall have a pre-printed diagram that clearly depicts the function of each circuit breaker and relay. The vehicle load manager shall be located in this panel. The opening to the electrical shall measure approximately 19” wide near the switch panel and 37” wide toward the windshield.

Electronic diagnostic connections for the engine, transmission, and ABS brakes shall be

located in the lower-left panel on the cab dash.

DRIVER'S INFORMATION DISPLAY

There shall be a display panel on the driver's gauge cluster that will illuminate various caution and warning indicator lamps. This display also contains a display for specific and user selectable data. The display unit reads data from the J1939-11 powertrain communications network. Display will be capable of but not limited to the following features:

- Auto Self-Test
- Viewing the state of each digital or analog input to the unit
- Viewing the state of each output
- Allows users ability to set service reminders by distance or hours of operation
- Allows users ability to set data screens in various formats i.e. bar graph / text
- Viewable active and stored powertrain ECU fault data.
- Diagnostics screen allows user to select and view a specific source such as engine / transmission
- Display is selectable between English and metric readings.
- Messages and Icons will pop up in display when a condition exists such as:

Transmission oil life, filter or other service needed as reported by the Allison Transmission ECU

Engine conditions: Low oil pressure, high coolant temperature, low coolant level, water in fuel, check / stop engine, regeneration needed, high exhaust temp

Indicator lights may also accompany pop up messages:

- Door ajar indicator will also pop up a "Do Not Move Vehicle, Check all doors and Items that Raise or extend beyond apparatus cab or body" message

CHASSIS ELECTRICAL SYSTEM

The chassis shall include a single starting electrical system which shall include a 12 volt direct current system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311 degree Fahrenheit insulation. All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 257 degree Fahrenheit minimum high temperature flame retardant loom.

CHASSIS COLOR CODED WIRING

All chassis wiring shall be type "GXL" in accordance with S.A.E. J1128 and NFPA-1901. ALL wiring shall be **COLOR CODED** and continuously marked with the circuit number and function.

A battery "loop back" ground circuit shall be supplied for the EDS system to reduce the possible effects of Electromagnetic and Radio Frequency Interference.

The chassis cab, engine and transmission shall be electrically bonded to the chassis frame rails with braided ground straps.

VEHICLE DATA RECORDER

Apparatus shall be equipped with a Class1 "Vehicle Data Recorder and Seat Belt Warning

System" (VDR/SBW) that is connected to the power train CAN (Controller Area Network) bus consisting of transmission (TCM), engine control (ECM) and antilock brake (ABS) modules mounted on the apparatus. The VDR/SBW will function per NFPA 1901-2009 sections 4.11 (Vehicle Data Recorder) utilizing the power train's J1939 data and 14.1.3.10 (Seat Belt Warning) using the Class1 "Seat Belt Input Module" for seat occupied and belt status information.

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

There shall be a seat belt indicator system supplied in the cab. The indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

A display panel shall be supplied in the dash area. The panel shall have an audible indicators and a red light display to indicate that a seat belt has not been fastened.

SEAT BELT WARNING SYSTEM

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

STEERING COLUMN

The steering column shall be a Douglas Autotec tilt and telescope. A lever mounted on the side of the column shall control the tilt and telescope features. A Signal-Stat (self-canceling) turn signal switch shall be mounted to the column. The steering shaft from the column to the meter box shall have a rubber boot to cover the shaft slip and a second rubber boot to seal the passage hole in the floor.

The steering wheel shall be 18 inches in diameter.

The Signal-Stat turn signal switch shall include the following functions:

- Left and right turn signals
- High beam dimmer control
- Hazard warning switch
- Two speed with intermittent windshield wiper control
- Windshield washer control

12-VOLT FUSE BLOCK

There shall be one (1) fuse block installed on the side of the engine doghouse rearward of the officer's seat in a protective housing. The unit shall include six-(6) 12 volt constant power supply ports and grounding buss with easily changeable fuses. The unit shall have a 100 amp total operating range.

TWO WAY RADIO INSTALLATION

Motorola Model CDM 1250 or its successor model shall be installed by the apparatus manufacturers radio shop with the location of both the radio and microphone to be determined at the time of the pre-construction visit.

RADIO ANTENNA MOUNT(S)

There shall be one (1) standard antenna-mounting base, with 17 feet of coax cable and weatherproof cap provided for a two (2)-way radio installation. The mount(s) shall be located on the cab roof, just to the rear of the light bar.

RADIO POWER CIRCUIT

A 50 amp switched battery power circuit with manual reset shall be installed to activate the radio.

POWER AND GROUND STUDS

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40 amp battery direct load and one (1) power stud shall be capable of carrying up to a 20 amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud.

12-VOLT POWER OUTLET(S)

There shall be two (2) 12-volt power outlets provided in the cab.
The power outlet(s) shall be wired to direct battery power with the appropriate wire size and fuse.

USB CHARGING PORT

There shall be one (1) dual USB charging port provided in the cab.
The charging port shall be wired to direct battery power with appropriate wire size and fuse.

ELECTRONIC SIREN

There shall be one-(1) Whelen model WS-295HFS2 hands free siren control head. The siren button shall be activated when the siren is in hands free mode. The siren shall incorporate a rotary selector. There shall be an on/off power switch, a push button switch for manual siren or air horn tones, and a noise-canceling microphone with volume control.

Location of siren control to be determined upon finalization of dash configuration

HORN, ELECTRIC

Two (2) electric horns (one high note and one low note) activated by the steering wheel horn button shall be provided.

BACK-UP ALARM

There shall be one-(1) electronic back-up alarm installed at the rear of the apparatus. The alarm shall be wired to the transmissions output signal and is automatically activated when the transmission is shifted into reverse.

LIGHTS, CAB DOME

Six-(6) combination clear/red LED dome lights with one-(1) piece bezels shall be installed in the cabs headliner. The push on / push off switches for the clear and red dome lights are integrally mounted in the dome lights lens.

The white LED lights shall be activated when any cab door is in the open position automatically switching off all red lights currently on and reactivated when the door is closed.

LIGHT, DOOR AJAR

A door ajar light shall be located on the cab's ceiling. This light shall be a self-contained flashing light that activates when any of the apparatus doors are open. The lens color shall be red.

An audible alarm shall be installed in conjunction with the door-ajar warning light system. The panel only operates when the ignition switch is in the “On” position and the parking brake released.

LIGHTS, STEP WELL

Four-(4) Whelen OS Series LED model 0SC0EDCR shall be provided, one-(1) in each cab step well. All step well lights shall be illuminated when any door is opened. The steady burn illumination light shall incorporate three clear LED and a clear non-optic hard coated polycarbonate lens. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The encapsulated assembly shall provide protection against environmental elements. The solid state illumination light shall be vibration resistant. An installation kit including mounting hardware, neoprene gasket and 45 degree angle chrome housing shall be provided for surface mounting. The 0AC0EDCR will contain a 12” non-terminated pigtail. The illumination light meets SAE J592 requirements and is covered by a five year factory warranty.

LIGHT, CAB MAP

One-(1) gooseneck map light shall be installed on the officer's side of the cab operated by an on/off switch mounted on the lights base.

LIGHTS, ENGINE MAINTENANCE

Two-(2) white 4" LED round lights shall be mounted under the cab. The lights shall automatically activate when the cab is tilted.

STANDARD FRONT LIGHTING

The headlamps, turn signals, front warning, and intersection lights shall be located within black warning light modules.

HEADLIGHTS

Four-(4) LED rectangular headlights shall be installed in the warning light modules, two-(2) each side. The headlights shall be mounted in the lower positions of the module.

DAYTIME RUNNING LIGHTS W/ALTERNATING HEADLIGHT FLASHER

The apparatus shall be equipped with Daytime Running Lights. The Daytime Running lights shall operate only when the ignition switch is in the "On" position and the parking brake is released. The headlight circuitry shall override the Daytime Running Lamp feature when the headlight switch is in the "On" position. The vehicle identification lamps shall not illuminate in the Daytime Running Lamp mode.

A solid state-alternating flasher shall be installed on the high beam side of the headlamps. A rocker switch located in the cab shall control the module. If high beam lights are required, activating the headlight dimmer switch shall automatically over-ride the flasher when the headlight switch is in the "On" position.

TURN SIGNALS

Amber LED turn signal lamps shall be installed directly above the low beam headlights in the warning light modules.

TURN SIGNAL/MARKER LIGHTS

Amber LED lamps shall be mounted outboard of the turn signal at a 45-degree angle off the front of the cab. The lamps are part of the warning light module, and are visible from both the front and side of the vehicle.

LED CORNERING LIGHTS

Flashing LED-cornering lamps shall be mounted below the marker light in the warning light module. The lamps are mounted at a 45-degree angle off the front of the cab and are visible from the side and front of the vehicle.

DOT LIGHTS

There shall be five-(5) LED marker lights installed on the cabs roof located as high as practical and spaced per DOT guidelines.

LIGHTS, INBOARD LOWER FRONT WARNING

Two-(2) warning LED lights shall be installed, one-(1) each side inboard of the turn signal in the warning light modules.

CAB GROUND LIGHTS

There shall be one-(1) 4" LED light mounted under each cab door illuminating the area below providing a safe entrance and exit for cab occupants. All cab ground lights shall automatically activate when any cab door is opened and by a switch located on the dash.

CAB PAINT FINISH, TWO TONE

The custom cab shall have a two-tone paint finish. The paint colors shall be furnished by the customer. The break in the color shall be at the bottom of the chassis window, unless otherwise specified by the department.

All cab exterior components including doors and glass, shall be removed. The complete cab exterior shall be thoroughly sanded, solvent cleaned and finished with high luster polyurethane paint before mounting of body to assure full coverage of paint to all surfaces.

UPPER CAB PAINT FINISH

The upper cab exterior shall have no mounted components prior to painting to assure full coverage of metal treatments.

These steps are followed as recommended by the paint manufacturer to provide a lasting and high quality gloss finish. All paint products shall be provided by DuPont.

UPPER CAB PAINT COLOR/CODE

The upper cab paint code shall be Black, 99.

PRIMARY/LOWER CAB PAINT FINISH

The primary/lower cab exterior shall have no mounted components prior to painting to assure full coverage of metal treatments.

These steps are followed as recommended by the paint manufacturer to provide a lasting and high quality gloss finish. All paint products shall be provided by DuPont.

PRIMARY/LOWER CAB PAINT COLOR/CODE

The primary/lower cab paint code shall be Red, 854008.

CARRYING CAPACITY PLATE

A permanently attached carrying capacity plate in accordance with NFPA 1901 Standards shall be installed in plain view of the driver.

The tag shall include the following:

- Overall height
- Overall length
- GVWR
- Seating capacity

SEATING CAPACITY PLATE

A permanently attached Seating Capacity Plate shall be mounted in the cab in plain view that reads “Seating Capacity – 4 People”.

Each seating position that is not, intended to be used during transit shall be individually labeled as follows:

"WARNING THIS SEAT IS NOT TO BE OCCUPIED WHILE VEHICLE IS IN MOTION"

OCCUPANCY/SEAT BELT PLATE

Occupancy / Seat Belt plates shall be provided and installed visible from each seated position, which reads:

"OCCUPANTS MUST BE SEATED AND BELTED WHEN THE APPARATUS IN MOTION"

"DO NOT WEAR HELMET" PLATE

A plate shall be installed visible from each seating position that states:

"DO NOT WEAR HELMET WHILE SEATED"

OVERALL HEIGHT/LENGTH/WEIGHT PLATE

An Overall Height/Length/Weight information plate shall be installed that can be clearly identified and visible to the driver while in the seated position showing the apparatus completed overall height, length, (in feet and inches) and gross vehicle weight (in tons) current to the apparatus manufactured date.

If changes to the vehicle occur while in service, the department must revise the overall height-length-weight plate.

FLUID CAPACITY PLATE

A permanently affixed fluid date plate shall be installed in the driving compartment to

indicate the type and quantities of the following fluid used in the vehicle.

- Engine Oil
- Engine Coolant
- Chassis Transmission Fluid
- Pump Transmission Lubrication Fluid (if applicable)
- Pump Primer Fluid (if applicable)
- Drive Axle Lubrication Fluid
- Air Conditioning Refrigerant
- Air Conditioning Lubrication Oil
- Power Steering Fluid
- Cab Tilt Mechanism Fluid
- Transfer Case Fluid
- Equipment Rack Fluid
- Air Compressor System Lubricant
- Generator System Lubricant
- Front Tire Pressure - Cold
- Rear Tire Pressure - Cold

The following information shall also be supplied on the Fluid Data Plate:

- Chassis Manufacturer
- Production Number
- Paint Number
- Year Built
- Date Shipped
- Vehicle Identification Number

MOVEMENT WARNING PLATE

A permanently affixed Movement Warning plate shall be installed near the door ajar light that reads:

“DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

"DO NOT RIDE" PLATE

A permanently affixed "DO NOT RIDE" warning plate shall be installed located on the stepping areas of the vehicle warning personnel that riding on or in these areas while the vehicle in motion is prohibited.

PUMP ENCLOSURE, SIDE CONTROL

The pump enclosure superstructure shall be constructed of aluminum tubing, channel, angle, and break-formed components. The framework shall be formed by beveled aluminum alloy extrusions and electrically seam welded both internally and externally at each joint using 5356 aluminum alloy welding wire. The main, frame work shall be constructed of 3.00 x 3.50, 6063-T6 aluminum extrusions. The break-formed components shall be constructed from 3/16" (1.875) aluminum.

The crossmembers support the substructure and the exterior panels independently from the

cab and body. The crossmembers shall be isolated from the frame rails using torsion mounts. The pump enclosure shall be supported at the top of the frame rails, in a minimum of four-(4) places. The module shall be secured with angle brackets bolted to both the pump enclosure support cross rails and the side of the chassis frame rails. This design is required to eliminate shifting and stress on the pump enclosure, pump panels, and running boards.

The front of the pump module shall be covered with aluminum tread plate to keep road debris from the front of the pump. Front of pump module shall be finished in black texture coat.

The pump enclosure provides an area above the pump for the installation of crosslays or dunnage area.

Any pump enclosure constructed using any material other than aluminum or utilizing any other mounting method is not acceptable.

PUMP PANELS

The operator's controls and gauges shall be mounted on pump panels constructed of 1/8" (.125) black anodized, non-glare aluminum.

The operator's master gauge panel shall be vertically hinged with push style latch for access to gauges and auxiliary controls.

The operator's control panel shall be located below the master gauge panel and constructed of 1/8" (.125) black anodized, non-glare aluminum.

All gauges and controls shall be properly identified with color-coded metal tags. The tags shall be affixed with 3M brand industrial adhesive. The gauges shall be functionally grouped above each control.

The right side upper panel shall be vertically hinged with double doors and push style latches for pump compartment access. The doors shall be constructed of .125" aluminum tread plate.

The right side lower panel shall be removable for serviceability. The panel shall be constructed of 1/8" (.125) black anodized, non-glare aluminum.

All instruments and controls shall be provided and installed as a group at the pump panel. The central midpoint or centerline of any valve control shall be no more than 72" vertically above the ground or platform that is designed to serve as the operator's standing position. The instruments shall be placed to keep the pump operator as far as practical from all discharge and intake connections and in a location where they are readily visible and operationally functional while the operator remains stationary.

FULLY HINGED PUMP PANEL, RIGHT SIDE

One-(1) vertically hinged pump panel with push style latch shall be installed and constructed of the same material as stated in the pump module specifications. The hinged panel replaces the current right hand lower removable panel for ease of access to the pump compartment during routine maintenance.

PUMP COMPARTMENT ACCESS PANEL, FRONT

A removable maintenance panel shall be installed at the front of the pump compartment

manufactured from 3/16" aluminum tread plate.

PUMP PANEL LIGHT, LEFT SIDE

One-(1) individual OnScene Access LED pump panel light with on/off switch shall be mounted under the light shield left side. For optimum visibility during nighttime operations, the light shall be mounted as high as possible.

PUMP PANEL LIGHT, RIGHT SIDE

One-(1) individual OnScene Access LED pump panel light with on/off switch shall be mounted under the light shield right side. For optimum visibility during nighttime operations, the light shall be mounted as high as possible.

LIGHTS, PUMP COMPARTMENT

Two-(2) compartment lights shall be installed inside the pump compartment (one on each side of compartment) for inspection or routine maintenance wired to the pump panel light switch.

RUNNING BOARD, LEFT SIDE

A running board shall be provided on the left side of pump module constructed of anodized aluminum extrusion slotted, punched, and raised to provide superior traction during inclement weather operations. Bolted to the pump modules substructure the running board shall be spaced out 1/4" from the module for additional run off. Running board shall be finished in black texture coat.

The running board stepping surface shall comply with the latest version of NFPA 1901.

RUNNING BOARD, RIGHT SIDE

A running board shall be provided on the right side of pump module constructed of anodized aluminum extrusion slotted, punched, and raised to provide superior traction during inclement weather operations. Bolted to the pump modules substructure the running board shall be spaced out 1/4" from the module for additional run off. Running board shall be finished in black texture coat.

The running board stepping surface shall comply with the latest version of NFPA 1901.

HANDRAILS, ABOVE THE PUMP PANEL

One-(1) pair of 12" handrails shall be installed above the pump panels, one-(1) each side. The handrails shall be constructed from 1-1/4" knurled aluminum.

The handrails shall meet or exceed NFPA 1901 requirements.

PRESSURE GAUGES, 2-1/2"

The discharges shall be provided with 2-1/2" pressure gauges. The discharge gauges shall be liquid filled with a solution to assure visual readings and reduce inner lens condensation. The body of the gauges shall be constructed of Zytel nylon with chrome-plated bezels. The face of the gauges shall be Spun Metal with black background and white markings reading from zero to 400 PSI.

The gauges shall be installed at each discharge control on the pump operator's panel. On side mount pump applications with push pull handles each gauge shall incorporate a Thuemling Instrument Group 1-piece module assembly consisting of the gauge, push-pull and trim bezel.

The pressure gauges shall maintain performance of all features and be free from defects in material and workmanship which includes fluid fill leakage and discoloration for seven years.

GAUGE BEZELS

The pump panel master and pressure gauge bezels shall be standard chrome finish.

PUMP PANEL TAGS

All discharges, gauges, and controls will be properly identified by color-coded metal tags. The metal tags will be affixed with 3M industrial adhesive.

PUMP ASSEMBLY

The entire pump shall be cast, manufactured, and tested at the pump manufacturer's factory.

The pump shall be driven by a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance specs as outlined by the latest NFPA Pamphlet No. 1901. The pump shall be free from objectionable pulsation and vibration.

The pump body and related parts shall be of fine grain, cast iron alloy, with a minimum tensile strength of 30,000 PSI. All moving parts in contact with water shall be of high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.

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

The pump shall have one double suction impeller. The pump body shall have two opposed discharge volute cutwaters to eliminate radial unbalance.

Pump shaft to be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing shall be located immediately adjacent to the impeller (on side opposite the drive unit). The sleeve bearing is to be lubricated by a force-fed, automatic oil lubricated design, pressure balanced to exclude foreign material. The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.

The pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined, hand-ground and individually balanced. The vanes of the impeller intake eyes shall be hand ground and polished to a sharp edge, and be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

The impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wraparound double labyrinth design for maximum efficiency.

The pump shaft shall be heat-treated, electric furnace, corrosion resistant, stainless steel, to be super-finished under packing with galvanic corrosion (zinc separators in packing) protection

for longer shaft life. Pump shaft must be sealed with double lip oil seal to deep road dirt and water out of drive unit.

DRIVE UNIT

The drive unit shall be cast and completely manufactured and tested at the pump manufacturer's factory.

Pump drive unit shall be of sufficient size to withstand up to 16,000 ft. Lbs. Torque of the engine in both road and pump operating conditions. The drive unit is designed with ample capacity for lubrication reserve to maintain proper operating temperature.

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

All gears drive and pump, shall be of highest quality electric furnace, chrome nickel steel. Bores shall be ground to size and teeth integrated, crown-shaved and hardened, to give an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrusts.

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

If drive unit is equipped with a power shift, the shifting mechanism shall be a heat-treated, hard-anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.

Three warning lights with plates shall be provided to alert the operator when the drive unit has fully shifted from road to pump position. Two lights shall be located on the cabs instrument panel and the other on the pump panel adjacent to the throttle.

A 3" clapper check valve shall be installed between the suction side of the pump and the tank-to-pump valve. This 3" clapper valve shall remove the possibility of a water surge expanding the booster tank.

Pump system shall have an integral discharge manifold system that allows a direct flow of water to all discharge valves.

PACKING GLANDS

The pump shaft shall have only one packing gland located on the inlet side of the pump. It shall be of split design for ease of repacking. The packing gland must be a full circle threaded design to exert uniform pressure on packing and to prevent "cocking" and uneven packing load when it is tightened. It shall be easily adjusted by hand with rod or screwdriver, with no special tools or wrenches required. The packing rings shall be of a unique, permanently lubricated, long life graphite composition and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion.

PUMP SHIFT

An air operated pump shift shall be installed in the chassis cab to engage the fire pump.

Provisions shall be made for placing the pump drive system in operation using controls and switches that are clearly identified and within convenient reach of the operator while in the cab.

A green indicator light shall be installed on the cab dash and labeled "Pump Engaged".

Where an automatic chassis transmission is provided, a green indicator light in the driving compartment and a green indicator light located at the pump operator's position shall be provided and shall be energized when both the pump shift has been completed and the chassis transmission is engaged in pump gear.

The light in the driving compartment shall be labeled "OK TO PUMP". The light on the pump operator shall be positioned adjacent to and preferably above the throttle control and shall be labeled "Warning: DO NOT OPEN THROTTLE UNLESS LIGHT IS ON". The green light on the pump operator's panel shall be energized when the pump is engaged, the transmission is in drive, and the parking brake is set.

PUMP PRIMING SYSTEM

Pump shall be equipped with an air powered priming system.

PUMP ANODE(S)

Two (2) pump anode(s) shall be installed on the pump for corrosion protection.

The anode system provides a sacrificial metal alloy which helps to diminish or prevent pump and pump shaft galvanic corrosion.

U.L. TEST POINTS

An Underwriters Laboratories approved engine speed counter shall be located on the pump panel to provide a means to certify the tachometer. In addition, two (2) U.L. test plugs shall be pump panel mounted for testing of vacuum and pressures.

U.L. CERTIFICATION, 1500 GPM

The vehicle shall be third party tested and certified by Underwriters Laboratories, Inc. UL testing is recognized as a leading, third party, product safety certification organization for over 100 years. UL has served on the NFPA (National Fire Protection Association) technical committee for over thirty-(30) years.

The testing organization must meet the following minimum requirements:

- Must be nationally recognized testing laboratory recognized by OSHA
- Must comply with the ASTM (American Society for Testing Materials) standard E543 "Determining the qualifications for nondestructive testing agencies"
- Must have more than forty (40) years of Automotive Fire Apparatus safety testing experience and more than fifteen (15) years of factory aerial device testing and Certification experience
- Must not represent, be associated with, or in the manufacture or repair of automotive fire apparatus

- Must provide proof of ten-(10) million dollars in excess liability insurance for bodily injury and property damage combined

The pump shall meet and perform the following test to receive a U.L. Certification.

- 100% of rated capacity at 150 PSI net pump pressure
- 100% of rated capacity at 165 PSI net pump pressure
- 70% of rated capacity at 200 PSI net pump pressure
- 50% of rated capacity at 250 PSI net pump pressure

PUMP TEST CERTIFICATION PLATE

A permanently affixed plate shall be installed at the pump operator's panel. It shall provide the rated discharge and pressures together with the speed of the engine as determined by the certification test for each unit. It shall also provide the position of the parallel/series pump used and the no load governed speed of the engine as stated by the engine manufacturer on a certified brake horsepower curve.

A label shall be provided on the pump operator's panel that states the following:
"Warning: Death or serious injury might occur if proper operating procedures are not followed". The pump operator as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with water hydraulics hazards and component limitations.

SUCTION HEADERS

A 6" NST non-gated suction header with removable screen, and long handled cap shall be provided on the left side of the pump.
A 6" NST non-gated suction header with removable screen, and long handled cap shall be provided on the right side of the pump with an open flange to accept the front suction plumbing.

FRONT SUCTION INLET

A 5" non-gated front suction inlet shall be installed vertically thru the front bumper extensions gravelshield and turn 90 degrees forward terminating 5” FNPT x 5” MNST with chrome plated adapter and strainer.
The front suction plumbing shall be constructed from black iron plumbing with victaulic or roustabout couplings at each end, the plumbing shall be contoured and form fitted routed along the chassis frame rails connecting the pumps suction header plumbing to the front 90 degree elbow.
A warning plate permanently affixed in close proximity of the suction inlet shall be installed stating:

"WARNING - SERIOUS INJURY OR DEATH COULD OCCUR IF INLET IS SUPPLIED BY A PRESSURIZED SOURCE WHEN THE VALVE IS CLOSED".
A 3/4" ball valve shall be provided for the front suction located at the lowest point of the plumbing and properly labeled. The valve shall have a cast bronze body, with a 1/4 turn, chrome plated bronze ball, reinforced Teflon seals, and blow-out-proof stem rated to 600 PSI.
A 6" swivel elbow rotating 180 degrees shall be installed in the front suction plumbing.

THERMAL RELIEF VALVE W/LIGHT

The pump shall be equipped with a thermal relief valve. The valve automatically monitors water temperature and is preset to open 120 degrees Fahrenheit. A display shall be provided on the pump panel.

INTAKE RELIEF VALVE

There shall be an suction side relief valve provided in the pump system. The relief valve is adjustable from 50-175 psi and set at the factory at 125 psi.

PRESSURE GOVERNOR and ENGINE MONITORING DISPLAY

Fire Research PumpBoss series PBA400-A00 pressure governor and monitoring display kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 6 3/4" high by 4 5/8". The control knob shall be 2" in diameter with no mechanical stops, have a serrated grip, and a red idle push button in the center. It shall not extend more than 1 3/4" from the front of the control module. Inputs for monitored engine information shall be from a J1939 databus or independent sensors. Outputs for engine control shall be on the J1939 databus or engine specific wiring. Inputs from the pump discharge and intake pressure sensors shall be electrical.

The following continuous displays shall be provided:

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

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. All LED intensity shall be automatically adjusted for day and night time operation.

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

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

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

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

The pressure governor and monitoring pressure display shall be programmed at installation for a specific engine.

MASTER GAUGES, 4-1/2"

Two compound 4-1/2" master gauges shall be provided and installed on the pump operator's panel. The intake and discharge gauges are liquid filled with a solution to assure visual readings and reduce inner lens condensation. The body of the gauges shall be constructed of Zytel nylon with chrome-plated bezels. The face of the gauges shall be Spun Metal with black background and white markings accurate within 1%.

The pressure gauges shall maintain performance of all features and be free from defects in material and workmanship which includes fluid fill leakage and discoloration for seven years.

FILL SUBSURFACE/RETURN LINE

There shall be one-(1) subsurface/return line installed in the booster tank. The subsurface/return line shall prevent aeration of the water in the booster tank under low water conditions. The subsurface/return line piping shall be of the same size as the “Tank Fill”.

TANK TO PUMP

One (1) 3” ball valve shall be installed between the pump and the water tank. The tank to pump valve shall be a quarter turn fixed pivot design constructed from bronze. The valve shall be controlled by a chrome push/pull locking “T” handle installed at the left pump panel.

VALVE, MASTER DRAIN

There shall be a master drain valve recessed mounted below the pump module under the side running board, connecting all drain lines, with the capacity to discharge water simultaneously from all locations to below the chassis frame rails.

TANK FILL

There shall be a 2" pump to tank fill line installed, with a 2" inline bronze valve and high-pressure flexible hose tested to 1200 PSI. The valve shall be (locking "T" handle) push-pull controlled at the pump operator’s panel.

ENGINE COOLER

The engine cooler shall be installed in-line from the discharge side of the pump, and installed in the engine cooling system. There shall be a 1/2", quarter turn valve installed thru the pump

panel and shall be clearly labeled.

PUMP COOLER

The pump shall have a 3/8" line installed from the pump discharge, to the water tank to cool the pump during long periods of pumping when water is not being discharged. The pump cooler shall be controlled from the pump operators panel by a 3/8" valve consisting of a cast bronze body with 1/4 turn chrome plated bronze ball, reinforced Teflon seals, and blow-out-proof stem rated to 600 PSI.

The valve shall be installed thru the pump panel and clearly labeled.

PLUMBING SYSTEM

All suction and discharge lines up to 3" shall be constructed of a minimum of Schedule 10 stainless steel pipe, where vibration or chassis flexing may damage or loosen threaded pipes, Victaulic or Roustabout couplings shall be used. All suction and discharge outlets shall have National Standard Threads (NST) and designed for 500 PSIG including, valves, drain cocks, lines, intake, and outlet closures, excluding the tank fill and tank to pump lines (tank side of the valves).

PUMP/PLUMBING PAINTING

The pump shall be painted black. This includes all intakes, discharges, manifolds, and associated valves.

AKRON PUSH-PULL CONTROL VALVE PACKAGE

All discharge valves shall be Akron Heavy-Duty Swing-Out push/pull controlled from the pump operator's panel unless otherwise specified.

The Akron Swing-Out Heavy-Duty valves are designed for operating pressures to 250 psi (17 bars)

- 10-year warranty against manufacturer's defects
- Available in 1"to 4" sizes
- 90° handle travel 316 stainless steel ball with Hydromax technology
- Improved sealing & increased gating ability
- Flow optimization reduces turbulence while in the gated position and requires lower operating forces
- No lubrication or regular maintenance required
- Simple two seated design (no O-Rings to cut or lose during assembly or maintenance)
- Wide range of available adapters
- Designed and tested to exceed NFPA requirements
- Cast, machined and assembled at our facilities in Wooster, Ohio

All valve packages shall meet current NFPA 1901 Standards for valve operating speeds when controlled by gear, electric actuator, or slow close device.

SUCTION, 2-1/2" LEFT FRONT PANEL

One-(1) 2-1/2" swing operated ball valve shall be installed at the pump panel, left front plumbed to the suction side of the pump with 2-1/2” piping, 2-1/2" FNST chrome inlet

swivel, brass inlet strainer, chrome plug with chain, and 3/4” drain valve.

A warning plate permanently affixed in close proximity of the suction inlet shall be installed stating:

"WARNING - SERIOUS INJURY OR DEATH COULD OCCUR IF INLET IS SUPPLIED BY A PRESSURIZED SOURCE WHEN THE VALVE IS CLOSED".

DISCHARGE ELBOWS

All 2-1/2" side discharge outlets shall terminate with chrome-plated 30-Degree elbows with 2-1/2" MNST threads, chrome vented cap and chain.

FRONT BUMPER DISCHARGE

There shall be one-(1) front discharge installed thru the gravelshield on the passenger's side of the hose well.
The front bumper discharge shall terminate 2" NPT x 1-1/2" NST with a 90-degree swivel.
One-(1) 2" brass valve with 3/4" drain shall be installed on the discharge side of the pump plumbed to the front swivel with flexible high-pressure hose and victaulic stainless steel couplings tested to 1200 PSI, the front discharge shall be push/pull controlled at the pump operator's panel.
A tread plate stop shall be provided preventing the front bumper discharge swivel from incidental contact with the cab.

NO. 1 CROSSLAY, 1-3/4" DOUBLE LAY

One-(1) pre-connected crosslay compartment shall be provided above the side mount operator's panel accommodating 200' of 1-3/4" double jacket hose. Stainless steel nylon guided rollers shall be installed at each end with stainless steel scuff plates around the perimeter to protect the painted surface.

One-(1) 2" ball valve with mechanical swivel shall be installed. The valve shall be plumbed to the crosslay with 2" high-pressure flexible hose and stainless steel couplings. The high pressure hose shall be tested to 1200 PSI. The crosslay valve shall be push-pull controlled at the pump operator's panel.

Each discharge is equipped with a 3/4 quarter-turn drain valve.

NO. 2 CROSSLAY, 1-3/4" DOUBLE LAY

One-(1) pre-connected crosslay compartment shall be provided above the side mount operator's panel accommodating 200' of 1-3/4" double jacket hose. Stainless steel nylon guided rollers shall be installed at each end with stainless steel scuff plates around the perimeter to protect the painted surface.

One-(1) 2" ball valve with mechanical swivel shall be installed. The valve shall be plumbed to the crosslay with 2" high-pressure flexible hose and stainless steel couplings. The high pressure hose shall be tested to 1200 PSI. The crosslay valve shall be push-pull controlled at the pump operator's panel.

Each discharge is equipped with a 3/4 quarter-turn drain valve.

CROSSLAY DIVIDER

One-(1) crosslay hosebed divider shall be provided manufactured from 1/4" (.250") smooth aluminum plate, extruded aluminum base mounted in an extruded track for horizontal adjustment, with radius corners, and DA sanded to prevent damage to the hose.

CROSSLAY COVER

There shall be a Hypalon crosslay cover provided with the apparatus secured by twist-lock connectors along the top, and Velcro closures on each end protecting the crosslay hose. The cover prevents hose from inadvertently deploying during normal operations meeting the current NFPA requirements.

The Hypalon end flaps shall be secured at the bottom using pushpins. The cover prevents hose from inadvertently deploying during normal operations meeting the current NFPA requirements.

The covers shall be black in color.

DISCHARGE, 2-1/2" LEFT FRONT PANEL

One-(1) Akron 2-1/2" Heavy-Duty ball valve with 3/4” drain shall be installed at the pump panel left front plumbed to the discharge side of the pump push/pull controlled from the pump operator's panel.

DISCHARGE, 2-1/2" LEFT REAR PANEL

One-(1) Akron 2-1/2" Heavy-Duty ball valve with 3/4” drain shall be installed at the pump panel, left rear, plumbed to the discharge side of the pump push/pull controlled from the pump operator's panel.

DISCHARGE, 4" RIGHT FRONT PANEL

One-(1) Akron 4" Heavy-Duty (Slo-Close) ball valve with 3/4” drain shall be installed at the pump panel, right front, plumbed to the discharge side of the pump equipped with 4" NST threads chrome cap and chain handwheel controlled at the pump operator's panel.

DISCHARGE, 2-1/2" RIGHT REAR PANEL

One-(1) Akron 2-1/2" Heavy-Duty ball valve with 3/4” drain shall be installed at the pump panel, right rear, plumbed to the discharge side of the pump push/pull controlled from the pump operator's panel.

DECK GUN PLUMBING, 3"

One-(1) Akron 3" Heavy-Duty (Slo-Close) inline valve with 3/4” drain shall be plumbed to the Deck Gun discharge outlet with 3” pipe terminating 3" FNPT x four-(4) bolt flange push-pull controlled at the pump operator's panel.

TELESCOPING MONITOR PIPE

Task Force Tips model XG18VL-PL manually telescoping waterway shall be installed. The waterway shall be capable of being lowered to deck level (or into a monitor well) for storage and transportation and shall be capable of being raised to an extended height of 18" by lifting a quick release latch located at the base of the extension tube. This latching device shall be capable of locking the waterway in either the raised or lowered position while maintaining the ability to horizontally rotate the monitor device 360 degrees.

A sensor shall be located on the waterway that signals a 12 volt indicator light installed in the cab to illuminate to indicate that the monitor is raised.

The aluminum riser shall have a 3" waterway; hardcoat anodized finish and be furnished with a 3" Victaulic inlet and a 3" male NPT outlet. The unit shall be covered by a five-year warranty.

MONITOR

An Akron Brass Portable ground base monitor item 3423 with two 2.5" NH clappered swiveled inlets, direct mount, 3488 playpipe and 2499 tips shall be provided. The base will have folding legs with no locking mechanism required to keep legs in place. The monitor shall have handwheel elevation control from 90° above to 15° below horizontal with an elevation safety stop at 35° above horizontal; 360° continuous rotation in the deck mode flowing 1250 gpm and 180° in the portable mode flowing 800 gpm; horizontal locking mechanism and stops to prevent accidental over rotation; a full 3" waterway with cast-in turning vanes in each elbow and a 3" NPT or 3" Flange Inlet. The monitor shall also include a pressure gauge, carry handle, grease fittings, safety chain, carbide tip ground spikes and Pyrolite® construction. Deck height not to exceed 12", base weight: 32 lbs., liftoff weight: 23 lbs.

PRECONNECT, 2-1/2" LEFT FRONT HOSEBED

One-(1) 2-1/2" preconnect shall be installed in the hosebed, left front, plumbed with an Akron 2-1/2" Heavy-Duty ball valve with 3/4" drain terminating 2-1/2" FNPT x 2-1/2" MNST chrome cap and chain push-pull controlled at the pump operator's panel.

PRECONNECT, 2-1/2" RIGHT FRONT HOSEBED

One-(1) 2-1/2" discharge shall be installed in the hosebed, right front, plumbed with an Akron 2-1/2" Heavy-Duty ball valve with 3/4" drain terminating 2-1/2" FNPT x 2-1/2" MNST chrome cap and chain push-pull controlled at the pump operator's panel.

DISCHARGE, 2-1/2" LEFT REAR

One-(1) Akron 2-1/2" Heavy-Duty ball valve with 3/4" drain shall be plumbed to the left rear of the apparatus terminating 2-1/2" FNPT x 2-1/2"MNST with chrome cap and chain push-pull controlled at the pump operator's panel.

WATER TANK

The tank shall have a capacity of 500 U.S. gallons and shall be constructed of PT3™ polypropylene material. 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.

ISO CERTIFICATION

The tank must be "T" shaped in design and fabricated by a tank manufacturer that is ISO 9001:2008 certified in each of its locations. The ISO certification must be to the current standard in effect at the time of the design and fabrication of the tank.

DESIGN

Each tank is designed to the customer's specification and/or drawing submittal. An approval

drawing is sent to the customer prior to commencing manufacturing. Upon receipt of the signed approval drawing, the tank is scheduled for production.

CONSTRUCTION

The booster and/or foam tank shall be of a specific configuration and is so 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 shall provide a liquid barrier offering leak protection in the event of a weld compromise. The top of the booster tank is 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 interlock with one another and are 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™. Tolerances in design allow for a maximum variation of 1/8" on all dimensions.

WATER FILL TOWER AND COVER

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 be located in the left front corner of the tank unless otherwise specified by the tank manufacturer to the purchaser. 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 shall assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall accommodate the necessary lifting hardware.

SUMP

There shall be one (1) sump standard per tank. The sump shall be 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 shall incorporate a dip tube from the front of the tank to the sump

location. The sump shall have a minimum 3" NPT 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.

OUTLETS

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 GPM. The addition of rear suction fittings, nurse valve fittings, dump valve fittings, and through-the-tank sleeves to accommodate rear discharge piping must be specified. All auxiliary outlets and inlets must meet all NFPA guidelines in effect at the time of manufacture.

MOUNTING

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 must 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” and a Shore A Hardness of approximately 60 durometer. The rubber must be installed so it shall 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. A picture frame type cradle mount with a minimum of 2" x 2" x 1/4” mild steel, stainless steel, or aluminum angle shall be provided or the use of corner angles having a minimum dimension of 4" x 4" x 1/4” by 6” high are permitted for the purpose of capturing the tank. Although the tank is designed on a free floating suspension principle, it is required that the tank have adequate vertical hold down restraints to minimize movement during vehicle operation. If proper retention has not been incorporated into the apparatus hose floor structure, an optional mounting restraint system shall be located on top of the tank, half way between the front and the rear on each side of the tank. These stops can be constructed of steel, stainless steel or aluminum angle having minimum dimensions of 3" x 3" x 1/4” and shall be approximately 6” to 12” long. These brackets must incorporate rubber isolating pads with a minimum thickness of 1/4” inch and a hardness of 60 durometer affixed on the underside of the angle. The angle should then be bolted to the body side walls of the vehicle while extending down to rest on the top outside edge of the upper side wall of the tank. Hose beds floors must be so designed that the floor slat supports extend full width from side wall to side wall and are not permitted to drop off the edge of the tank or in any way come in contact with the individual covers where a puncture could occur. Tank top must be capable of supporting loads up to 200 lbs. per sq. foot when evenly distributed. Other equipment such as generators, portable pumps, etc. must not be mounted directly to the tank top unless provisions have been designed into the Poly-Tank® III for that purpose. The tank shall be completely removable without disturbing or dismantling the apparatus structure.

CAPACITY CERTIFICATION

All water and foam tanks 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. Each Poly-Tank® III is 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.

TANKNOLOGY™ TAG

A tag shall be installed on the apparatus in a convenient location and contain pertinent information including a QR code readable by commercially available smart phones. The information contained on the tag shall include the capacity of the water and foam (s), the maximum fill and pressure rates, the serial number of the tank, the date of manufacture, the tank manufacturer, and contact information. The QR code shall allow the user to connect with the tank manufacturer for additional information and assistance.

WATER TANK SIZE CERTIFICATION

The manufacturer shall certify the capacity of the water tank prior to the delivery of the apparatus. This capacity shall be recorded on the manufacturer's record of construction and the certification shall be provided when the apparatus is delivered.

GAUGE, WATER LEVEL

There shall be a Class 1 Intelli-Tank model ITL-40M tank level gauge supplied and mounted on the pump operator's panel to monitor the level of water in the tank. The tank level gauge shall indicate the liquid level or volume on an easy to read LED display and show increments of 1/8 of a tank.

Each tank level gauge system shall include:
A pressure transducer that is mounted on the outside of the tank in an easily accessible area. Sealed foam tanks will require zero pressure vacuum vents.

A super bright LED display viewable from 180 degrees with a visual indication at nine accurate levels.

A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power.

APPARATUS BODY, 96" WIDE

The 96" wide apparatus body and subframe shall be constructed entirely of marine grade aluminum plate and extrusions.

BODY CONSTRUCTION

The complete apparatus body structure shall be an all welded construction and be free from nuts, bolts and other fasteners. Upon completion of the weldments, the body shall be completely sanded and deburred for removal of all sharp edges.

The body framework shall be formed from beveled aluminum alloy extrusions and electrically seam welded at each joint using 5356 aluminum alloy welding wire. Body sides shall be formed from 5052 H-32 (marine grade) smooth aluminum plates. The horizontal surfaces above the compartment tops shall be constructed from aluminum tread plate.

The horizontal and vertical frame member extrusions shall be 2.0" x 4.0" with a .190" wall

thickness. The extrusion shall be made from 6063T6 aluminum alloy. This extrusion shall have .190" outside radius corners. The longitudinal frame member, below the lower compartments shall be a 2.0" x 4.0" 6063T6 aluminum alloy extrusion with .190" radius corners. Each body corner shall be a 3.5" x 9-3/4" 6063T6 extruded aluminum section with .210" wall thickness, and shall be welded as an integral part of the body. This extrusion shall have a 1" corner radius.

COMPARTMENT CONSTRUCTION

The compartment sidewalls shall be of one-piece construction. The walls shall be formed from 3/16" (.1875") 5052 H-32 (marine grade) smooth aluminum plate. All compartment floors shall be formed from 3/16" (.1875") aluminum tread plate. The floors shall be welded in place with a continuous weld all around the perimeter to insure maximum strength.

The external compartment tops shall be constructed of 1/8" (.125") aluminum tread plate. The tops shall have a formed edge, which serves as a drip rail for the compartments below. The compartment tops shall be secured with stainless steel screws to allow for ease of removal for access to the bodies wiring harnesses.

The compartment seams shall be sealed with permanent pliable silicone caulking.

Each compartment shall be vented through a 3" wide x 15" high louver that is machined stamped in a panel located in each body corner extrusion. The panel shall be removable to provide access to service wiring and other mounted components.

COMPARTMENTS, LEFT SIDE

L1

There shall be one-(1) left front compartment installed ahead of the rear axle. This compartment shall have one-(1) roll up door. The compartment shall be approximately 27" wide x 68" high x 25" deep in the lower section and 12" deep in the upper section. The compartment shall have a useable door opening of approximately 24" wide x 55" high.

L2

There shall be one-(1) compartment installed above the wheel well. This compartment shall have one-(1) roll up door. The compartment shall be approximately 50" wide x 36" high x 12" deep. The compartment shall have a useable door opening of approximately 47" wide x 23" high.

L3

There shall be one-(1) left rear compartment installed ahead of the rear axle. This compartment shall have one-(1) roll up door. The compartment shall be approximately 36" wide x 68" high x transverse in the lower section and 12" deep in the upper section. The compartment shall have a useable door opening of approximately 33" wide x 55" high.

COMPARTMENT DOORS, LEFT SIDE ROLL UP

Roll-up doors shall be installed on the left side compartments of the apparatus as specified.

Slats are to be double-wall (box frame) aluminum extrusion. Exterior surfaces are to be flat. Interior surfaces are to be concave to prevent loose equipment from jamming doors. The slats must be anodized to eliminate oxidation. The slats are to have inner-locking end shoes on every slat secured by a Punch-Dimple process. The slats are to have interlocking joints with a folding locking flange. Between each slat shall be a PVC/vinyl inner seal to prevent any

metal-to-metal contact.

The track shall be one-piece aluminum, which has an attaching flange and finishing flange incorporated into its design, which provides a finish look to installation without additional trim or caulking. The track is to have a replaceable side seal. The side seal shall prevent water and dust intrusion into the compartment.

There shall be an aluminum drip rail above each compartment door with a built in replaceable wiper seal.
Each roll up door shall have a counter balance to assist in lifting and eliminate the risk of accidental closing.

A full width lift bar, operable by one hand, shall be used as a positive latch device for securing each individual compartment door in the closed position.

The side compartment roll-up door slats and doorframe extrusions shall be finish painted to match the body.

COMPARTMENTS, RIGHT SIDE

R1
There shall be one-(1) right front compartment installed ahead of the rear axle. This compartment shall have one-(1) roll up door. The compartment shall be approximately 27" wide x 28" high x 25" deep. The compartment shall have a useable door opening of approximately 24" wide x 21" high.

R2
There shall be one-(1) right rear compartment installed behind the rear axle. This compartment shall have one-(1) roll up door. The compartment shall be approximately 36" wide x 28" high x transverse. The compartment shall have a useable door opening of approximately 36" wide x 28" high.

COMPARTMENT, RIGHT 3/4 SIDE

R3/R4
The apparatus body shall have 3/4 side compartments on the right side above the right side lower compartments. The compartment shall have two-(2) door openings. Each drop down style door shall have a useable opening of approximately 58" wide x 12" high. The interior dimensions of the compartment shall be approximately 121" wide x 16" high x 12" deep.

COMPARTMENT DOORS, RIGHT SIDE HINGED

The right side compartment doors shall be constructed entirely from 5052-H32 smooth aluminum plate using a box pan configuration. The outer panel shall be constructed from 3/16" (.1875") smooth aluminum plate and the inner pan stitch welded in place from 1/8" (.125") smooth aluminum plate.

There shall be a 1/4" (.250") hole installed in the lower corners of the inside door pans for drainage. The doors shall have a closed cell neoprene rubber gasket installed around the perimeter of the door to remove water.

Exterior door latches shall incorporate a black D-paddle handle with rotary style latch. For ease of operation, the D-handle opening shall be large enough to accommodate a gloved hand. The D-paddle latching design shall be subjected to corrosion, water infiltration, and cycle testing to 35,000 cycles. Double doors shall utilize concealed rotary latches on the secondary door, actuated by a recessed stainless steel paddle handle. The door design shall

not impede into the compartment opening when in the open position. The watertight door seal shall exceed the current KKK-1822 water infiltration standards. The doors shall be securely fastened to the apparatus body with full-length stainless steel piano hinges using 1/4-20 stainless bolts and locking nuts. The hinges shall be slotted to allow for adjustments.

Absolutely no self-tapping screws or pop rivets shall be acceptable to mount the door mechanisms or slam latch assemblies.

COMPARTMENT DOORS, RIGHT SIDE ROLL UP

Roll-up doors shall be installed on the right side compartments of the apparatus as specified.

Slats are to double-wall (box frame) aluminum extrusion. Exterior surfaces are to be flat. Interior surfaces are to be concave to prevent loose equipment from jamming doors. The slats must be anodized to eliminate oxidation. The slats are to have inner-locking end shoes on every slat secured by a Punch-Dimple process. The slats are to have interlocking joints with a folding locking flange. Between each slat shall be a PVC/vinyl inner seal to prevent any metal-to-metal contact.

The track shall be one-piece aluminum, which has an attaching flange and finishing flange incorporated into its design, which provides a finish look to installation without additional trim or caulking. The track is to have a replaceable side seal. The side seal shall prevent water and dust intrusion into the compartment.

There shall be an aluminum drip rail above each compartment door with a built in replaceable wiper seal.
Each roll up door shall have a counter balance to assist in lifting and eliminate the risk of accidental closing.

A full width lift bar, operable by one hand, shall be used as a positive latch device for securing each individual compartment door in the closed position.

The side compartment roll-up door slats and doorframe extrusions shall be finish painted to match the body.

COMPARTMENT, CENTER REAR

B1

There shall be one-(1) compartment installed at the center rear of the apparatus. This compartment shall have one-(1) roll up door. The compartment shall have a useable door opening of approximately 43" wide x 21" high.

COMPARTMENT DOOR, REAR ROLL UP

A roll-up door shall be installed on the rear compartment of the apparatus.

Slats are to double-wall (box frame) aluminum extrusion. Exterior surfaces are to be flat. Interior surfaces are to be concave to prevent loose equipment from jamming doors. The slats must be anodized to eliminate oxidation. The slats are to have inner-locking end shoes on every slat secured by a Punch-Dimple process. The slats are to have interlocking joints with a folding locking flange. Between each slat shall be a PVC/vinyl inner seal to prevent any metal-to-metal contact.

The track shall be one-piece aluminum, which has an attaching flange and finishing flange incorporated into its design, which provides a finish look to installation without additional

trim or caulking. The track is to have a replaceable side seal. The side seal shall prevent water and dust intrusion into the compartment.

There shall be an aluminum drip rail above each compartment door with a built in replaceable wiper seal.
Each roll up door shall have a counter balance to assist in lifting and eliminate the risk of accidental closing.

A full width lift bar, operable by one hand, shall be used as a positive latch device for securing each individual compartment door in the closed position.

The rear compartment roll-up door slats and doorframe extrusions shall be finish painted to match the body.

VERTICAL LOAD TEST, APPARATUS BODY

The fire body shall exceed a vertical load testing. The vertical load test to the fire body shall follow the same strict and detailed requirements of the Economic Commission for Europe Structural Standard, ECE-29R as applied to the cab.

The fire body shall be placed under a vertical load test to show structural integrity. There shall be 65,979 lbs. (29.53 metric tons) applied to the fire body. There shall be no structure failures to the body and body compartments.

A complete photographic, video, data, and dimensional record of these tests shall be available and placed on record for customer evaluations.

BRACKETS, GROUND LADDERS

One-(1) pair of spring operated ladder brackets shall be installed on the exterior wall of the hosebed, right side, designed to hold one-(1) extension ladder and one-(1) roof ladder. Each bracket shall be mounted on polished aluminum extrusions slotted to allow infinite adjustment of the ladder brackets.

COMPARTMENT, PIKE POLE

One-(1) pike pole compartment shall be installed on the apparatus to store two-(2) pike poles. The compartment shall have a tread plate access door with latch. There shall be two-(2) aluminum tubes provided to secure the pike poles.

STORAGE SLOT, BACKBOARD

There shall be one-(1) compartment under the hose bed cover with the capacity to hold one-(1) long style backboard. The department must supply make and model of backboard.

WHEEL WELL AIR BOTTLE COMPARTMENT, LEFT FRONT

There shall be an air bottle compartment located in the rear wheel well left front to house one-(1) spare SCBA cylinder. The bottom of the compartment shall also be supported to eliminate breakage. The compartment shall be vented to facilitate moisture drainage. The compartment door shall be stainless steel with a positive mechanical latch.

WHEEL WELL AIR BOTTLE COMPARTMENT, LEFT REAR

There shall be an air bottle compartment located in the rear wheel well left rear to house one-

(1) spare SCBA cylinder. The bottom of the compartment shall also be supported to eliminate breakage. The compartment shall be vented to facilitate moisture drainage. The compartment door shall be stainless steel with a positive mechanical latch.

WHEEL WELL AIR BOTTLE COMPARTMENT, RIGHT FRONT

There shall be an air bottle compartment located in the rear wheel well right front to house one-(1) spare SCBA cylinder. The bottom of the compartment shall also be supported to eliminate breakage. The compartment shall be vented to facilitate moisture drainage. The compartment door shall be stainless steel with a positive mechanical latch.

WHEEL WELL AIR BOTTLE COMPARTMENT, RIGHT REAR

There shall be an air bottle compartment located in the rear wheel well right rear to house one-(1) spare SCBA cylinder. The bottom of the compartment shall also be supported to eliminate breakage. The compartment shall be vented to facilitate moisture drainage. The compartment door shall be stainless steel with a positive mechanical latch.

BODY TRIM

The standard body trim shall include the following:

There shall be drip rail installed over the compartment door openings.

A drip rail shall be located over each compartment door. This drip rail shall form a lip over the exterior door pans to prevent water from running into a compartment.

The vertical rear face of the body shall be covered with black texture coated aluminum plate.

Two-(2) handrails shall be located on the rear of the apparatus, one-(1) handrail per side. Each handrail shall be constructed of 1-1/4" knurled aluminum. Each handrail shall be sufficient in length to meet all standard requirements.
Two-(2) stanchions shall be mounted at the rear of the apparatus hosebed, one-(1) each side. The stanchions shall be 11" long x 3-3/4" wide. Stainless steel scuff plates shall be installed in the hosebed area to prevent deploying hose from damaged on stanchion supports. The stanchions shall provide mounting positions for the Zone C warning lights and additional hosebed lighting. All wiring for the upper rear lighting shall be concealed inside the stanchions.

FUEL FILL, RECESSED WITH DOOR

There shall be a recessed fuel fill assembly with a non-locking door mounted on the left side of the apparatus body. The fuel fill assembly shall be equipped with a fuel fill cap, retention ring and hinged door. The assembly shall be properly labeled "DIESEL FUEL ONLY".

FENDERETTES, REAR BODY

Two-(2) black rubber fenderettes shall be securely fastened to the rear wheel wells, one-(1) each side.

MUD FLAPS, REAR

The rear axle mud flaps shall be constructed from hard black rubber and installed at the rear of the body fenders.

RUBRAIL

There shall be a black aluminum rub rail installed on both sides of the lower body compartments. The rub rail shall be constructed from "C" channel extrusion. The aluminum rub rail shall be bolted in place with stainless steel bolts, and spaced from the fire body to provide body protection. The solid rub rail shall serve as protection to the side doors when encountering close objects. Rub rails welded on shall not be acceptable.

CHROME FOLDING STEP(S), FRONT OF BODY

There shall be four (4) large chrome-folding step(s) with a minimum surface area of thirty-five (35) square inches. The step(s) shall be mounted on the front face of the forward compartment as directed by the customer.

There shall be an LED light installed above and below each step.

STEPS, REAR FIXED W/LED LIGHT

There shall be four (4) rear lighted steps installed on the apparatus. The steps shall be a Cast Products step and have a minimum of thirty-five (35) square inches of surface area to conform to the NFPA 1901 standards. The step(s) shall include a 12-volt LED light to illuminate the area below.

TOW EYES, REAR

Two-(2) 1" thick rear tow eyes constructed of A-36 steel shall be mounted below the frame at the rear of the vehicle. The tow eyes shall be attached to steel weldments that are mounted to the apparatus. The eyes shall have a minimum dimension of three-(3) inches. The tow eyes shall be used for towing, not lifting the vehicle.

HANDRAIL, BELOW HOSE BED

There shall be an intermediate handrail installed on the apparatus below the hose bed. The handrail shall be constructed of 1-1/4" knurled aluminum.

HOSE BED DIVIDER(S)

Two (2) hose bed divider(s) shall be manufactured from 1/4" (.250") smooth aluminum plate with an extruded aluminum base welded to the bottom. The divider shall have an extruded track to slide in to allow the hose bed to adjust for different hose capacities. One end of the divider shall have a 3" radius corner. The divider shall be sanded to prevent damage to hose.

HOSE BED COVER

A 1/8" (.125") aluminum tread plate hose bed cover shall be provided. The cover shall be two (2) door types with continuous stainless steel hinge along each side. The hosebed cover shall have aluminum assist handles and door hold open springs. An open door indicator switch shall be provided and wired the open door indicator system in the cab.

Two (2) Hypalon end flaps shall be provided at the rear of the apparatus. The flaps shall be constructed of 16 oz. heavy-duty, fire retardant Hypalon.
The Hypalon end flaps shall be secured at the bottom using snaps and Velcro. The end flaps shall completely protect the hose and prevent the hose from inadvertently deploying during normal operation.

The cover shall meet the TIA 03-1 NFPA requirement.
The covers shall be black in color.

HOSE BED CAPACITY

The hose bed shall have the capacity to hold the following from left to right:

Quantity:	Size of Hose:	Brand Name of Hose:
250"	1-3/4"	Double Jacketed
1000'	4"	Supply Line
500'	2-1/2	Double Jacketed
250'	2-1/2"	Double Jacketed

Customer must specify hose to have the correct hose capacity to meet the current NFPA.

COMPARTMENT UNISTRUTS

One (1) set of aluminum unistruts shall be installed in compartments L2, R1, and R2 for future installation of shelves or to allow the specified trays/tool boards to be adjustable.

SHELF, ADJUSTABLE

There shall be one (1) adjustable shelf constructed from 3/16" (.1875) smooth aluminum. The shelf shall be approximately 27"W x 12"D. The adjustable track shall be made from aluminum extrusions. Each shelf shall have a 2" lip on all sides for additional strength.

This shelf shall be located in the upper section of compartment L1.

SHELF, ADJUSTABLE

There shall be one (1) adjustable shelf constructed from 3/16" (.1875) smooth aluminum. The shelf shall be approximately 36"W x 12"D. The adjustable track shall be made from aluminum extrusions. Each shelf shall have a 2" lip on all sides for additional strength.

This shelf shall be located in the upper section of compartment L3.

SHELF, ADJUSTABLE

There shall be one (1) adjustable shelf constructed from 3/16" (.1875) smooth aluminum. The shelf shall be approximately 27"W x 24"D. The adjustable track shall be made from aluminum extrusions. Each shelf shall have a 2" lip on all sides for additional strength.

This shelf shall be located in the lower section of compartment L1.

SHELF, ADJUSTABLE

There shall be one (1) adjustable shelf constructed from 3/16" (.1875) smooth aluminum. The shelf shall be approximately 36"W x 24"D. The adjustable track shall be made from aluminum extrusions. Each shelf shall have a 2" lip on all sides for additional strength.

This shelf shall be located in the lower section of compartment L3.

ELECTRICAL SYSTEM

BODY ELECTRICAL

The body electrical system shall be designed as an integrated electrical package specifically engineered for fire apparatus application. The integrated electrical system shall be comprised of power distribution panels, which interface to the body and chassis through an engineered

harnessing system.

All chassis wiring shall be type "GXL" in accordance with S.A.E. J1128 and NFPA-1901. Wiring shall be color coded and include function codes every three-(3) inches on both sides.

The electrical wiring harness shall be covered by a black split convoluted loom, rated at a minimum of 275º F.

DISTRIBUTION PANELS

The electrical distribution panels and circuits must be housed in each rear corner compartment or extrusion. The distribution panel shall incorporate a power and ground stud for connection to the internal circuits.

All internal wire end terminals, including locking bulkhead connectors, shall be mechanically affixed to the wire ends by machine terminal crimping presses. No hand-crimped terminals shall be acceptable.

All internal splices shall be ultrasonically welded connections - no butt style connections shall be acceptable. All internal wiring shall be of the high temperature GXL type wire and shall be protected by wiring duct wherever possible.

Each side electrical distribution panel shall consist of fifteen-(15) power distribution relays. The power distribution relays shall be replaceable, SPDT automotive style, rated at a minimum of 30 amperes.

The power distribution relays shall incorporate separate inputs, which are able to accept outputs from a load management system. The load management inputs must allow for the addition of a load management system before, during or after the time of delivery without requiring a rewiring of the existing distribution panel circuits.

Connections to the distribution panel shall utilize Deutsch style bulkhead connectors. Screw clamp type connections are not acceptable.

The distribution panel shall also contain circuit's ancillary to the required DOT signals and other body functions.

The complete body electrical system shall be 100% documented and contain independent circuit diagrams with point to point wiring information, as shall as a general component diagram included in the apparatus manual.

The body electrical panel shall be capable of being completely disconnected and fully tested by a computerized circuit analyzer.

All electrical equipment switches shall be mounted on a switch panel mounted in the cab convenient to the driver. Light switches shall be of the marine grade rocker type with integral indicator light to show when lights are energized. All switches shall be appropriately identified.

WIRING PROTECTION

All 12-volt wiring shall be run in high temperature, rated at a minimum of 275º F, split loom

for easy access to wires when trouble shooting.

12-VOLT TESTING

The apparatus low voltage system shall be tested and certified. A copy of certification shall be provided to the purchaser with the apparatus.

Reserve Capacity Test
The unit shall be run until all engines, engine compartment temperatures are stabilized and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load be activated for ten-(10) minutes. All electrical loads shall be shutoff after ten-(10) minutes and the battery system shall then be capable of restarting the engine.

Alternator Performance Test at Idle
Minimum continuous electrical loads shall be activated while the unit is at idle speed.

Alternator Performance Test at Full Load
The total continuous electrical load shall be activated with the engine running up to the manufacturer's governed speed. The test duration shall be a minimum of two-(2) hours. Activation of the load management system shall be permitted during the test. If however, an alarm is sounded by excessive battery discharge as detected by the system or a system voltage of less than 11.8 volts DC for a 12-volt nominal system for more than 120 seconds, shall be considered a test failure.

Low Voltage Alarm Test
The engine shall be shut off and the total continuous electrical load shall be activated and continue to be applied until the excessive battery discharge alarm activates. The test shall be considered a failure if the alarm has not sounded within 140 seconds after the voltage drops to 11.8 volts.

EMI/RFI PROTECTION

The apparatus shall be manufactured to incorporate the latest designs in the electrical system with components that are state of the art to insure electromagnetic interference (EMI) and radio frequency interference (RFI) emissions are suppressed at the source.

The apparatus shall have the ability to operate in typical fire and rescue situations with no adverse effects from EMI and/or RFI.

The apparatus shall utilize components that are fully protected and wiring that utilizes shielding and loop backgrounds where required to control EMI/RFI susceptibility. The apparatus shall be bonded through ground straps. Relays and solenoids that are suspect to generating spurious electromagnetic radiation are diode and/or resistor protected to prevent transient voltage spikes.

In order to prevent the radio frequency interference completely the purchaser shall be requested to provide a listing of the type, power output, and frequencies of all radio and bio medical equipment that is proposed to be used on the apparatus.

LIGHT(S), 24" LED COMPARTMENT

Seven (7) On Scene Solutions “Access Series” 24" LED light(s) shall be provided with 15

HB, surface mount LED's per 10" light section and produce a minimum of 200 lumens per 10" length. Each "Access Series" shall be capable of operating at a voltage of 9VDC to 14VDC. Each "Access Series" shall be cuttable in 2" increments and feature a high quality, impact resistant Lexan™ enclosure.

The light stick shall be waterproof and rated at 100,000 hours of service. Each light stick shall be provided with a 5 year free replacement warranty.

LIGHT(S), 54" LED COMPARTMENT

Two (2) On Scene Solutions "Access Series" 54" LED light(s) shall be provided with 15 HB, surface mount LED's per 10" light section and produce a minimum of 200 lumens per 10" length. Each "Access Series" shall be capable of operating at a voltage of 9VDC to 14VDC. Each "Access Series" shall be cuttable in 2" increments and feature a high quality, impact resistant Lexan™ enclosure.

The light stick shall be waterproof and rated at 100,000 hours of service. Each light stick shall be provided with a 5 year free replacement warranty.

LIGHT(S), 60" LED COMPARTMENT

Three (3) On Scene Solutions "Access Series" 60" LED light(s) shall be provided with 15 HB, surface mount LED's per 10" light section and produce a minimum of 200 lumens per 10" length. Each "Access Series" shall be capable of operating at a voltage of 9VDC to 14VDC. Each "Access Series" shall be cuttable in 2" increments and feature a high quality, impact resistant Lexan™ enclosure.

The light stick shall be waterproof and rated at 100,000 hours of service. Each light stick shall be provided with a 5 year free replacement warranty.

DOOR AJAR SWITCHES

All apparatus body doors shall be provided with an auto door switch. These switches shall operate the compartment interior lights and activate the door ajar indicator on each side of apparatus body when the door is opened. There shall be a red door ajar light mounted in the cab, in view of the driver to indicate an unsecured door. There shall be a buzzer mounted in the cab that shall alert the driver.

LIGHTBAR, 72" WHELEN FN72QLED

A Whelen Edge Ultra Freedom Super-LED Series lightbar model FN72QLED shall be provided. The Edge Ultra Freedom lightbar shall incorporate an anodized extruded aluminum "I" beam chassis with two red Linear-LED corner modules , two red 400 Series Linear-LED endcap lights, two red 400 Series Linear-LED lights, and two white 400 Series Linear-LED lights with clear optic lenses. The Linear-LED corner modules shall incorporate 12 red Super-LEDs, two clear optic collimators, and utilize a metalized reflector for maximum output. The red 400 Series Linear-LED lights shall incorporate 12 red Super-LEDs, two clear optic collimators, and utilize a metalized reflector for maximum output. The white 400 Series Linear-LED lights shall incorporate 12 white Super-LEDs, two clear optic collimators, and utilize a metalized reflector for maximum output. All Linear-LED lights conformal coated PC boards shall provide additional protection against environmental elements. The hard coated lenses shall provide extended life/luster protection against UV and chemical stresses. The FN72QLED shall include rubber endcap gaskets, lens divider gaskets, and cord seal to help prevent water and other elements from entering the lightbar

The lightbar shall be controlled in the following manner:

Calling for Right of Way - All Positions
Blocking Right of Way - Clear shall not be Active

The lights shall be activated by a single emergency light switch located on the master light switch panel in the cab.

The lightbar shall meet NFPA 1901 edition as configured.

OPTICOM

There shall be one-(1) GTT Opticom (Model 795) LED low profile emitter installed in the lightbar and controlled by a switch in the cab. The unit shall operate in accordance with the current NFPA requirements.

LIGHTS, ZONE C UPPER

One (1) pair of Whelen model B6TMRR1P LED lights shall be installed one each side on the upper rear outer corners of the apparatus. This light shall include a red directional Linear LED light in the lower section, and a rotating beacon in the upper section. The lights shall be housed in a single polished aluminum fixture. The lens color shall be Red.

LIGHTS, ZONE B/D FRONT LOWER

Two-(2) Whelen TIR6 Series Super-LED model 50R03ZRR lights shall be installed, one-(1) each side forward portion of the apparatus. The warning lights shall incorporate red Linear Super-LEDs, a red optic hard coated polycarbonate lens. The surface mount module includes a chrome flange and hardware for horizontal mounting.

LIGHTS, ZONE B/D MIDSHIP LOWER

Two-(2) Whelen TIR6 Series Super-LED model 50R03ZRR lights shall be installed, one-(1) each side midship of the apparatus. The warning lights shall incorporate red Linear Super-LEDs, a red optic hard coated polycarbonate lens. The surface mount module includes a chrome flange and hardware for horizontal mounting.

LIGHTS, ZONE B/D REAR LOWER

Two-(2) Whelen TIR6 Series Super-LED model 50R03ZRR lights shall be installed, one-(1) each side rearward portion of the apparatus. The warning lights shall incorporate red Linear Super-LEDs, a red optic hard coated polycarbonate lens. The surface mount module includes a chrome flange and hardware for horizontal mounting.

LIGHTS, ZONE C LOWER

Two-(2) Whelen 600 Series Super-LED model 60R02FRR shall be installed, one-(1) each side on the lower rear of the apparatus. The warning light shall incorporate red Linear Super-LEDs, a red optic hard coated polycarbonate lens, and utilize a metalized reflector with integrated TIR hybrid optics for maximum output. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The encapsulated lens/reflector assembly and conformal coated PC board shall provide additional protection against environmental elements. The solid state warning lights shall be vibration resistant. The self-contained flashing light shall have 14 Scan-Lock flash patterns including synchronize feature and steady burn. The warning light is covered by a five year factory

warranty.

STOP, TURN AND BACK-UP LIGHTS

Stop, turn and backup lights shall be Whelen 600 Series, individual fixtures. The red stop (LED) light shall be model 60R00BRR, the turn light shall be model 60A00TAR amber (LED) type with directional arrow, and the backup light shall be a white (LED) model 60C00WCR.

HOUSING, REAR TAIL LIGHT ASSEMBLY

The fixtures shall be mounted on each rear face of the body in a model CAST4, four-(4) light head cast aluminum housing.

LIGHTS, LED DECK

Two-(2) Whelen PAR-36 model PFB12 LED 12 volt floodlights shall be installed at the rear of the apparatus to provide work area lighting immediately behind the vehicle in accordance with current NFPA requirements. Each light shall be manually operated by an on/off switch at the light.

CLEARANCE LIGHTS AND REFLECTORS

Clearance lights and reflectors shall be LED lights, which include (2) red marker lights, (4) red rectangular reflectors, (2) amber rectangular reflectors and (1) red three light cluster recessed in the rear step.

LIGHTS, BRITAX END/CORNER LED

Two-(2) Britax model 427 (12V) LED rubber mounted angled clearance lights shall be mounted, one-(1) each side on the rear corners of the apparatus body.

The lights shall be wired to the chassis clearance and marker lights. The lens color shall be red/amber.

LIGHTS, UNDERBODY

There shall be six-(6) Whelen 2G Series model 20C0CDCD ground lights provided. The 12v steady burn compartment lights shall incorporate 12 clear LED and a clear optic hard coated polycarbonate lens. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The encapsulated coated PC board and lens fitted with foam in place gasket assembly shall provide additional protection against environmental elements. The solid state compartment light shall be vibration resistant. The 20C0CDCD will contain 350 usable lumens. An installation kit including mounting hardware and rubber gasket shall be provided. The 20C0CDCD will contain a 12" terminated pigtail with a waterproof Deutsch® connector. The compartment light is covered by a five year factory warranty.

There shall be one (1) light below compartments L1, L3, R1, and R3, and two (2) lights under the rear step.

LIGHT, LICENSE PLATE

A Whelen OS Series LED model 0SC0EDCR shall be provided at the rear of the apparatus to illuminate the license plate. The steady burn illumination light shall incorporate three clear LED and a clear non-optic hard coated polycarbonate lens. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The encapsulated assembly shall provide protection against environmental elements. The solid state illumination light

shall be vibration resistant. An installation kit including mounting hardware, neoprene gasket and 45 degree angle chrome housing shall be provided for surface mounting. The 0AC0EDCR will contain a 12" non-terminated pigtail. The illumination light meets SAE J592 requirements and is covered by a five year factory warranty.

LIGHT, DRIVER/PASSENGER'S SIDE BROW

Two-(2) brow lights shall be installed on the front cab roof, one-(1) on the driver's and one-(1) on the passenger's side. The mounting brackets shall be attached to the bottom of the lamp head and be machined to conform to the roof radius. Wiring shall extend from a weatherproof strain relief at the rear of the lamp head.
Two (2) Whelen Pioneer Plus Model PTP1 light head(s) shall be provided. The 85 watt +12v DC Pioneer light head shall incorporate Super-LED single spot light installed in die-cast black powder coated aluminum housing. The PTP1 configuration shall consist of 30 white Super-LEDs with a two degree TIR reflector and a clear non-optic polycarbonate lens. The Pioneer spot light shall have 8,000 usable lumens.

The lens/reflector assembly shall utilize a liquid injected molded silicone gasket to be resistant to water, moisture, dust, and other environmental conditions. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The PTP1 shall be shall be vibration resistant. The Pioneer PC boards shall be conformal coated for additional protection. The Pioneer light will not illuminate ultraviolet rays that attract insects during nighttime operation. Two breathable membrane patches shall be installed to the bottom of the housing to maintain a consistent internal pressure. The PTP1 shall have extended LED operation with low current consumption and low operating temperature. The Pioneer light shall be SAE 1113-42 compliant and Class 5 testing for EMI. The PTP1 is covered by a five year factory warranty.
The cab mounted brow light(s) shall be controlled by a light switch located in the cab labeled BROW LIGHT.

LIGHTS, 12-VOLT RECESSED MOUNT SCENE

Two (2) Whelen Pioneer Plus Model PTP1 light head(s) shall be provided and installed. The light(s) shall be installed in a PBA103 semi recessed chrome 15° housing. The wiring shall extend from a weatherproof strain relief at the rear of the lamp head. The 85 watt +12v DC Pioneer light head shall incorporate Super-LED single spot light installed in a die-cast white powder coated aluminum housing. The PTP1 configuration shall consist of 30 white Super-LEDs with a two degree TIR reflector and a clear non-optic polycarbonate lens. The Pioneer spot light shall have 8,000 usable lumens.

The lens/reflector assembly shall utilize a liquid injected molded silicone gasket to be resistant to water, moisture, dust, and other environmental conditions. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The PTP1 shall be shall be vibration resistant. The Pioneer PC boards shall be conformal coated for additional protection. The Pioneer light will not illuminate ultraviolet rays that attract insects during nighttime operation. Two breathable membrane patches shall be installed to the bottom of the housing to maintain a consistent internal pressure. The PTP1 shall have extended LED operation with low current consumption and low operating temperature. The Pioneer light shall be SAE 1113-42 compliant and Class 5 testing for EMI. The PTP1 is covered by a five year factory warranty.
The lights shall be installed, one-(1) each side of the cab between the front and rear doors. The cab mounted recessed scene lights shall be controlled by individual scene light switches located in the cab labeled LEFT SCENE and RIGHT SCENE and when the respective side

cab door(s) are opened.

GENERATOR, ABOVE THE PUMP

The generator shall be installed above the pump module in the dunnage area.

GENERATOR

A 6k W PTO driven hydraulically powered generator system shall be supplied and installed. The genset shall be installed per the manufacturer recommendations and be capable of supplying full power during all engine speeds or operation modes. The genset shall be capable of being switched on or off at any time, with or without electrical loads applied. The genset field and armature windings shall be of copper magnet wire, coated with class 200 film insulation. The genset alternator shall be capable of accepting a zero power factor load of 200% rated kVA and recover to 90% of rated voltage within ½ second. The genset shall be capable of continuous operation in 120 degree F ambient conditions.

A transmission PTO adapter shall be used. The gear ratio of the PTO shall be selected to provide required genset pump speeds with respect to engine speeds. The hydraulic pump can be directly mounted to the PTO using the standard SAE flange or the pump can be remote mounted utilizing a driveshaft. Direct mount pumps on the PTO shall have supports per the manufacturer instructions to avoid stress damage to the PTO mounting face. Remotely mounted pumps shall have adequately sized & configured mounting brackets, drive shafts and guarding to prevent entangling injuries.

The compartment or installation location for the genset module shall be made per the manufacturer recommendations. Proper cooling air control, service panel access, and exhaust air venting shall be demonstrated. The compartment or mounting location shall have an under tray and/or adequate structure to support the genset module.

The hydraulic system reservoir shall be mounted above the pump and have access for fluid filling, draining and viewing the sight glass fluid level indicator. Clearance of at least 10” above the reservoir must be provided for hydraulic fluid filter service. The system reservoir shall be labeled with the type and approximate amount of fluid required. The fluid shall be Dextron III hydraulic fluid.

All connecting hydraulic hoses & fittings shall be of the size and pressure rating specified by the manufacturer. The hoses shall be adequately protected from chafing or abrasion during operation.

A display meter consisting of 4 numeric LED displays shall be used. The meter shall simultaneously display system voltage, frequency, and amperage in each of the two 120V legs. The meter shall also have provisions for toggling to total hours run and oil temp via a mode switch. The display shall be mounted in an area clear for operator observation and near the on/off switch.

The genset shall be a capable of being switched on or of by one or multiple switches as required. The on/off control switch(s) shall be mounted in an area convenient for the driver and/or pump operator as required.

SPECIFICATIONS

- Height - 13.8"
- Width - 31"

- Depth - 16"
- Weight - 263lbs
- Max kW - 6.0
- AMPS@120V - 50
- AMPS@240V - 25
- HP Required - 18.3
- Max System Pressure - 3500 psi

PTO, GENERATOR

A clutch driven 10-bolt heavy-duty engine driven PTO (Power Take off Unit) installed on the EVS transmission to run the generator. The output side of the PTO shall have a SAE "B" pad or a keyed 1.25" shaft. A switch located in the cab shall be furnished to activate the PTO. A neutral switch interlock shall be provided preventing accidental engagement of the PTO unless the transmission is in the neutral position.

LIGHT, GENERATOR PTO INDICATOR

A green light to indicate that the PTO is in gear shall be mounted in the cab and on the pump panel.

BREAKER PANEL

A General Electric breaker box with 240 main breaker and four (4) 120 volt circuit breakers shall be installed. The breaker box shall include a master breaker sized according to the generator output. The breaker box shall be located in a compartment as specified by the engineering department to meet the current NFPA specifications.

WIRING PROTECTION

All 120-volt wiring shall be run in high temperature, rated at a minimum of 275º F, split loom for easy access to wires when trouble shooting.

120-VOLT ELECTRICAL SYSTEM TESTING

The following 120 volt electrical wiring and associated equipment tests shall be performed.

DIELECTRIC VOLTAGE

A dielectric voltage withstand test of 900 volts for one (1) minute.

ELECTRICAL POLARITY VERIFICATION

There shall be an electrical polarity verification to determine that connections have been properly made.

OPERATIONAL TEST - there shall be the following operational tests conducted.

1. CRANKING TIME
   The cranking time until the prime mover (generator) starts and runs.

2. VOLTAGE, FREQUENCY, AMPERES
   The voltage, frequency, and amperes are tested at continuous full rated load.

3. OPERATIONAL INDICATORS

The prime mover (generator) oil pressure, water temperature, transmission temperature, hydraulic temperature, and the battery charge rate, as applicable, the ambient temperature and a altitude.

4. OPERATIONS TEST

The power source shall be operated at 100 % of its nameplate voltage for a minimum of two (2) hours.

POWER SOURCE SPECIFICATION PLATE

A permanently affixed plate shall be installed near operator's position. The plate shall provide the operator with the following information:

- Rated voltage(s) and type (AC or DC)
- Phase
- Rated frequency (at rated voltage(s))
- Rated Amperage
- Continuous rated watts
- Power source engine speed

RECEPTACLES, 120V HOUSEHOLD

There shall be three (3) 120 volt, 20 amp household receptacles installed on the apparatus. The receptacles shall be wired to the breaker box. The receptacles shall have a weatherproof cover and be a duplex outlet.

There shall be one (1) receptacle in compartments L1, R1, and B1.

BODY PAINT FINISH, TWO TONE

The body shall be painted two colors. The paint break shall be determined by the department.

The body exterior shall have no mounted components prior to painting to assure full coverage of metal treatments. Box pan compartment doors shall be painted separately to assure proper paint coverage on body, door jambs, and door edges.

All painted surfaces shall follow the following procedure to insure a lasting finish:

- Metal surfaces shall be sanded to remove all burrs and imperfections, before etching and treatment.
- A wax & grease solvent shall be used to clean and prep the aluminum surface. The surface shall then be rinsed with fresh water. This step removes wax, grease and other surface contaminants, thus leaving a bright, clean, and conditioned surface.
- A self-etching, metal primer shall be applied next. The self-etching primer shall fill all of the minor imperfections, scratches, etc. In the metal. This step produces a corrosion resisting conversion coating that prevents off oxidation and other surface contaminants leaving a surface that gives excellent paint adhesion.
- A sandable primer shall be sprayed on the metal that seals the surface for the polyurethane paint. A minimum coating thickness of 2 MIL shall be applied. Primer is then sanded smooth leaving the best surface for top coat.

- The apparatus body shall then be painted with a minimum of three-(3) coats of color and a base coat.

These steps are followed as recommended by the paint manufacturer to provide a lasting and high quality gloss finish. All paint products shall be provided by DuPont.

UPPER BODY PAINT FINISH

The upper body exterior shall have no mounted components prior to painting to assure full coverage of metal treatments. Box pan compartment doors shall be painted separately to assure proper paint coverage on body, door jambs, and door edges.

The apparatus body shall then be painted with a minimum of three-(3) coats of color and a base coat.

These steps are followed as recommended by the paint manufacturer to provide a lasting and high quality gloss finish. All paint products shall be provided by DuPont.

BODY PAINT COLOR/CODE

The apparatus body paint code shall be Black, 99.

LOWER BODY PAINT FINISH

The lower body exterior shall have no mounted components prior to painting to assure full coverage of metal treatments. Box pan compartment doors shall be painted separately to assure proper paint coverage on body, door jambs, and door edges.

The apparatus body shall then be painted with a minimum of three-(3) coats of color and a base coat.

These steps are followed as recommended by the paint manufacturer to provide a lasting and high quality gloss finish. All paint products shall be provided by DuPont.

BODY PAINT COLOR/CODE

The apparatus body paint code shall be Red, B8241EX.

INTERIOR COMPARTMENT FINISH

The interior of the body compartments shall be a light grey textured finish.

SCOTCHLITE STRIPE

There shall be a Scotchlite stripe located on the apparatus cab and body. The stripe shall cover a minimum of fifty percent (50%) of the cab, body sides and of the rear of the apparatus. The stripe shall also cover twenty-five percent (25%) of the front of the apparatus.
The stripe shall be installed to meet the current NFPA requirements.
The striping shall be black in color.
The reflective stripe shall run straight from the headlights to the front body compartments with a reverse "Z" design and run to the rear of the body on each side of the apparatus.

STRIPE, REAR CHEVERON

A minimum of fifty percent of the rear vertical surface of the unit shall be overlaid with a reflective material, installed in an alternating "Chevron" pattern (sloping down and away from the centerline) at a 45-degree angle. Each stripe shall be 6” wide and the colors of stripping

shall be in compliance, with the current edition of NFPA 1901.
The Chevron striping shall be 3M red and lime green.

CHEVRON REFLECTIVE STRIPE, FRONT BUMPER

The front bumper shall be overlaid with a reflective material, installed in an alternating "Chevron" pattern (sloping down and away from the centerline) at a 45 degree angle.
The Chevron striping shall be 3M red and lime green.

WARRANTY, BODY PARTS & LABOR

There shall be a two-(2) year extended body mechanical parts and labor warranty provided with the apparatus. The apparatus shall be free of defects in material and workmanship for a warranty period of two-(2) year after the date on which the apparatus is first delivered to the original purchaser.

WARRANTY, CAB/CHASSIS PARTS & LABOR

The manufacturer shall provide a limited parts and labor warranty to the purchaser of the cab and chassis for a period of two-(2) year, or the first 24,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the end user.

WARRANTY, CAB STRUCTURAL

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

WARRANTY, BODY STRUCTURAL

There shall be a ten-(10) year body warranty on each new fire body/heavy-duty rescue apparatus. The bodies are to be free of structural failures caused by defective design or workmanship for a warranty period of ten-(10) years after the date on which the vehicle is first delivered to the original purchaser or 100,000 miles, whichever occurs first.

WARRANTY, CAB PAINT

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

WARRANTY, BODY PAINT/CORROSION

There shall be a four-(4) year paint/corrosion warranty provided. This warranty shall cover perforation, blistering, peeling, or any other adhesion defects caused by defective manufacturing methods, or material selections, for a warranty period of four-(4) years or 100,000 miles which occurs first, after the date of which the vehicle is first delivered to the original purchaser.

WARRANTY, FRAME RAIL

The chassis frame and crossmembers shall be provided with a lifetime material and workmanship limited warranty to the original purchaser. The warranty shall cover the chassis frame and crossmembers as being free from defects in material and workmanship that would arise under normal use and service.

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

WARRANTY, MERITOR AXLE

FRONT AXLE

The front axle shall be warranted by Meritor for two-(2) years with unlimited miles under the general service application.

REAR AXLE

The rear axle shall be warranted by Meritor for two-(2) years with unlimited miles under the general service application.

WARRANTY, DIESEL ENGINE

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

WARRANTY, TRANSMISSION

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

WARRANTY, ANTI LOCK BRAKE SYSTEM

The ABS brake system shall be warranted for a period of three-(3) years/300,000 miles.

WARRANTY, FIRE PUMP

Limited warranty coverage of parts and labor for the first two (2) years and parts only for years three (3) through five(5).

WARRANTY, PLUMBING SYSTEM

There shall be a ten-(10) year pump plumbing warranty provided. The warranty covers all plumbing components used in construction of the fire apparatus water/foam plumbing system against defects and workmanship, provided the apparatus is used in a normal and reasonable manner. The warranty is extended only to the original user-purchaser for a period of 10 years from the date of delivery.

WARRANTY, WATER TANK

The poly tank manufacturer warrants each tank to be free from manufacturing defects in material and workmanship for the service life of the original vehicle (vehicle must be actively used in fire suppression). The warrant is transferable, with written approval of the manufacturer. Each tank is inspected and tested for leaks prior to leaving the manufacturing facility. The tank shall be installed in the vehicle in accordance to the manufacture's guidelines.

There are no warranties, expressed or implied, which extend beyond the description of the face hereof. There is no expressed or implied warranty of merchantability or a warranty of fitness for a particular purpose. Additional, this warranty is in lieu of all other obligations or liabilities on the part of the Manufacturer.

MANUAL, CHASSIS OPERATION

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

MANUALS, ENGINE AND TRANSMISSION OPERATION

There shall be two-(2) printed hard copy sets of the engine operation manual and two-(2) printed hard copy sets of the transmission operation manual specific to the model ordered included with the chassis.

DIAGNOSTISC SOFTWARE

Diagnostic software programs for engine, transmission, ABS system, vehicle data recorder and body controller systems are to be supplied with apparatus.

MANUALS, APPARATUS BODY

The contractor shall supply, at time of delivery, at two-(2) sets of complete operation and service documentation covering the completed apparatus as delivered and accepted.

The documentation shall address at least the inspection, service, and operations of the fire apparatus and all major components thereof.

MANUALS, FIRE PUMP

There shall be two-(2) copies of pump manuals provided to the department.

WIRING DIAGRAMS, "AS BUILT" CAB/CHASSIS

There will be a complete digital set of "AS BUILT" electrical schematics provided at the time of delivery. These schematics will have each circuit properly numbered and in color.

The schematic will show each connector in the circuitry and the position in which each circuit enters, exits, or terminates. The schematic will be drawn in such a manner as to allow individual circuitry to be followed throughout the apparatus.

These schematics will not have the circuitry condensed into a single line or sets of lines. Multiple sheets will be acceptable so long as each of the harnesses is properly identified to the connecting sheet and harness. There will be a border around the paper(s), which contain alpha and numeric characters for indexing coordinate reference. There will be an indexing or part reference document for quick location of items shown on the schematics.

WIRING DIAGRAMS, "AS BUILT" APPARATUS BODY

There will be a complete set of "AS BUILT" electrical schematics provided at the time of delivery. These schematics will have each circuit properly numbered and in color.

The schematic will show each connector in the circuitry and the position in which each circuit enters, exits, or terminates. The schematic will be drawn in such a manner as to allow individual circuitry to be followed throughout the apparatus.

These schematics will not have the circuitry condensed into a single line or sets of lines. Multiple sheets will be acceptable so long as each of the harnesses is properly identified to the connecting sheet and harness. There will be a border around the paper(s), which contain alpha and numeric characters for indexing coordinate reference. There will be an indexing or part reference document for quick location of items shown on the schematics.

This document will refer the user to the appropriate drawing and page number and to sections of the drawing(s) by the means of letter and number coordinates. The schematic will show all

harnesses used in the apparatus cab, chassis and body that is supplied by the chassis and body manufacturer.

Modifications to the manufactured standard harnesses are to be documented and properly indexed for quick identification.

A complete wire number, color, and function listing will accompany the schematics.

SUPPLIED NFPA MISCELLANEOUS EQUIPMENT 1901 2009 EDITION

The following equipment shall be supplied and mounted on the apparatus by the apparatus manufacturer or local dealer.

- 800’ OF 2-1/2” HOSE # on HOSE and COUPELING
- 700’ HOSE, 1.75" IPS thread YELLOW JAF LINE # on HOSE and COUPELING
- 800' of 4" LDH YELLOW IN COLOR # on Hose and COUPELING
- (2) 25' 4" LDH YELLOW IN COLOR # on Hose and COUPELING
- (4) TFT Mid-Matic NOZZLES
- (2) TFT 2-1/2" PLAYPIPES
- 6 lb FLAT HEAD AXE W/BRACKET
- HALLIGAN STYLE BAR
- 6 lb PICK HEAD AXE W/BRACKET
- 6' PIKE POLE W/BRACKET
- 8' PIKE POLE W/BRACKET
- PORTABLE LED LITEBOX HAND LIGHTS W/CHARGING BRACKETS
- EXTINGUISHER 20lb A-B-C DRY CHEMICAL W/BRACKET
- EXTINGUISHER 2-1/2 GALLON WATER W/ BRACKET
- (5) SCOTT AIR PACKS W/4500 PSI CYLINDERS
- (5) 4500PSI CYLINDERS
- FIRST AID KIT
- (2) LEFT AND RIGHT PUMP PANEL LDH SPANNER WRENCHES W/BRACKETS
- HARRINGTON HYDRANT ASSIST VALVE
- HARRINGTON PUMP INTAKE VALVE W/BUILT IN RELIEF VALVE
- HYDRANT WRENCHES W/BRACKETS
- (1) 45 DEGREE 2-1/2" NST to 4" STORTZ ADAPTOR
- 2.5" NST DOUBLE FEMALE W/BRACKETS
- 2.5" NST DOUBLE MALE W/BRACKETS
- RUBBER MALLET
- (2) SALVAGE COVERS
- WHEEL CHOCKS W/BRACKETS
- (5) 5 POINT TEARAWAY TRAFFIC VESTS
- (3) ROAD SAFETY CONES
- LED FLARES
- MEDTRONIC PHYSIO-CONTROL SAED Life Pac 1000
- BULLARD TIC T4N W/CHARGING STATION (BUNDLE)
- I-PAD MINI 64

Quantity and brand shall be designated by the customer in accordance with NFPA 1901

current addition standards.

LADDER(S), 10' FOLDING

There shall be one (1) Alco-Lite Model FL-10, 10' folding ladder(s) provided with the apparatus. The ladder(s) shall be aluminum, single-section with rubber feet. The ladder(s) shall meet or exceed the latest NFPA standards.

LADDER(S), 14' ROOF

There shall be one (1) Alco-Lite model PRL-14, 14' roof ladder(s) supplied with the apparatus. The ladder(s) shall be aluminum, single-section with folding steel roof hooks on one end and steel spikes at the other. The ladder(s) shall meet or exceed the latest NFPA standards.

LADDER(S), 24' 2-SECTON EXTENSION

There shall be one (1) Alco-Lite model PEL-24, 24' two-section ladder(s) supplied with the apparatus. The extension ladder(s) shall be aluminum with steel spurs on one end. The ladder(s) shall meet or exceed the latest NFPA standards.

LETTERING

A lettering package that matches other fire department apparatus shall be provided. There shall be a maximum of one hundred (100) letters and/or numbers.

Fire departments may provide vinyl seals for the apparatus if desired.

TOOL MOUNTING

There shall be an allowance of sixteen (16) hours for the purposes of tool mounting at the local dealer.
Pack-Track panels and retaining hardware shall be mounted on the back wall of the cab and shall hold the drivers SCBA and various hand tools i.e. Halligan, ax, sledge....

TRAINING

Training shall be provided to the Salem Fire Department on all (4) Divisions, with a qualified manufacturers instructor Training shall including classroom and practical applications. Presentation materials shall be left with the Salem Fire Department at the conclusion of training. This may be in video, written, or a PowerPoint format.

PART 4. EVALUATION AND SELECTION

4.1 RULE FOR AWARD

Any contract that results from this procurement shall be awarded to the responsive and responsible vendor offering the lowest price for the vehicle specified.

PART 5. TERMS AND CONDITIONS

5.1 TERM OF CONTRACT

The contract term shall commence upon receipt of the "Notice to Proceed" and terminate upon satisfactory delivery of the vehicle.

5.2 DELIVERY TERMS

The vehicle shall be delivered to the Salem Fire Department, Station 1, 48 Lafayette Street, Salem, MA 01970 between the hours of 8 AM and 3 PM Monday-Friday. Please coordinate delivery with Chief David W. Cody at 978-744-6990 /dcody@salem.com

5.3 ASSIGNMENTS AND SUBCONTRACTING

The selected vendor shall not assign, sell, subcontract or otherwise transfer any interest in this contract without the prior written consent of the City. The successful bidder shall be fully responsible to the City for the acts and omissions of his subcontractor, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

5.4 PAYMENT

The City shall make every effort to furnish payment within thirty (30) days of receipt of a reasonably detailed invoice. Any invoice received must reference the contract number. Nothing contained in the contract shall create any contractual relation between any subcontractor and the City. The Successful Bidder shall cause appropriate provision to be inserted in all subcontracts relative to the work to require compliance by each subcontractor with the application provisions of the Contract for the improvements embraced in the site preparation.

Invoicing for all work must be done weekly and must be accompanied by copies of original bills for material used.

5.5 INSURANCE REQUIREMENTS

General- The Vendor shall before commencing performance of the Contract be responsible for providing and maintaining insurance coverage in force for the life of the Contract of the kind and in adequate amounts to secure all of the obligations under the Contract and with insurance companies licensed to write insurance in the Commonwealth of Massachusetts. All such insurance carried shall not be less than the kinds and amounts designated herein, and the Vendor agrees that the stipulation herein of the kinds and limits of coverage shall in no way limit the liability of the Vendor to any such kinds and amounts of insurance coverage. All policies issued shall indemnify and save harmless the City of Salem, its agents and employees from any and all claims for damages to persons or property as may rise out of the performance of this Contract.

Vendor's Comprehensive General Public Liability and Property Damage Liability Insurance - The Vendor shall carry Comprehensive General Liability Insurance providing for a limit of not less than Five Hundred Thousand Dollars ($500,000.00) for all damages arising out of bodily injury to or death of one person, and subject to that limit for each person, a total limit of not less than One Million Dollars ($1,000,000.00) for all damages arising out of bodily injuries or death of two or more persons in any one accident; and Vendor's Comprehensive Property Damage Liability Insurance providing

for a limit of not less than Five Hundred Thousand Dollars ($500,000.00) for all damages arising out of injury to or destruction of property in any one accident, and subject to that limit per accident, a total (or aggregate) limit or not less than One Million Dollars ($1,000,000.00) for all damages arising out of injury to or destruction of property during the policy period.

Comprehensive Automotive and Property Damage Insurance - The Vendor shall carry Automobile Insurance covering all owned vehicles, hired vehicles or non-owned vehicles under the control of the Vendor while performing work under the Contract in the amount of not less than Five Hundred Thousand Dollars ($500,000.00) for all damages arising out of bodily injuries to or death of one person and subject to that limit for each person, a total of not less than One Million Dollars ($1,000,000.00) for all damages arising out of bodily injuries to or death of two or more persons in any one accident; and Property Damage coverage in the amount of not less than Five Hundred Thousand Dollars ($500,000.00) for all damages to or destruction of property.

The Vendor must carry Workman's Compensation Insurance in the amounts prescribed under Massachusetts State Law and meet all other City and State Laws and Regulations.

No cancellation(s) of such insurance, whether by the insurer or by the insured party shall be valid unless written notice thereof is given by the parties proposing cancellation to the other party and to the City of Salem at least fifteen (15) days prior to the intended effective date thereof, which date shall be expressed in said notice, which shall be sent by registered mail, return receipt requested. These provisions shall apply to the legal representative(s), trustee in bankruptcy, receiver, assignee, trustee, and successor(s) in interest of the Vendor.

All insurance coverage shall be at the sole expense of the Vendor and shall be placed with such company as may be acceptable to the City of Salem and shall constitute a material part of the contract documents.

Failure to provide written proof to City and continue in force such insurance as aforesaid shall be deemed a material breach of the contract, and may constitute sufficient grounds for immediate termination of the same.

5.6 INDEMNIFICATION

Unless otherwise provided by law, the Vendor will indemnify and hold harmless the City against any and all liability, loss, damages, costs or expenses for personal injury or damage to real or tangible personal property which the City may sustain, incur or be required to pay, arising out of or in connection with the performance of the Contract by reason of any negligent action/inaction or willful misconduct by the Contractor, its agents, servants or employees.

5.7 FEDERAL AND STATE LAW

The selected contractor shall comply with all applicable Federal, State and Local laws and ordinances.