



## LEGAL NOTICE

### INVITATION TO SUBMIT QUOTATIONS

The Town of Smyrna will accept quotations on a pumper truck for the Fire Department. Bidders shall submit sealed quotations in the format specified in the Invitation to Submit Quotations no later than 10:00 a.m. January 29, 2019 at which time bids will be publicly opened and read aloud. No bid may be withdrawn after the scheduled closing time for a period of 90 days. Bidding documents may be obtained at Smyrna Town Hall during regular business hours or [www.townofsmyrna.org](http://www.townofsmyrna.org). Quotations should be mailed or hand delivered to:

Rex S. Gaither  
Smyrna Town Hall  
**Sealed Bid on Fire Truck / January 29 @ 10:00 a.m.**  
315 South Lowry Street  
Smyrna, TN 37167

The Town of Smyrna will not discriminate in the purchase of all goods and services on the basis of race, color, religion, sex, national origin, age, disability or any other lawfully protected classification.

Verbal quotations or quotations received after the closing date will not be accepted. The Town of Smyrna reserves the right to reject any and all bids, to waive technicalities or informalities and to accept any bid deemed to be in the best interest of the Town.

SUBMITTED BY: REX S. GAITHER  
FINANCE DIRECTOR

TO BE RUN: January 1, 2019

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Name of Company

## TABLE OF CONTENTS

	<b>Page</b>
<b>SECTION I - GENERAL INFORMATION</b>	<b>3</b>
<b>SECTION II - BID INFORMATION</b>	<b>4</b>
<b>BID QUOTATION FORM</b>	<b>12</b>
<b>SECTION III - APPARATUS SPECIFICATIONS</b>	<b>14 – 127</b>
<b>SECTION IV - SPECIFICATION COMPLIANCE</b>	<b>128</b>
<b>EXHIBIT A - LETTER OF INTENT TO SUBMIT QUOTATION</b>	<b>129</b>

## **SECTION I - GENERAL INFORMATION**

A. The Town of Smyrna desires to obtain quotes on a pumper truck for the Fire Department.

Smyrna Town Hall location:  
315 South Lowry Street  
Smyrna, TN 37167

Questions should be directed to Chief Bill Culbertson (615) 459-9735 or  
[bill.culbertson@townofsmyrna.org](mailto:bill.culbertson@townofsmyrna.org).

B. The Town of Smyrna reserves the right to reject any and all bids, to waive technicalities or informalities and to accept any bid deemed to be in the best interest of the Town. No bid may be withdrawn after the scheduled closing time for a period of 90 days.

C. The bidder shall abide by and comply with the true intent of the specifications and not take advantage of any unintentional error or omission, but shall fully address the full intent and meaning of each aspect of the specifications.

D. Bid document shall be completed and included as an integral part of each bidders proposal.

E. Freight shall be paid by vendor and should be included in unit price bid.

F. The Town is a tax exempt organization.

G. Mail is delivered after 11:00 a.m. Monday through Friday.

H. The Town of Smyrna, in accordance with Title VI of the Civil Rights Act of 1964 and Title 49, Code of Federal Regulations, hereby notifies all Bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, religion, sex, national origin, age, disability or any other lawfully protected classification.

I. Bid quotations must be submitted on the Town's quotation pages. No exceptions.

J. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to T.C.A. § 12-12-106 Iran Divestment Act.

## **SECTION II - BID INFORMATION**

### **INQUIRIES / INTENT TO SUBMIT QUOTATION**

All vendors that wish to bid **must** submit a "Letter of Intent" (Exhibit A) on company letterhead via email to Chief Bill Culbertson by January 8, 2019. Chief Bill Culbertson will confirm receipt of email. Companies not submitting Letter of Intent will not be considered for award of pumper apparatus.

All requests for clarification or questions regarding this quotation should be directed to:

Chief Bill Culbertson  
Smyrna Fire Department  
145 South Lowry Street  
Smyrna, TN 37167  
Phone: (615) 459-9735  
bill.culbertson@townofsmyrna.org

The deadline for clarification or questions is midnight on January 8, 2019. Any correspondence related to the Invitation to Submit Quotations should refer to the appropriate Invitation to Submit Quotations section, page, and paragraph number.

Clarifications will be sent by email to all bidders that submit intent to submit quotations by January 15, 2019.

- January 8 - "Letter of Intent to Submit Quotation" emails due
- January 8 - Deadline for clarifications or questions
- January 15 - Clarifications emailed to bidders intending to submit quotations
- January 29 - Quotations due

### **SUBMISSION OF BIDS**

In addition to these specifications, each bidder is required to submit a complete and accurate description, of their own product to include, but not limited to, size, dimensions, type, model, material grade and material thickness of their apparatus in the form of a detailed bid proposal. Bids will be judged on completeness and accuracy in response to these specifications. Bid proposals not complying with these basic minimum specifications may be judged non-compliant and shall be rejected.

Bid prices and compliance responses are to be entered on these forms **only**. Use of contractor's bid forms will be grounds for bid rejection. The contractor's specifications are to follow and use the same headings and follow the same sequence of these specifications for ease of evaluation.

Bids will be made available to other municipalities and governmental agencies within the USA. Unit purchases after a period of one year will be adjusted to reflect to the established Producers Price Index (PPI), U. S. Labor Dept., Bureau of Statistics, Series PCU3713 #2A, Emergency Vehicles.

### **BONDS**

A Performance, Labor and Material Bond, in the amount of 100% of the contract sum, will be required of the successful contractor.

## **BIDDER QUALIFICATIONS**

The bidder shall have in operation a parts and service facility within 50 miles of Smyrna, adequate for actively engaging in the performance of the services specified herein.

The Bidder shall employ qualified personnel to render prompt, efficient, and quality service.

A certified and notarized statement of financial condition and/or current Dunn and Bradstreet rating may be required prior to contract signing.

The manufacturer shall have been in operation for a minimum of thirty (30) years in the manufacture of fire apparatus.

An inspection of the bidder's facility may be made prior to award of the bid, at which time additional information could be requested to verify the bidder's responsibility.

The bidder shall identify the location of the manufacturing facility.

## **EXCEPTIONS, VARIATIONS OR CLARIFICATIONS**

Any exception shall be clearly defined with details as to the proposed alternative, referencing manufacturer and model number where appropriate. A general exception cannot be taken for any paragraph. A full word for word written comparison shall be included within the bid for any exception listed. Each exception shall be considered by the degree of impact and total effect on the bid. Bidders taking total exception to the bid specifications shall not be considered by the Purchaser. The Purchaser shall determine which (if any) exceptions are acceptable and this determination shall be final. By signature on the quotation page, each bidder agrees to this clause.

The Purchaser shall evaluate all bids received for all variations and exceptions to these specifications. If variations are found and are not listed as an exception, it shall be considered non-compliant and be rejected.

Should the apparatus not comply with all requirements of this document, the apparatus shall be rejected when delivered. All apparatus shall be inspected for material, workmanship, and compliance with specifications prior to acceptance. All items found to be not in compliance shall be identified, and the Purchaser reserves the right to accept or reject those specific items. The non-compliance or rejected items shall be replaced or reworked to meet the requirements of this document at no additional cost to the Purchaser.

## **GENERAL CONSTRUCTION**

The apparatus shall be of the latest type and constructed with due consideration to symmetrical proportion, the distribution of weight and the nature of the load to be carried, and the general character of the service to which the apparatus shall be subjected when placed in service. The apparatus and all major components shall be manufactured in North America.

The importance of public safety associated with all fire fighting vehicles requires that this vehicle meet or exceed these specifications. The minimum level of quality and design detailed in these specifications are required to meet the life cycle objectives of the apparatus.

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

The sheet metal material and gauge throughout the specifications are considered minimum. Since such materials are available to all manufacturers, exceptions to same shall not be accepted. Substitutions of lighter gauge material shall not be acceptable.

All parts not specifically mentioned herein, but which are necessary in order to furnish a complete fire apparatus, shall be furnished and shall conform to the best practices known to the fire apparatus industry. All items furnished shall be new and unused.

Details of design, construction and the sizes and weights of the different parts are left to the discretion of the manufacturer unless specified or shown.

The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to: accessibility of the various components, required periodic maintenance operations, ease of operation, and symmetrical proportioning of the overall apparatus.

Because this project requires the integration of the new custom fabricated components and related accessories to a new cab, chassis and necessary components, the Manufacturer shall accept final responsibility for the merger of the components into a fully integrated and complete vehicle.

Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the removal of major component parts for service and/or repair.

Construction shall be rugged and ample safety factors shall be provided to carry loads as specified to meet the road requirements and speed conditions.

## **TAXES**

This will be a lump sum bid which covers all costs including any State or Federally mandated tax or program after the sale of this apparatus.

## **WITHDRAWAL OF BIDS**

Bids may be withdrawn by e-mail or certified mail from Bidders prior to the time fixed for opening. Negligence on the part of the Bidder in preparing the bid confers no right for the withdrawal of the bid after it has been opened. No bid may be withdrawn after the scheduled closing time for a period of 90 days.

## **DELIVERY**

The manufacturer shall state the number of calendar days required to complete and deliver the apparatus after the award of the contract. The Manufacturer shall not be held liable for delay in delivery caused by accidents, strikes, or floods, provided, however, that the Manufacturer notifies the Purchaser's representative in writing, of the occurrence of any delay, such notification to be by certified mail, e-mail or third party courier and provided within 10 working days of its occurrence. The bid price shall be F.O.B. at 145 South Lowry Street. Call 615-459-9735 prior to delivery.

To insure proper break-in of all components while still under warranty, the apparatus shall be delivered over the road and under its own power. Rail and/or truck freight is not acceptable. The apparatus shall be suitably protected against damage from road debris while in transit.

## **INFORMATION REQUIRED AT DELIVERY**

Copies of complete operation and maintenance manuals, covering the completed apparatus, including, but not limited to, the chassis manual, lubrication charts, and fire equipment service information as supplied by brand name component suppliers.

Engine manufacturer's current brake horsepower curve, showing the maximum no-load governed engine RPM.

Manufacturers record of apparatus construction details form including actual vehicle weights.

## **DRAWINGS**

To assure the Purchaser that the bidder fully understands the scope of work to be performed and is familiar with the project, two copies of arrangement drawings shall be included with the bid. The purpose of these drawings is to assist the Purchaser in evaluation and comparison of all bids received in compliance with the specifications. Omission of drawings shall be cause for rejection of bid. The drawings shall depict the proposed apparatus and shall show the front, side, top, and rear views and interior floor plan of the proposed apparatus and shall show all principle dimensions. The drawings shall show the location of hardware, lights, discharge outlets, suction inlets, accessories, etc.

Before construction begins, drawings shall be reviewed and approved by Chief Bill Culbertson.

## **MATERIALS**

The material specifications herein shall be considered an absolute minimum. Exceptions shall not be taken or permitted due to the fact that all the raw materials of the specified type and gauge are available to all manufacturers. Since all custom fire apparatus builders have the ability to obtain and fabricate as these specifications require, all basic design specifications stated herein shall be met.

## **CERTIFICATIONS**

The proposed apparatus shall meet or exceed all applicable requirements of the latest editions of NFPA standards unless changed by the requirements of these specifications and all State and Federal regulations in effect at the date required for the submittal of the bid proposal.

Parts and service shall be available for this apparatus for a minimum of twenty (20) years.

The unit proposed is not to be a prototype unit and is to be of an established model and design.

## **SERVICE CENTER AND FIELD SERVICE**

Serviceability is of high importance to the town. For that reason, the bidder shall maintain a fully equipped company service center and provide on-call field service within 50 miles of the Town of Smyrna when requested. As a condition of bid acceptance, the bidder shall state the location and size, hours of operation, along with number of mechanic bays available for truck service and the experience of employees within the organization. A road service truck is required to afford heavy duty emergency service. Failure to provide this with your bid will be grounds for immediate bid rejection. Please disclose any replacement equipment available while undergoing service.

## **WARRANTY**

The successful bidder shall furnish a warranty that covers any defects in material and workmanship under normal use and service for the minimum periods listed in the specifications.

The warranties of the various components, (i.e., chassis, pump, equipment etc.) not manufactured by the apparatus builder making up the completed apparatus shall be passed on to the purchaser. To prevent the problems of "divided responsibilities" the successful bidder shall coordinate all warranty claims, the apparatus shall be manufactured by divisions of the same, or associated corporations.

## **LIQUIDATED DAMAGES**

Bidder must agree to fully complete the pumper before the calendar days indicated on page 12 from date of notice to proceed from Chief Bill Culbertson. Bidder must also agree to pay, as liquidated damages, the sum of \$50.00 per each calendar day thereafter.

## **AGREEMENT CONTRACT**

The bid document is the contract between vendor and purchaser. All questions will be answered and pages 12 and 13 completed.

## **INSURANCE REQUIREMENTS**

The Bidder shall purchase and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Bidder, its agents, representatives, or employees.

### **A. MINIMUM SCOPE AND LIMITS OF INSURANCE**

#### **1. Workers Compensation**

Workers Compensation insurance shall be in compliance with the Workers Compensation law of the State of Tennessee. Employers Liability is included with a minimum limit of \$500,000 per accident/per disease/per employee.

#### **2. Commercial General Liability**

Commercial General Liability insurance shall have a minimum limit per occurrence of \$1,000,000 and a minimum general aggregate of \$5,000,000.

#### **3. Automobile Liability**

Automobile Liability Insurance shall have a minimum combined single limit per occurrence of \$1,000,000. This insurance shall include third-party bodily injury and property damage liability for owned, hired and non-owned automobiles.

#### **4. Product Liability**

Product Liability shall have a total aggregate minimum of \$7,000,000.

The Bidder shall maintain full casualty insurance coverage on the cab and chassis from the time of first possession until title to apparatus is accepted by Purchaser.

If the Bidder maintains higher limits than the minimums shown above, the Town of Smyrna requires and shall be entitled to coverage for the higher limits maintained by the Bidder. Any available insurance

proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the Town of Smyrna.

**B. DEDUCTIBLES AND SELF-INSURED RETENTIONS**

Any deductibles or self-insured retentions must be declared to the Town of Smyrna. The Bidder shall be responsible for all deductibles and self-insured retentions.

**C. OTHER INSURANCE PROVISIONS**

The policies are to contain, or be endorsed to contain, the following provisions:

1. General Liability and Automobile Liability Coverages
  - a. The Town, its elected and appointed officials, agents, employees and volunteers shall be named as an additional insured as regards negligence by the Bidder.
  - b. The Bidder's insurance shall be primary as respects the Town, its elected and appointed officials, agents, employees and volunteers. Any insurance or self-insurance maintained by the Town of Smyrna shall be excess and non-contributory of the Bidder's insurance.
  - c. Liability coverage shall include completed operations coverage, and Bidder shall maintain such coverage for a period of 2 to 5 **years** from the date of final acceptance.
2. Workers Compensation and Employers Liability Coverage

The insurer shall agree to waive all rights of subrogation against the Town, its elected and appointed officials, agents, employees and volunteers for losses arising from work performed by the Bidder for the Town of Smyrna.
3. All Coverages
  - a. Coverage shall not be canceled, suspended, or voided by either party (the Bidder or the insurer) or reduced in coverage or in limits except after 30 days written notice has been given to the Town of Smyrna. Ten-day written notice of cancellation is acceptable for non-payment of premium. Notifications shall comply with the standard cancellation provisions in the Bidder's policy.
  - b. Neither the acceptance of the completed work nor the payment thereof shall release the Bidder from the obligations of the insurance requirements or indemnification agreement.
  - c. The insurance companies issuing the policies shall have no recourse against the Town of Smyrna for payment of premiums or for assessments under any form of the policies.
  - d. Replacement certificates, policies or endorsements shall be provided to the Town for any such insurance expiring prior to the completion of services.
  - e. Any failure of the Bidder to comply with reporting provisions of the policy shall not affect coverage provided to the Town, its elected and appointed officials, agents, employees and volunteers.

**D. ACCEPTABILITY OF INSURERS**

All required insurance shall be provided by a company or companies licensed to conduct business in the State of Tennessee and having A.M. Best Company ratings of no less than A.

**E. VERIFICATION OF COVERAGE**

The Contractor shall furnish the Town with Certificates of Insurance reflecting proof of required coverage. The Certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. **The Certificates are to be received and approved by the Manager of Safety & Risk Management before work commences and upon any contract renewal thereafter.**

Upon failure of the Contractor to furnish, deliver and maintain such insurance as requested, this contract, at the election of the Town, may be suspended, discontinued or terminated. Failure of the Contractor to purchase and/or maintain any required insurance shall not relieve the Contractor from any liability or indemnification under the contract.

The Certificate of Insurance naming the "Town of Smyrna" as Additional Insured shall be addressed to the attention of:

Town of Smyrna  
Department of Safety & Risk Management  
ATTN: Kay Charles  
315 S Lowry St  
Smyrna, TN 37167

The Certificate of Insurance may also be submitted electronically to [kay.charles@townofsmyrna.org](mailto:kay.charles@townofsmyrna.org).

The Town reserves the right to request complete certified copies of all required insurance policies at any time.

**F. SUBCONTRACTORS**

Contractor shall include all subcontractors as insureds under its policies **OR** shall be responsible for verifying and maintaining the Certificates provided by each subcontractor. Subcontractors shall be subject to all of the requirements stated herein. The Town of Smyrna reserves the right to request copies of subcontractor's Certificates at any time.

**G. WORKERS' COMPENSATION INDEMNITY**

In the event Bidder is not required to provide or is exempt from providing workers' compensation coverage, the parties hereby agree that Bidder, its owners, agents and employees will have no cause of action against, and will not assert a claim against the Town of Smyrna, its elected and appointed officials, agents, employees and volunteers, under any circumstances. The parties also hereby agree that the Town of Smyrna, its elected and appointed officials, agents, employees and volunteers shall in no circumstance be, or considered as, the employer or statutory employer of Bidder, its owners, agents and employees. The parties further agree that Bidder is a wholly independent Bidder and is exclusively responsible for its employees, owners, and agents. Bidder hereby agrees to protect, defend, indemnify and hold the Town of Smyrna, its elected and appointed officials, agents, employees and volunteers harmless from any such assertion or claim that may arise from the performance of this contract.

**HOLD HARMLESS AND INDEMNITY REQUIREMENTS:**

Bidder shall indemnify and hold harmless, to the maximum extent permitted by law, the Town of Smyrna and its officers, agents, employees, volunteers, from and against any and all liability, damages, losses, (whether in contract or in tort, including personal injury, accidental death or property damage, and regardless, of whether the allegations are false, fraudulent or groundless), and costs (including reasonable attorney's fees, litigation, arbitration, mediation, appeal expenses) which in whole or in part are caused by the negligence, recklessness or intentional wrongful misconduct of the Bidder and persons employed by or utilized by the Bidder in Bidder's performance of this Agreement.

The Bidder further agrees to indemnify for claims, loss, damages or expenses attributable to bodily injury, sickness, disease, death, personal injury or property damage caused in whole or in part by the Bidder, officers, agents, volunteers, employees and anyone acting on behalf of the Bidder, including anyone directly or indirectly employed or hired by the Bidder and anyone for whose acts the Bidder may be liable regardless of whether or not it is caused in whole or in part by the negligent act, error, or omission of the Town, its elected and appointed officials, agents, employees and volunteers.

The Bidder further agrees to assume all liability for use and all claims made against the Town of Smyrna and its officers, agents, employees or volunteers for the use of any patents, patent infringement claims, process, device or article forming a part of the apparatus or any appliance furnished under contract.

Pursuant to Tennessee Attorney General Opinion 93-01, the Town will not indemnify, defend or hold harmless in any fashion the Bidder from any claims arising from any failure, regardless of any language in any attachment or other document that the Bidder may provide.

**APPLICABLE LAW:**

Any contract resulting from this ISQ shall be governed by and construed under the laws of the State of Tennessee.

**BID QUOTATION FORM**

The undersigned agrees to meet requirements of the specifications, attached hereto and provide the required insurance coverage and bonds on a state approved insurance company.

In submitting this quotation it is understood that the Purchaser reserves the right to accept or reject any or all proposals and it is further understood that any or all proposals may not be withdrawn for a period of ninety (90) days from the opening thereof.

**ONE (1) PUMPER FIRE APPARATUS PER SPECIFICATIONS**

Manufacturer \_\_\_\_\_

Manufacturer Location \_\_\_\_\_

Model \_\_\_\_\_

F.O.B. Purchasers Location: 145 South Lowry Smyrna, Smyrna

\$ \_\_\_\_\_ Lump Sum

This price will be net of any discounts. Please enumerate discounts on the following lines.

\_\_\_\_\_  
\_\_\_\_\_

3 day onsite orientation, operations, maintenance and training by manufacturer representative (not a dealer representative).

State your delivery time in calendar days ARO: \_\_\_\_\_

Bid will be firm for 90 days. Terms: net payment on delivery.

BIDDER: \_\_\_\_\_

AUTHORIZED SIGNATURE: \_\_\_\_\_

NAME TYPED: \_\_\_\_\_

TITLE: \_\_\_\_\_

STREET ADDRESS: \_\_\_\_\_

CITY, STATE, ZIP: \_\_\_\_\_

TELEPHONE: \_\_\_\_\_ FAX: \_\_\_\_\_

E-MAIL ADDRESS: \_\_\_\_\_ DATE: \_\_\_\_\_

The undersigned hereby declares that no person or party other than the undersigned have any interest whatever in this proposal, that it is without any connection or collusion with any person or persons making or having made any proposal for the same work and without any previous understanding with such person or persons as to relative prices, obviating competition, and that it is made in good faith.

BIDDER: \_\_\_\_\_

AUTHORIZED SIGNATURE: \_\_\_\_\_

NAME TYPED: \_\_\_\_\_

TITLE: \_\_\_\_\_

Service Center Address: \_\_\_\_\_

Size of Service Center: \_\_\_\_\_

Hours of Operation: \_\_\_\_\_

Number of Mechanic Bays available for Truck Service: \_\_\_\_\_

Years of Experience of Employees: \_\_\_\_\_

Field Service

On-call Road Service Truck: \_\_\_\_\_

Heavy Duty Emergency Service Truck: \_\_\_\_\_

List Replacement Equipment if available, while undergoing service: \_\_\_\_\_

\_\_\_\_\_

Warranty: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Response Time in hours: \_\_\_\_\_

Name of nearest authorized dealer: \_\_\_\_\_

Address of nearest authorized dealer: \_\_\_\_\_

\_\_\_\_\_

Hours of Operation: \_\_\_\_\_

## **SECTION III – APPARATUS SPECIFICATIONS**

### **PURPOSE**

Through these specifications it is the intent of the Purchaser to secure an apparatus to withstand the duty encountered in the firefighting and rescue apparatus service.

The apparatus shall be constructed with due consideration to the nature and distribution of the load to be sustained, and to the characteristics of the service.

All parts not specifically mentioned herein, but which are necessary in order to furnish a complete fire apparatus, shall be furnished and shall conform to the best practices known to the emergency vehicle industry.

Subletting any part of the fabrication, painting, or finishing of this apparatus will not be acceptable. The apparatus body is to be built completely by the Bidder or the bid will be excluded from consideration.

Where these specifications require specific brand names, model numbers, dimensions or capacities of components, these shall be supplied, as each has been selected carefully for reliability and availability of replacement on a local basis.

Due to the importance of public safety associated with firefighting, and to assure a reasonably trouble free life for the body being purchased, Bidders shall have at least thirty (30) years' experience manufacturing and field testing aluminum bodies for emergency vehicle duty. Bidders of apparatus that have not manufactured and field tested such apparatus for at least thirty (30) years shall be excluded from consideration. The proposals of such Bidders will not be considered.

Bidders shall state in the proposal, the number years of experience they have building aluminum body emergency vehicles.

The apparatus and all major components shall be manufactured in the United States.

To insure adequate service when necessary, the bidder shall include the address of their service facility which must be located within 50 miles of the Smyrna Fire Department.

Y\_\_\_N\_\_\_

### **REGULATION COMPLIANCE**

Where applicable, Bidder's specifications must fully comply with requirements of the respective N.F.P.A. recommendations, Underwriters Laboratories Inc., State Inspection-Insurance Board, and all State and Federal Department of Transportation vehicle regulations at contract signing.

In the event the apparatus fails to meet a required UL test on the first trial, a second trial may be made at the option of the Bidder within thirty (30) days of the date of the first trial. The second trial shall be final or conclusive, and failure to comply with these requirements shall be cause for rejection and exercise of the performance bond.

Permission to keep or store apparatus, in any building owned or occupied by the Purchaser, during the above specified period with the permission of the Bidder, shall not constitute acceptance of the same.

Y\_\_N\_\_

### **ROAD REQUIREMENTS**

Road tests shall be conducted by the Bidder with the apparatus fully loaded, and a continuous run of ten (10) miles will be made under typical driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission, drive shafts, front and rear axles, etc. shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus.

Y\_\_N\_\_

### **FORM AND DOCUMENT REQUIREMENTS**

The Bidder shall submit a certified weight distribution diagram with their bid that includes stating the payload capacity (G.V.W. less empty weight of apparatus).

Color photographs of similar apparatus and features manufactured by the Bidder shall be submitted with the proposal.

The Bidder shall submit with his bid a list of a minimum of 100 vehicles similar to this bid that they have previously manufactured. The complete minimum list of 100 shall include the names, addresses, and telephone numbers of the Purchasers' Fire Chiefs.

A separate listing shall be provided to include a minimum of ten customers that have purchased two or more emergency vehicles similar to this proposal that the Bidder has manufactured in the last ten years. The listing shall include the names, addresses, and telephone numbers of the Purchasers' Fire Chiefs.

A statement that guarantees replacement parts for all components manufactured by the body builder will be available for a period not less than 20 years. The statement shall be signed by an officer of the company.

A sample form of the inspection criteria used during the paint process of the apparatus shall be furnished with the bid. This form shall require information pertaining to the areas of the apparatus painted, when painted, type and quantity of priming and finish paints used, and a graded scale of the finish paint quality. The form shall require signature of the body builder's paint supervisor, with inspection date, to indicate that each particular step is acceptable and approved.

On any vehicle where the driveline work is done for installation of a pump or PTO, a "Driveshaft Alteration Record" shall be completed to show specific angles used for the pump and/or PTO. The form shall be signed by the responsible individual and dated. A copy of this form shall accompany the proposal.

A sample Quality Assurance Certification form used by the body builder's electrical department shall be furnished with the bid. The form shall indicate, via a checklist and dated signature, that all 12 volt and 120 volt items of the apparatus have been inspected and approved. This shall include installation quality as well as function.

An estimated Amp draw analysis of the proposed apparatus 12 volt electrical system shall be provided with the Bidders proposal. The analysis shall show estimated Amp draw of the apparatus responding to the scene and of the apparatus at the scene.

Each bid must give the full business address of the Bidder. The name of each person signing the bid shall also be typed or printed below the signature.

The Bidder must provide the name, full address and phone number of its authorized sales representative who is to coordinate the contract and delivery of the apparatus.

Y\_\_N\_\_

### **PAINT TESTING**

The Bidder shall have conducted salt tests on at least three major paint manufacture's product to determine which showed the most desirable results in terms of appearance and durability. A set of test plates of each product shall have been given to each individual paint manufacturer as well as a third party testing firm. The results of the tests shall be in writing and available for inspection by the Purchaser.

Y\_\_N\_\_

### **INSURANCE**

The Bidder shall provide with his bid a Certificate of Insurance listing the amount of his company's Product Liability insurance coverage. This insurance shall not be less than \$7,000,000 total aggregate coverage.

The Bidder shall maintain full casualty insurance coverage on the cab and chassis from the time of first possession until title to apparatus is accepted by Purchaser.

The Purchaser reserves the right to require proof of insurance from the Bidder's insurance carrier prior to entering into contract with the Bidder.

Y\_\_N\_\_

### **APPARATUS DRAWINGS**

The Bidder shall submit, with the proposal, two (2) sets of scaled apparatus drawings done exactly to these specifications.

Said drawings shall be submitted with the bid proposal in order for the Purchaser to permit evaluation of the scope of the work being proposed by the Bidder and its conformance to the specifications.

At a minimum, the drawings shall show left side exterior, right side exterior, front exterior, and rear exterior. When applicable, the body top view or interior floor plan shall also be shown.

Y\_\_N\_\_

**THREE DIMENSIONAL BODY DRAWING**

A three dimensional drawing of the Bidders typical extruded aluminum body shall be submitted with the Bidders proposal. The drawing shall show all the aluminum extrusions used including type and shape, and where located. The areas where the body cross members are mounted to the chassis frame shall also be shown.

This three dimensional drawing must be submitted to give the Purchaser a clear understanding of the structural integrity of the unit.

Y\_\_N\_\_

**THREE DIMENSIONAL PLUMBING DRAWING**

The Bidder shall submit a three dimensional drawing of the proposed pump compartment with the proposal. The drawing shall include the pump panels, components, valves, and control rod placement for department review and acceptance of the engineered layout of the unit.

Y\_\_N\_\_

**WIRING DIAGRAM**

The Bidder shall submit a wiring diagram that is typical for the type of unit being bid so that the Purchaser can review the Bidders overall electrical system.

Y\_\_N\_\_

**EXCEPTIONS, VARIATIONS OR CLARIFICATIONS**

Each Bidder is required to provide a complete and accurate description of the proposed apparatus.

To provide for a fair and readily comparable evaluation of the proposals, the Bidder must list his apparatus description in the same sequence as provided in this bid specification.

Since all components specified by brand, model number, dimension, size, or capacity are readily available to all Bidders, bidding of variations and alternates must be detailed clearly.

To provide a fair comparison of all Bidders' proposals, any exceptions, variations, or clarifications to these specifications must be set forth on a separate sheet with Bidders letterhead in the bid. These exceptions, variations, or clarifications must be numbered to correspond with items numbered in the specifications.

Specifically, all Bidders are required to submit these specifications with their proposal and consecutively number each item of the Bidders proposal that differs. The number shall correspond with the Bidder's exception, variation, or clarification page which shall be included with the proposal.

NOTE: Failure to list each and every exception in above manner will result in rejection of Bidder's proposal. A general statement taking "total exception" to the specifications will result in rejection of that bid.

Y\_\_N\_\_

**PATENT INDEMNIFICATION BY BIDDER**

The Bidder, if his bid is accepted, shall indemnify the Purchaser against patent infringement claims and will defend any and all suits and assume all liability for use and all claims made against the Purchaser or any of its officials or agents for the use of any patents, process, device or article forming a part of the apparatus or any appliance furnished under contract.

Y\_\_N\_\_

**COMPLETION**

The Bidder will specify the estimated number of calendar days that the apparatus will be completed after award of the contract. The Bidder will not be held liable for delay in delivery caused by events not subject to control such as accidents, strikes or floods.

Y\_\_N\_\_

**PRICING, TERMS AND CONTRACTS**

The bid price shall not include any local, State or Federal taxes. The Bidder shall not be liable for any State or Federally mandated tax which becomes law after the signing of the contract for this apparatus. The Bidder shall state if their price includes delivery to the Purchaser and shall separate out the cost of such delivery for evaluation by the Purchaser.

The complete payment shall be made to the body builder upon delivery to the Purchaser. No advanced payment of any sort will be made to the Bidder.

Bidders shall be required to provide, in exact detail, the payment terms for said apparatus in their fire apparatus proposal.

Any contract which the Purchaser shall enter into shall include the attached specifications, in addition to Bidders proposal specifications.

Y\_\_N\_\_

**AWARD OF CONTRACT**

The Contract will be awarded as soon as possible to the lowest responsible Bidder, provided the bid is responsive to the specification, reasonable, and in the sole judgement of the Purchaser it is in the best interest of the Purchaser to accept it.

The Purchaser reserves the right to waive any informality in Bids received when such waiver is in the interest of the Purchaser; also to accept any item in the bid, unless otherwise specified by the Purchaser or Bidder.

Each Bidder shall be prepared, if so requested by the Purchaser, to present specific evidence of his experience, qualifications, and financial ability to carry out the terms of the contract. The financial capability of the Bidder will be seriously considered as part of the bid evaluation.

Y\_\_\_N\_\_\_

**REJECTION OF BIDS**

The competency and responsibility of Bidders will be considered in making the award. The Purchaser reserves the right to reject any or all Bids when, in his sole judgement, such rejection is in the best interest of the Purchaser, and to reject the bid of a Bidder who, in the judgement of the Purchaser, is not in a position to fulfill the contract. The Purchaser does not obligate itself to accept the lowest or any bid.

Y\_\_\_N\_\_\_

**WITHDRAWAL OF BIDS**

Bids may be withdrawn by Bidders certified mail or telegraphic request prior to the time and date fixed for opening.

Negligence on the part of the Bidder in preparing the bid confers no right of the withdrawal of the bid after it has been opened.

No Bid may be withdrawn after the scheduled closing time for a period of 90 days.

Y\_\_\_N\_\_\_

**FULL DOCUMENTATION AT TIME OF DELIVERY**

-- The Bidder must supply, at time of delivery, complete and detailed operation and maintenance manuals for all apparatus components.

-- A complete and exact wiring diagram of the delivered body electrical system will be provided at the time of delivery.

-- A written procedure, on Company letterhead, shall be provided with the delivered vehicle detailing correct steps to be taken for future mixing of paint for touch up and repaint purposes. This shall include exterior job color paint and compartment interior paint. A copy of this document must be provided with the Bidder's proposal.

-- A high quality, long lasting finish and appearance is critical with this apparatus. A document, on Company letterhead, shall be provided with the delivered vehicle detailing the procedure for maintenance and cleaning of the apparatus paint, lettering, striping, and aluminum tread plate. The document shall detail steps to be taken during the "initial" cleaning process and "final" cleaning process, including type of materials and solutions to be used and required unit measurement of each solution.

-- Procedures shall also be explained for correct waxing of the vehicle. The document shall include an explanation of the danger of acid rain and the proper precautions to be taken to protect the apparatus. A copy of this maintenance, cleaning, and waxing document must be provided with the Bidder's proposal.

-- The delivered apparatus shall have a certified G.V.W.R. weight sticker applied to the vehicle on delivery to assure the apparatus meets all laws pertaining to the weight carrying capacity of the vehicle.

Y\_\_N\_\_

**WARRANTY**

The Successful bidder shall warrant the apparatus to be free from defects in material and workmanship for a period of two (2) years. Component parts, if found to be defective, shall be repaired or replaced without cost to purchaser. This warranty shall be exclusive of the chassis, fire pump, and other trade accessories, which is normally warranted by their respective manufacturers.

In addition to the two year base warranty, the following extended warranties shall be furnished if applicable:

- A twenty (20) year structural body warranty.
- A ten (10) year paint warranty.
- A seven (7) year electrical body warranty.
- A ten (10) year stainless steel plumbing warranty.

The Bidder shall include with his bid a copy of all warranty details requested in this specification including, but not limited to, cab and chassis, engine, transmission, axles, frame, paint, body structural, plumbing, water tank, electrical, etc.

Y\_\_N\_\_

**CONFLICT TO SPECIFICATIONS**

To be considered, all proposals must be made in accordance with these "Instructions to Bidders".

Should any Bidder find, during examination of specifications, any discrepancies, omissions, ambiguities or conflicts, or be in doubt as to their meaning, he shall request from the Purchaser, in writing, an interpretation or correction thereof not later than ten (10) days before the date of the bid opening. The Purchaser will review the question, and where the information sought is not clearly indicated or specified, in his opinion, he will issue a clarifying or correcting addendum bulletin. Proper interpretation or the making of any necessary inquiry will be the Bidders responsibility.

All specifications herein contained are considered as minimum. No exceptions to these minimum standards shall be allowed relating to gauge of metal, size of components, and overall design.

Y\_\_N\_\_

**PRE-CONSTRUCTION MEETING**

A pre-construction meeting shall be held utilizing "GoToMeeting" conferencing prior to any construction processes at the Bidder's manufacturing facility. Authorized representatives of both the Purchaser and the Manufacturer shall be present (a dealer of the Manufacturer is not acceptable). The "GoToMeeting" shall be a secure online meeting with transmit and receive audio capabilities for participants.

Prior to and during the meeting the Manufacturer shall supply complete apparatus drawings and specifications for review and Purchaser approval.

Y\_\_N\_\_

**FINAL INSPECTION TRIP**

The bidder's proposal shall include the expenses for a final inspection trip for two (2) representatives of the Smyrna Fire Department to the apparatus builder's factory prior to shipping. These expenses shall include normal commercial air fare, lodging, rental car, and meals for two (2) days.

Y\_\_N\_\_

**MODEL**

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

Y\_\_N\_\_

**MODEL YEAR**

The chassis shall have a vehicle identification number that reflects the latest available model year.

Y\_\_N\_\_

**COUNTRY OF SERVICE**

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

The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis. Spartan Chassis is not responsible for compliance to state, regional, or local regulations. Dealers should identify those regulations and order any necessary optional equipment from Spartan Chassis or their OEM needed to be in compliance with those regulations.

Y\_\_N\_\_

**CAB AND CHASSIS LABELING LANGUAGE**

The cab and chassis shall include the applicable caution, warning, and safety notice labels with text to be written in English.

Y\_\_ N\_\_

**APPARATUS TYPE**

The apparatus shall be a pumper vehicle designed for emergency service use which shall be equipped with a permanently mounted fire pump which has a minimum rated capacity of 2000 gallons per minute (3000 L/min). The apparatus shall include a water tank and hose body whose primary purpose is to combat structural and associated fires.

Y\_\_ N\_\_

**VEHICLE TYPE**

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

Y\_\_ N\_\_

**VEHICLE ANGLE OF APPROACH PACKAGE**

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

NFPA1901 Angle of Approach definition:

“To determine the angle of approach, place a thin steel strip against the front of the tires where they touch the ground or stretch a tight string from one front tire to the other at the front where they touch the ground. Determine the lowest point (component or equipment) on the vehicle forward of the front tire that would make the smallest angle of approach. Hang a plumb bob from the lowest point and mark the point on the ground where the point of the plumb bob touches. Measure the vertical distance from the ground to the point where the plumb bob was hung (distance *V*). Measure the horizontal distance from the plumb bob point to the steel strip or string running from front tire to front tire (distance *H*). Divide the vertical distance by the horizontal distance. The ratio of *V/H* is the tangent of the angle of approach. If the ratio is known, the angle of approach can be determined from a table of trigonometric functions of angles or from a math calculator. The standard requires a minimum angle of approach of 8.00 degrees: since the tangent of 8.00 degrees is 0.1405, if *V* divided by *H* is 0.1405 or larger, the angle of approach is 8.00 degrees or greater.”

Y\_\_ N\_\_

**AXLE CONFIGURATION**

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

Y\_\_ N\_\_

**GROSS AXLE WEIGHT RATINGS FRONT**

The front gross axle weight rating (GAWR) of the chassis shall be 21,500 pounds.

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

Y\_\_ N\_\_

**GROSS AXLE WEIGHT RATINGS REAR**

The rear gross axle weight rating (GAWR) of the chassis shall be 33,000 pounds.

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

Y\_\_ N\_\_

**PUMP PROVISION**

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

Y\_\_ N\_\_

**WATER & FOAM TANK CAPACITY**

The chassis shall include a carrying capacity of 1250 gallons (2839 liters). The water and/or foam tank(s) shall be supplied and installed by the apparatus manufacturer.

Y\_\_ N\_\_

**CAB STYLE**

The cab shall be a custom, fully enclosed, LFD model with a 10.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer six (6) seating positions.

The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.

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

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

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19 inch thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and lower roof skin shall be 0.13 inch thick; the rear wall and raised roof skins shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.

The exterior width of the cab shall be 99.40 inches wide with a minimum interior width of 91.00 inches. The overall cab length shall be 144.60 inches with 67.50 inches from the centerline of the front of the axle to the back of the cab.

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

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 65.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 63.38 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.25 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 32.25 inches wide X 61.00 inches high, from the cab floor to the top of the door opening.

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

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

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

Y\_\_ N\_\_

## **OCCUPANT PROTECTION**

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

The system components shall include:

- Driver steering wheel airbag
- Driver dual knee air bags (patent pending) with energy management mounting (patent pending) and officer knee airbag.
- Large driver, officer, and crew area side curtain airbags
- APS advanced seat belt system - retractor pre-tensioners tighten the seat belts around the occupants, securing the occupants in seats and load limiters play out some of the seat belt

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

- Heavy truck Restraints Control Module (RCM) - receives inputs from the outboard sensors, selectively deploys APS systems, and records sensory inputs immediately before and during a detected qualifying event
- Integrated outboard crash sensors mounted at the perimeter of the vehicle - detects a qualifying front or side impact event and monitors and communicates vehicle status and real time diagnostics of all critical subsystems to the RCM
- Fault-indicating Supplemental Restraint System (SRS) light on the driver's instrument panel

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

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

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

Y\_\_ N\_\_

### **CAB FRONT FASCIA**

The front cab fascia shall be the Evolution style, constructed of lightweight, impact resistant fiberglass reinforced plastic which shall be attached to the front cab skin to offer an appealing exterior. The cab fascia will encompass the front of the aluminum cab structure from the bottom of the windshield to the lower section of the cab.

The fascia shall include modules for two (2) single Hi/Low beam headlamps, the modules shall also provide a turn signal position integrated with the headlight bezel. The headlight bezel shall be removable, when removed there shall be easy access for maintenance of the light assemblies as well as access to the engine air intake ember separator, the electrical bulkhead connections, and the transmission electronic communications module. Stylized louvers are incorporated into the design of the fascia to enhance air flow to the cooling system.

The Evolution fascia shall also provide two (2) warning light positions below each of the headlamp modules for the installation of up to four (4) warning lights on the front cab fascia.

Y\_\_ N\_\_

### **FRONT GRILLE**

The fascia shall include a stainless steel flat front grille. The grille shall be installed on the front of the cab fascia. The upper portion of the grille shall be hinged to provide service access behind the grille.

Y\_\_ N\_\_

**CAB UNDERCOAT**

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

Y\_\_ N\_\_

**CAB SIDE DRIP RAIL**

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

Y\_\_ N\_\_

**CAB PAINT EXTERIOR**

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.

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

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

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

Y\_\_ N\_\_

**CAB PAINT MANUFACTURER**

The cab shall be painted with PPG Industries paint.

Y\_\_ N\_\_

**CAB PAINT PRIMARY/LOWER COLOR**

The primary/lower paint color shall be PPG FBCH 904823 red.

Y\_\_ N\_\_

**CAB PAINT WARRANTY**

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

Y\_\_ N\_\_

### **CAB PAINT INTERIOR**

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

Y\_\_ N\_\_

### **CAB ENTRY DOORS**

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

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.

All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38 inch pin and shall be constructed of stainless steel.

Y\_\_ N\_\_

### **CAB ENTRY DOOR TYPE**

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

Y\_\_ N\_\_

### **CAB INSULATION**

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

Y\_\_ N\_\_

### **LH EXTERIOR REAR COMPARTMENT**

The cab shall offer an exterior compartment on the left side of the cab behind the rear door. The compartment opening shall be 10.00 inches wide X 21.19 inches high. The compartment size shall be 11.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

Y\_\_ N\_\_

### **LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING**

There shall be one (1) On-Scene brand Night Axe LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 9.00 inches long and shall include six (6) bright white LEDs.

Y\_\_ N\_\_

**LH EXTERIOR COMPARTMENT INTERIOR FINISH**

The interior of the left hand exterior compartment shall have a multi-tone silver gray texture finish.

Y\_\_ N\_\_

**RH EXTERIOR REAR COMPARTMENT**

The cab shall offer an exterior compartment on the right side of the cab behind the rear door. The compartment opening shall be 10.00 inches wide X 21.19 inches high. The compartment size shall be 11.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

Y\_\_ N\_\_

**RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING**

There shall be one (1) On-Scene brand Night Axe LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 9.00 inches in length and shall include six (6) bright white LEDs.

Y\_\_ N\_\_

**RH EXTERIOR COMPARTMENT INTERIOR FINISH**

The interior of the right hand exterior compartment shall have a multi-tone silver gray texture finish.

Y\_\_ N\_\_

**CAB STRUCTURAL WARRANTY**

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

Y\_\_ N\_\_

**CAB TEST INFORMATION**

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

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

Y\_\_ N\_\_

### **ELECTRICAL SYSTEM**

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

Y\_\_ N\_\_

### **APPARATUS WIRING PROVISION**

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

Y\_\_ N\_\_

### **MULTIPLEX DISPLAY**

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

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

Y\_\_ N\_\_

### **LOAD MANAGEMENT SYSTEM**

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

Y\_\_ N\_\_

### **DATA RECORDING SYSTEM**

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

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

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

Y\_\_ N\_\_

### **ACCESSORY POWER**

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

Y\_\_ N\_\_

### **EXTERIOR ELECTRICAL TERMINAL COATING**

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

Y\_\_ N\_\_

### **ENGINE**

The chassis engine shall be a Cummins X15 engine. The X15 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 505 horse power at 1800 RPM and shall be governed at 2100 RPM. The torque rating shall feature 1850 foot pounds of torque at 1150 RPM with 912 cubic inches (14.9 liter) of displacement.

The X15 engine shall feature a VGT™ Turbocharger, a high pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the 2017 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.

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

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

Y\_\_ N\_\_

### **CAB ENGINE TUNNEL**

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

Y\_\_ N\_\_

### **DIESEL PARTICULATE FILTER CONTROLS**

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

Y\_\_ N\_\_

### **ENGINE PROGRAMMING HIGH IDLE SPEED**

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

Y\_\_ N\_\_

### **ENGINE HIGH IDLE CONTROL**

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

Y\_\_ N\_\_

### **ENGINE PROGRAMMING ROAD SPEED GOVERNOR**

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

Y\_\_ N\_\_

### **AUXILIARY ENGINE BRAKE**

A compression brake, for the six (6) cylinder engine shall be provided. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine

compression brake shall activate upon 0% accelerator when in operation mode and actuate the vehicle's brake lights.

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

Y\_\_ N\_\_

### **AUXILIARY ENGINE BRAKE CONTROL**

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:

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

The compression brake shall be controlled via an off/low/high virtual button through the Vista display and control screen. The multiplex system shall remember and default to the last engine brake control setting when the vehicle is shut off and re-started.

Y\_\_ N\_\_

### **ELECTRONIC ENGINE OIL LEVEL INDICATOR**

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

Y\_\_ N\_\_

### **FLUID FILLS**

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

Y\_\_ N\_\_

### **ENGINE DRAIN PLUG**

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

Y\_\_ N\_\_

### **ENGINE WARRANTY**

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

Y\_\_ N\_\_

### **REMOTE THROTTLE HARNESS**

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

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

Y\_\_ N\_\_

### **ENGINE PROGRAMMING REMOTE THROTTLE**

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

Y\_\_ N\_\_

### **ENGINE PROGRAMMING IDLE SPEED**

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

Y\_\_ N\_\_

### **ENGINE FAN DRIVE**

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

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

Y\_\_ N\_\_

### **ENGINE COOLING SYSTEM**

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and

all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

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

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

The cooling system shall include a one piece injected molded polymer eleven (11) blade fan with a three (3) piece fiberglass fan shroud.

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

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

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

The radiator and charge air cooler shall be removable through the bottom of the chassis.

Y\_\_ N\_\_

### **ENGINE COOLING SYSTEM PROTECTION**

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

Y\_\_ N\_\_

### **ENGINE COOLANT**

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

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

Y\_\_ N\_\_

### **ENGINE COOLANT FILTER**

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

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

Y\_\_ N\_\_

### **ELECTRONIC COOLANT LEVEL INDICATOR**

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

Y\_\_ N\_\_

### **ENGINE PUMP HEAT EXCHANGER**

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

Y\_\_ N\_\_

### **COOLANT HOSES**

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

Y\_\_ N\_\_

### **ENGINE AIR INTAKE**

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

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

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

Y\_\_ N\_\_

### **AIR INTAKE PROTECTION**

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

Y\_\_ N\_\_

### **ENGINE EXHAUST SYSTEM**

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

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

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

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

Y\_\_ N\_\_

### **DIESEL EXHAUST FLUID TANK**

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

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

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

Y\_\_ N\_\_

### **ENGINE EXHAUST ACCESSORIES**

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

Y\_\_ N\_\_

### **ENGINE EXHAUST WRAP**

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

Y\_\_ N\_\_

## **TRANSMISSION**

The drive train shall include an Allison model EVS 4000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

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

The transmission gear ratios shall be:

1st	3.51:1
2nd	1.91:1
3rd	1.43:1
4th	1.00:1
5th	0.74:1
6th	0.64:1 (if applicable)
Rev	4.80:1

Y\_\_ N\_\_

## **TRANSMISSION MODE PROGRAMMING**

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

Y\_\_ N\_\_

## **TRANSMISSION FEATURE PROGRAMMING**

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

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

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

<u>Function ID</u>	<u>Description</u>	<u>Wire assignment</u>
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Inputs

C	PTO Request	142
J	Fire Truck Pump Mode (4th Lockup)	122 / 123

Outputs

C	Range Indicator	145 (4th)
G	PTO Enable Output	130
	Signal Return	103

Y\_\_ N\_\_

**ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR**

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

Y\_\_ N\_\_

**TRANSMISSION SHIFT SELECTOR**

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

Y\_\_ N\_\_

**TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE**

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

Y\_\_ N\_\_

**TRANSMISSION COOLING SYSTEM**

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

Y\_\_ N\_\_

**TRANSMISSION DRAIN PLUG**

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

Y\_\_ N\_\_

**TRANSMISSION WARRANTY**

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

Y\_\_ N\_\_

**PTO LOCATION**

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

Y\_\_ N\_\_

**DRIVELINE**

All drivelines shall be heavy duty metal tube and equipped with Spicer 1810 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®.

Y\_\_ N\_\_

**MIDSHIP PUMP / GEARBOX**

A temporary jackshaft driveline shall be installed by the chassis manufacturer to accommodate the mid-ship split shaft pump as specified by the apparatus manufacturer.

Y\_\_ N\_\_

**MIDSHIP PUMP / GEARBOX MODEL**

The midship pump/gearbox provisions shall be for a Waterous CSUC20 pump.

Y\_\_ N\_\_

**FUEL FILTER/WATER SEPARATOR**

The fuel system shall have a Racor S3238 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve and a see through cover to allow visual inspection of fuel and filter condition. The Racor S3238 shall be a 10 micron filter capable of handling a maximum flow rate of 150 gallons per hour.

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

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

Y\_\_ N\_\_

**FUEL LINES**

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

Y\_\_ N\_\_

### **ELECTRIC FUEL PRIMER**

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

Y\_\_ N\_\_

### **FUEL COOLER**

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

Y\_\_ N\_\_

### **FUEL TANK**

The fuel tank shall have a capacity of sixty-eight (68) gallons and shall measure 35.00 inches in width X 17.00 inches in height X 29.00 inches in length. The baffled tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00 inch NPT fill ports for right or left hand fill. A 0.50 inch NPT drain plug shall be centered in the bottom of the tank.

The fuel tank shall be mounted below the frame, behind the rear axle. Two (2) three-piece strap hanger assemblies with "U" straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the upper tank mounting brackets. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

Y\_\_ N\_\_

### **FUEL TANK MATERIAL AND FINISH**

The fuel tank shall be constructed of 12 gauge aluminized steel. The exterior of the tank shall be powder coated black and then painted to match the frame components.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 Method B, results to be 5B minimum. The pencil hardness test per ASTM D3363 shall have a final post-cured pencil hardness of H-2H. The direct impact resistance test per ASTM D2794, results to be 5B minimum.

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

Y\_\_ N\_\_

### **FUEL TANK STRAP MATERIAL**

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

Y\_\_ N\_\_

**FUEL TANK MISCELLANEOUS OPTIONS**

The fuel tank shall be raised between 0.75 of an inch and 1.25 inches for an improved angle of departure.

Y\_\_ N\_\_

**FUEL TANK FILL PORT**

The fuel tank fill ports shall be provided with two (2) left fill ports located one (1) in the forward position and one (1) in the middle position and the right fill port located in the middle position of the fuel tank.

Y\_\_ N\_\_

**FUEL TANK DRAIN PLUG**

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

Y\_\_ N\_\_

**FRONT AXLE**

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle. The weight capacity for the axle shall be rated to 21,500 pounds FAWR.

Y\_\_ N\_\_

**FRONT AXLE WARRANTY**

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

Y\_\_ N\_\_

**FRONT WHEEL BEARING LUBRICATION**

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

Y\_\_ N\_\_

**FRONT SHOCK ABSORBERS**

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special

extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.

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

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

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

Y\_\_ N\_\_

**FRONT SUSPENSION**

The front suspension shall include a nine (9) leaf spring pack in which the longest leaf measures 54.00 inch long and 4.00 inches wide and shall include a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 pounds.

Y\_\_ N\_\_

**STEERING COLUMN/ WHEEL**

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

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

Y\_\_ N\_\_

**ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR**

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

Y\_\_ N\_\_

**POWER STEERING PUMP**

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

Y\_\_ N\_\_

**FRONT AXLE CRAMP ANGLE**

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

Y\_\_ N\_\_

**POWER STEERING GEAR**

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

Y\_\_ N\_\_

**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.

Y\_\_ N\_\_

**REAR AXLE**

The rear axle shall be a Meritor model RS-30-185 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 33,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.56 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

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

Y\_\_ N\_\_

**REAR AXLE DIFFERENTIAL LUBRICATION**

The rear axle differential shall be lubricated with oil.

Y\_\_ N\_\_

**REAR AXLE WARRANTY**

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

Y\_\_ N\_\_

**REAR WHEEL BEARING LUBRICATION**

The rear axle wheel bearings shall be lubricated with oil.

Y\_\_ N\_\_

**VEHICLE TOP SPEED**

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

Y\_\_ N\_\_

**REAR SUSPENSION**

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

A helper spring shall be provided in addition to the standard spring pack to help prevent vehicle sway during aggressive cornering.

The rear suspension capacity shall be rated at 21,000 to 33,000 pounds.

Y\_\_ N\_\_

**REAR SHOCK ABSORBERS**

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

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

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

The heavy duty shock absorbers shall be tuned to provide higher damping forces.

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

Y\_\_ N\_\_

**FRONT TIRE**

The front tires shall be Michelin 425/65R22.5 "L" tubeless radial XFE regional tread.

The front tire stamped load capacity shall be 22,800 pounds per axle with a nominal speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.

Y\_\_ N\_\_

**REAR TIRE**

The rear tires shall be Michelin 315/80R-22.5 20PR "L" tubeless radial XDN2 Grip all weather tread.

The rear tire stamped load capacity shall be 33,080 pounds per axle with a nominal speed rating of 75 miles per hour when properly inflated to 130 pounds per square inch.

Y\_\_ N\_\_

**REAR AXLE RATIO**

The rear axle ratio shall be 5.63:1.

Y\_\_ N\_\_

**TIRE PRESSURE INDICATOR**

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

Y\_\_ N\_\_

**FRONT WHEEL**

The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch LvL One™ polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoa's Dura-Bright® finish with XBR technology as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

Y\_\_ N\_\_

**REAR WHEEL**

The rear wheels shall be Alcoa hub piloted, heavy duty, 22.50 inch X 9.00 inch LvL One™ polished aluminum wheels with Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

Y\_\_ N\_\_

**WHEEL TRIM**

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

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

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

Y\_\_ N\_\_

**TIRE CHAINS**

Onspot brand six (6) strand automatic ice chains shall be installed on the rear axle of the chassis to provide instant traction while traveling on ice and snow at speeds below 35 MPH. The ice chain airline shall include a pressure protection valve to keep from bleeding the air system in case of damage to the ice chains air lines.

Y\_\_ N\_\_

### **TIRE CHAINS ACTIVATION**

The tire chain system shall be activated by a virtual button on the Vista display and control screen. The virtual button shall display “Active” when the tire chains are engaged. The tire chains shall be interlocked with the transmission and shall engage only if the vehicle is traveling 30 MPH or less. After traveling over 30 MPH, the vehicle must be reduced to a speed below 5 MPH for the tire chains to be engaged or re-engaged. The virtual button, once the vehicle reaches 35 MPH shall be reset to “Inactive”. The vehicle must then reduce to a speed below 5 MPH to enable the tire chains virtual button.

Y\_\_ N\_\_

### **BRAKE SYSTEM**

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

The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.

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

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

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

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

control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration.

The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

Y\_\_ N\_\_

### **FRONT BRAKES**

The front brakes shall be Meritor 16.50 inch x 6.00 inch S-cam drum type.

Y\_\_ N\_\_

### **REAR BRAKES**

The rear brakes shall be Meritor 16.50 inch X 8.63 inch S-cam drum type. The brakes shall feature a cast iron shoe.

Y\_\_ N\_\_

### **PARK BRAKE**

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

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

Y\_\_ N\_\_

### **PARK BRAKE CONTROL**

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

The parking brake actuation valve shall be located as determined at the pre-construction meeting.

Y\_\_ N\_\_

### **FRONT BRAKE SLACK ADJUSTERS**

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

Y\_\_ N\_\_

### **REAR BRAKE SLACK ADJUSTERS**

Haldex rear brake automatic slack adjusters shall be installed on the axle.

Y\_\_ N\_\_

**AIR DRYER**

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

Y\_\_ N\_\_

**FRONT BRAKE CHAMBERS**

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

Y\_\_ N\_\_

**REAR BRAKE CHAMBERS**

The rear axle shall include TSE 30/36 brake chambers which shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE Type 36 brake chamber has a 36.00 square inch effective area.

Y\_\_ N\_\_

**AIR COMPRESSOR**

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

Y\_\_ N\_\_

**AIR GOVERNOR**

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

Y\_\_ N\_\_

**AUXILIARY AIR RESERVOIR**

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

Y\_\_ N\_\_

**MOISTURE EJECTORS**

Heated, automatic moisture ejectors with a manual drain provision shall be installed on all reservoirs of the air supply system.

Y\_\_ N\_\_

**AIR SUPPLY LINES**

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

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

Y\_\_ N\_\_

**AIR INLET CONNECTION**

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

Y\_\_ N\_\_

**AIR INLET/ AUTO EJECT CONNECTION COVER**

The air auto eject connection shall be red in color.

Y\_\_ N\_\_

**AIR INLET LOCATION**

The air inlet shall be installed on the left hand side of the cab above the wheel well in the forward position.

Y\_\_ N\_\_

**AIR INLET/ OUTLET FITTING TYPE**

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

Y\_\_ N\_\_

**AIR TANK SPACERS**

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

Y\_\_ N\_\_

**REAR AIR TANK MOUNTING**

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

Y\_\_ N\_\_

**WHEELBASE**

The chassis wheelbase shall be sized to accommodate the proposed apparatus.

Y\_\_ N\_\_

**FRAME**

The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep upper and lower flanges X 0.38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

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

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

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

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

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

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

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

Y\_\_ N\_\_

**FRAME WARRANTY**

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

Y\_\_ N\_\_

**REAR TOW DEVICE**

The frame rails shall contain (3) holes per frame in a pattern specified by the OEM for mounting Marion tow eyes at the rear of the frame at a location defined by the OEM.

Y\_\_ N\_\_

**FRAME CLEAR AREA**

The chassis frame shall be left clear of chassis mounted components inside and outside the frame rails within the first 48.00 inches behind the cab to allow space for OEM installed components. Cross members may be installed in the clear area if required for proper frame or driveline configuration.

Y\_\_ N\_\_

**FRAME PAINT**

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

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

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

Y\_\_ N\_\_

**FRONT BUMPER**

A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10 gauge 304 stainless steel, 12" high and 104.50 inches wide.

Y\_\_ N\_\_

**FRONT BUMPER EXTENSION LENGTH**

The front bumper shall be extended approximately 24.00 inches ahead of the cab.

Y\_\_ N\_\_

**FRONT BUMPER SUCTION PROVISION**

The bumper apron shall include a 5.00 inch stainless steel pipe intended for use as a suction intake for the pump. The suction pipe shall be routed from the right hand front bumper area to the area rear of the front axle near the back of the cab.

The front of the suction pipe shall be designed to extend vertically 2.00 inches above the top surface of the bumper in the right hand outboard position.

The forward end of the suction pipe shall be finished with a 5.00 inch National Pipe Thread (NPT). The rear of the suction shall include a Victaulic groove for connecting to the pump plumbing. The suction pipe shall also include a 0.50 inch NPT port intended as a primer assist connection.

The apparatus manufacturer shall plumb the suction pipe to the pump and shall provide all valves as required.

Y\_\_ N\_\_

**FRONT BUMPER APRON**

The 24.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

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

Y\_\_ N\_\_

**FRONT BUMPER COMPARTMENT CENTER**

The front bumper shall include a compartment in the bumper apron located in the center between the frame rails which may be used as a hose well. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment shall be the full size of available space in the apron from the cab fascia to the bumper and 38.00 inches wide X 10.88 inches deep. The clear opening shall be 37.75 inches wide.

Y\_\_ N\_\_

**AIR HORN**

The chassis shall include two (2) Grover brand Stutter Tone air horns which shall measure 21.00 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish.

Y\_\_ N\_\_

**AIR HORN LOCATION**

The air horns shall be recess mounted in the front bumper face, one (1) on the right side of the bumper in the inboard position relative to the right hand frame rail and one (1) on the left side of the bumper in the inboard position relative to the left hand frame rail.

Y\_\_ N\_\_

**AIR HORN RESERVOIR**

One (1) air reservoir, with a 2084 cubic inch capacity, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

Y\_\_ N\_\_

**ELECTRONIC SIREN SPEAKER**

There shall be two (2) Cast Products Inc. model SA4301, 100 watt speakers provided. Each speaker shall measure 6.20 inches tall X 7.36 inches wide X 3.06 inches deep. Each speaker shall include a flat mounting flange which shall be polished aluminum.

Y\_\_ N\_\_

### **ELECTRONIC SIREN SPEAKER LOCATION**

The two (2) electronic siren speakers shall be located on the front bumper face outboard of the frame rails with one (1) on the right side and one (1) on the left side in the outboard positions.

Y\_\_ N\_\_

### **FRONT BUMPER TOW HOOKS**

Two (2) heavy duty chrome plated tow hooks shall be installed below the front bumper in the forward position, bolted directly to the underside of each chassis frame rail with grade 8 bolts.

Y\_\_ N\_\_

### **TOW FORK PROVISION**

Two (2) heavy duty tubular steel towing forks shall be welded to the underside of the frame drop at the front of the chassis. The tubes shall be shaped like an upside down "U" to act as a designated hookup point to accept a tow bar from a service vehicle. The robust design shall allow a disabled vehicle to be lifted and towed without doing damage to the bumper or bumper mounted options.

Y\_\_ N\_\_

### **CAB TILT SYSTEM**

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

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

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

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

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

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

Y\_\_ N\_\_

### **CAB TILT LIMIT SWITCH**

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

Y\_\_ N\_\_

### **CAB TILT CONTROL RECEPTACLE**

A 25.00 foot cab tilt control harness shall be provided on the right side of frame just behind the cab. This harness shall consist of an 8.00 foot harness connected to the tilt pump and a 17.00 foot extension harness with a six (6) pin Deutsch connector with cap for mounting in a compartment in the body.

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

Y\_\_ N\_\_

### **CAB TILT LOCK DOWN INDICATOR**

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

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

Y\_\_ N\_\_

### **CAB WINDSHIELD**

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

The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs.

Each windshield shall be installed using black self locking window rubber.

Y\_\_ N\_\_

### **GLASS FRONT DOOR**

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished using electric actuation. The left and right front door windows shall be controlled using a switch on each respective side inner door panel. The driver's door shall include a switch for each powered door window in the cab.

There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more commonly known as "cozy glass" ahead of the front door roll down windows.

The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.

Y\_\_ N\_\_

**GLASS TINT FRONT DOOR**

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

Y\_\_ N\_\_

**GLASS REAR DOOR RH**

The rear right hand side crew door shall include a window which is 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the inner door panel and on the driver's control panel.

Y\_\_ N\_\_

**GLASS TINT REAR DOOR RIGHT HAND**

The window located in the right hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

Y\_\_ N\_\_

**GLASS REAR DOOR LH**

The rear left hand side crew door shall include a window which is 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the inner door panel and on the driver's control panel.

Y\_\_ N\_\_

**GLASS TINT REAR DOOR LEFT HAND**

The window located in the left hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

Y\_\_ N\_\_

**GLASS SIDE MID RH**

The cab shall include a window on the right side behind the front and ahead of the crew doors which shall measure 16.00 inches wide X 26.00 inches high. This window shall be capable of sliding vertically within this space and shall be rectangular in shape. The window shall be mounted in a black anodized aluminum frame with lower drain slots. The glass utilized for the window shall include a green automotive tint unless otherwise noted.

Y\_\_ N\_\_

**GLASS TINT SIDE MID RIGHT HAND**

The window located on the right hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

Y\_\_ N\_\_

### **GLASS SIDE MID LH**

The cab shall include a window on the left side behind the front door and ahead of the crew doors and above the wheel well which shall measure 16.00 inches wide X 26.00 inches high. This window shall be capable of sliding vertically within this space and shall be rectangular in shape. The window shall be mounted in a black anodized aluminum frame with lower drain slots. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

Y\_\_ N\_\_

### **GLASS TINT SIDE MID LEFT HAND**

The window located on the left hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

Y\_\_ N\_\_

### **CLIMATE CONTROL**

A ceiling mounted combination defroster and cabin heating and air conditioning system shall be located above the engine tunnel area. The system covers and plenums shall be of severe duty design made of aluminum which shall be coated with a customer specified interior paint. The design of the system's covers shall provide quick access to washable air intake filters as well as easy access to other serviceable items.

The air delivery plenums provide targeted airflow directly to the vehicle occupants. Six (6) adjustable louvers will provide comfort for the front seat occupants and ten (10) adjustable louvers will provide comfort for the rear crew occupants.

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

The system shall also provide heater pull up performance which meets or exceeds the performance requirements of SAE J1612 as well as defrost performance that meets or exceeds the performance requirements of SAE J381.

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

The air conditioning system plumbing shall be a mixture of custom bent zinc coated steel fittings and Aeroquip flexible hose with Aeroquip EZ-Clip fittings.

The overhead heater/defroster plumbing shall include an electronic flow control valve that re-directs hot coolant away from the evaporator, via a bypass loop, as the temperature control is moved toward the cold position.

Any component which needs to be accessed to perform system troubleshooting shall be accessible by one person using basic hand tools. Regularly serviced items shall be replaceable by one person using basic hand tools.

***System individual component BTU ratings:***

- Air conditioning evaporator total BTU/HR: 82,000
- Air conditioning condenser total BTU/HR: 59,000
- Heater coil total BTU/HR: 98,000

Y\_\_ N\_\_

**CLIMATE CONTROL DRAIN**

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

Y\_\_ N\_\_

**CLIMATE CONTROL ACTIVATION**

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

Y\_\_ N\_\_

**HVAC OVERHEAD COVER PAINT**

The overhead HVAC cover shall be painted with a multi-tone silver gray texture finish.

Y\_\_ N\_\_

**A/C CONDENSER LOCATION**

A roof mounted A/C condenser shall be installed centered on the cab forward of the raised roof against the slope rise, and painted to match the rest of the cab exterior.

Y\_\_ N\_\_

**A/C COMPRESSOR**

The air-conditioning compressor shall be a belt driven, engine mounted compressor. The compressor shall be compatible with R134-a refrigerant. Freon Compressor displacement: 19.1 cubic inches per revolution.

Y\_\_ N\_\_

**UNDER CAB INSULATION**

The underside of the cab tunnel surrounding the engine shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments. The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

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

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

Y\_\_ N\_\_

### **INTERIOR TRIM FLOOR**

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

Y\_\_ N\_\_

### **INTERIOR TRIM**

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

Y\_\_ N\_\_

### **REAR WALL INTERIOR TRIM**

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

Y\_\_ N\_\_

### **HEADER TRIM**

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

Y\_\_ N\_\_

### **TRIM CENTER DASH**

The main center dash area shall be constructed of durable vacuum formed ABS composite.

Y\_\_ N\_\_

### **TRIM LH DASH**

The left hand dash shall be a one (1) piece durable vacuum formed ABS composite housing which shall be custom molded for a perfect fit around the instrument panel. The left hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.

Y\_\_ N\_\_

**TRIM RH DASH**

The right hand dash trim shall consist of a vacuum formed ABS composite module, which contains a glove compartment with a hinged locking door and a Mobile Data Terminal (MDT) provision. The glove compartment size shall be 13.50 inches wide X 6.25 inches high X 5.50 inches deep. The MDT provision shall be provided above the glove compartment.

Y\_\_ N\_\_

**TRIM RH DASH ACCESSORIES**

The Mobile Data Terminal (MDT) provision on the right hand dash shall be provided with a slide-out tray. The MDT slide-out tray shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate. The mounting surface of the tray shall measure 11.75 inches wide X 10.75 inches deep which will allow for the mounting of a MDT with the added luxury of sliding it toward the officer as much as 11.00 inches. The tray shall include a clip for attaching a writing tablet.

Y\_\_ N\_\_

**ENGINE TUNNEL TRIM**

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

Y\_\_ N\_\_

**POWER POINT DASH MOUNT**

The cab interior shall include three (3) 12 volt cigarette lighter type receptacles in the cab dash switch panel to provide a power source for 12 volt electrical equipment. The receptacles shall be wired battery direct.

Y\_\_ N\_\_

**AUXILIARY POWER POINT REAR CREW**

The cab interior shall include two (2) 12 volt cigarette lighter type receptacle located on the forward facing seat box in the crew area. The receptacles shall be located one (1) each 19.00 inches to the left and right of the center of the seat box. The receptacle shall be connected to the batteries. This receptacle shall provide a power source for 12 volt electrical equipment.

Y\_\_ N\_\_

**STEP TRIM**

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

Y\_\_ N\_\_

**STEP TRIM KICKPLATE**

The cab steps shall include a kick plate in the rise of each step. The risers shall be trimmed in 3003-H22 bright aluminum tread-plate which is 0.07 inch thick.

Y\_\_ N\_\_

**UNDER CAB ACCESS DOOR**

The cab shall include an aluminum access door in the left crew step riser painted to match the cab interior paint with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.

Y\_\_ N\_\_

**INTERIOR DOOR TRIM**

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

Y\_\_ N\_\_

**DOOR TRIM KICKPLATE**

The inner door panels shall include an aluminum tread kick plate which shall be fastened to the lower portion of the door panels.

Y\_\_ N\_\_

**DOOR TRIM SCUFF PLATE**

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

Y\_\_ N\_\_

**DOOR TRIM CUSTOMER NAMEPLATE**

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

Y\_\_ N\_\_

**CAB DOOR TRIM REFLECTIVE**

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

Y\_\_ N\_\_

**INTERIOR GRAB HANDLE "A" PILLAR**

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

Y\_\_ N\_\_

**INTERIOR GRAB HANDLE FRONT DOOR**

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

Y\_\_ N\_\_

**INTERIOR GRAB HANDLE REAR DOOR**

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

Y\_\_ N\_\_

**ADDITIONAL INTERIOR GRAB HANDLE REAR DOOR**

Each interior rear door shall include two (2) additional grab handles. The handles shall be an ergonomically contoured 9.00 inch long cast aluminum grab handles. One (1) handle shall be mounted in horizontally on the upper interior door trim panel in the center area and one (1) shall be mounted vertically on the lower interior trim panel in the forward position toward the door hinge. Each handle shall feature a textured, black powder coat finish and shall assist personnel entering and exiting the cab.

Y\_\_ N\_\_

**INTERIOR REAR WALL COMPARTMENT**

The cab shall include an interior clear area provision for the side curtain crew airbag mounting to account for a compartment located on the left and right side at the rear wall to be installed by the body builder. The clear area shall extend from behind the standard rear door locations to the rear wall. The provision allows appropriate airbag selection for clear airbag deployment and adequate protection and ejection mitigation.

Y\_\_ N\_\_

**INTERIOR SOFT TRIM COLOR**

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

Y\_\_ N\_\_

**INTERIOR TRIM SUNVISOR**

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

Y\_\_ N\_\_

**INTERIOR ABS TRIM COLOR**

The cab interior vacuum formed ABS composite trim surfaces shall be gray in color.

Y\_\_ N\_\_

**INTERIOR FLOOR MAT COLOR**

The cab interior floor mat shall be gray in color.

Y\_\_ N\_\_

**CAB PAINT INTERIOR DOOR TRIM**

The inner door panel surfaces shall be painted with multi-tone silver gray texture finish.

Y\_\_ N\_\_

**HEADER TRIM INTERIOR PAINT**

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

Y\_\_ N\_\_

**RIGHT HAND DASH ACCESSORIES INTERIOR PAINT**

The right hand dash accessories shall be painted with multi-tone silver gray texture finish.

Y\_\_ N\_\_

**DASH PANEL GROUP**

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

Y\_\_ N\_\_

**SWITCHES CENTER PANEL**

The center dash panel shall include no rocker switches or legends.

Y\_\_ N\_\_

**SWITCHES LEFT PANEL**

The left dash panel shall include four (4) switches. There shall be three (3) across the top of the panel with one (1) below. Two (2) of the top row switches shall be rocker type and the left one (1) shall be the windshield wiper/washer control switch. The lower switch shall be a rocker type switch.

A rocker switch with a blank legend installed directly above shall be provided for any position not designated by a specific option. The non-designated switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

Y\_\_ N\_\_

**SWITCHES RIGHT PANEL**

The right dash panel shall include no rocker switches or legends.

Y\_\_ N\_\_

**SEAT BELT WARNING**

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide a visual warning indicator in the Vista display and control screen(s), an indicator light in the instrument panel, and an audible alarm.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened.

Y\_\_ N\_\_

**SEAT MATERIAL**

The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.

Y\_\_ N\_\_

**SEAT COLOR**

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

Y\_\_ N\_\_

**SEAT BACK LOGO**

The seat back shall include the "Spartan" logo. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

Y\_\_ N\_\_

**SEAT DRIVER**

The driver's seat shall be an H.O. Bostrom 400 Series Sierra model seat with air suspension. The four-way seat shall feature a 3.00 inches vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.

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

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

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

Y\_\_ N\_\_

### **SEAT BACK DRIVER**

The driver's seat shall include a standard seat back incorporating the all belts to seat feature (ABTS) as described above. The seat back shall feature a contoured, adjustable head rest. The seat back shall recline up to 19-degrees.

Y\_\_ N\_\_

### **SEAT MOUNTING DRIVER**

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

Y\_\_ N\_\_

### **OCCUPANT PROTECTION DRIVER**

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

The driver's seating area APS shall include:

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

and from intrusion as well as locks the lower body in place so the upper body shall be shall be slowed by the load limiting seat belt.

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

Y\_\_ N\_\_

### **SEAT OFFICER**

The officer's seat shall be a H.O. Bostrom 400 Series Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat shall be a non-adjustable type seat.

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

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

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

Y\_\_ N\_\_

### **SEAT BACK OFFICER**

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

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

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

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

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

Y\_\_ N\_\_

**SEAT MOUNTING OFFICER**

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

Y\_\_ N\_\_

**OCCUPANT PROTECTION OFFICER**

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

The officer's seating area APS shall include:

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

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

Y\_\_ N\_\_

**SEAT BELT ORIENTATION CREW**

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

Y\_\_ N\_\_

**SEAT REAR FACING OUTER LOCATION**

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the left side front seat and one (1) located directly behind the right side front seat.

Y\_\_ N\_\_

**SEAT CREW REAR FACING OUTER**

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

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

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

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

Y\_\_ N\_\_

### **SEAT BACK REAR FACING OUTER**

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

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

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

The SecureAll™ shall include a release handle which shall be integrated into the center of the bottom seat cushion for easy access and to eliminate hooking the release handle with clothing or other equipment.

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

Y\_\_ N\_\_

### **SEAT MOUNTING REAR FACING OUTER**

The rear facing outer seats shall offer special mounting positions which shall be 2.00 inches towards the rear wall offering additional space between the front seats and the outer rear facing seats.

Y\_\_ N\_\_

### **OCCUPANT PROTECTION RFO**

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

Each rear facing outer seating position APS shall include:

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

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

Y\_\_ N\_\_

### **SEAT FORWARD FACING CENTER LOCATION**

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

Y\_\_ N\_\_

### **SEAT CREW FORWARD FACING CENTER**

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

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

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

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

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

Y\_\_ N\_\_

### **SEAT BACK FORWARD FACING CENTER**

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

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

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

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

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

Y\_\_ N\_\_

### **OCCUPANT PROTECTION FFC**

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

Each forward facing center seating position APS shall include:

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

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

Y\_\_ N\_\_

### **SEAT FRAME FORWARD FACING**

The forward facing center seating positions shall include an enclosed seat frame located and installed on the rear wall. The seat frame shall measure 46.00 inches wide X 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The seat box shall be painted the same color as the remaining interior. (This was 1269-144)

Y\_\_ N\_\_

**SEAT FRAME FORWARD FACING STORAGE ACCESS**

There shall be one (1) access point to the storage area centered on the front of the seat frame. This access point shall be covered by a bottom hinged door with a chrome trigger latch to allow access for storage in the seat box.

Y\_\_ N\_\_

**SEAT MOUNTING FORWARD FACING CENTER**

The forward facing center seats shall be installed facing the front of the cab.

Y\_\_ N\_\_

**CAB FRONT UNDERSEAT STORAGE ACCESS**

The left and right under seat storage areas shall have a removable aluminum cover.

Y\_\_ N\_\_

**SEAT COMPARTMENT DOOR FINISH**

All underseat storage compartment access doors shall have a multi-tone silver gray texture finish.

Y\_\_ N\_\_

**HELMET STORAGE FRONT LOCATION**

The front cab area shall include two (2) helmet storage brackets located as determined at the pre-construction meeting.

Y\_\_ N\_\_

**HELMET STORAGE FRONT**

The front cab area shall include OnScene Solutions Talon helmet storage designed to meet current NFPA regulations. The Talon shall be constructed of aluminum and stainless steel. The Talon shall securely fasten fire helmets to flat cab surfaces. The Talon features multi-adjustable brim points for nearly any helmet size or configuration.

Y\_\_ N\_\_

**HELMET STORAGE FRONT CREW CENTER LOCATION**

The front inboard crew area of the cab shall include four (4) helmet storage brackets. The brackets shall be located as determined at the pre-construction meeting.

Y\_\_ N\_\_

**HELMET STORAGE FRONT CREW CENTER**

The front center crew area shall include OnScene Solutions Talon helmet storage designed to meet current NFPA regulations. The Talon shall be constructed of aluminum and stainless steel. The Talon shall securely fasten fire helmets to flat cab surfaces. The Talon features multi-adjustable brim points for nearly any helmet size or configuration.

Y\_\_ N\_\_

**WINDSHIELD WIPER SYSTEM**

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

Y\_\_ N\_\_

**ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR**

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

Y\_\_ N\_\_

**CAB DOOR HARDWARE**

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

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

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

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

Y\_\_ N\_\_

**DOOR LOCKS**

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

Y\_\_ N\_\_

**DOOR LOCK LH REAR CAB COMPARTMENT**

The left hand side rear compartment shall feature a manual door lock.

Y\_\_ N\_\_

**DOOR LOCK RH REAR CAB COMPARTMENT**

The right hand side rear compartment shall feature a manual door lock.

Y\_\_ N\_\_

**GRAB HANDLES**

The cab shall include one (1) 18.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The assist handle shall be made of SAE 304 stainless steel and be 1.25 inch diameter to enable easy grabbing with the gloved hand. Each assist handle shall include a stainless steel plate which saves the cab from scuffs through continued use of the handle.

Y\_\_ N\_\_

**REARVIEW MIRROR**

Ramco model CRM-1750-3HR bus style mirrors shall be provided. The mirror heads shall be injection molded chrome plated ABS plastic and shall measure 9.50 inches wide X 17.50 inches high. The mirrors shall be mounted one (1) on each the driver and officer doors of the cab with polished die-cast aluminum arms.

The mirrors shall feature an upper convex glass, a middle flat glass, and a lower convex glass that shall all be remote controlled and heated. The mirror control switches shall be located to the right of the shifter pod. The mirrors shall be manufactured using the finest quality non-glare glass and shall feature a rigid mounting thereby reducing vibration. The mirrors shall be corrosion free under all weather conditions.

Y\_\_ N\_\_

**REARVIEW MIRROR HEAT SWITCH**

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

Y\_\_ N\_\_

**TRIM LOWER SIDE**

A stainless steel trim band, 10.00 inches high, with upper and lower black and chrome trim moldings, shall be installed on the lower exterior sides of the cab and doors. The trim shall be installed so that the top edge approximately 1.00 inch below the top of the front bumper, and shall be affixed without holes and fasteners.

Y\_\_ N\_\_

**TRIM LOWER SIDE FRONT**

A stainless steel trim band, 10.00 inches high, with upper and lower black and chrome trim moldings, shall be installed on the lower exterior sides of the cab between the front bumper and the front doors. The trim shall be installed so that the top edge is approximately 1.00 inch below the top of the front bumper, and shall be affixed without holes and fasteners.

Y\_\_ N\_\_

**EXTERIOR TRIM REAR CORNER**

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

Y\_\_ N\_\_

**CAB FENDER**

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of SAE 304 polished stainless steel.

Y\_\_ N\_\_

**MUD FLAPS FRONT**

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

Y\_\_ N\_\_

**CAB EXTERIOR FRONT & SIDE EMBLEMS**

The cab shall include three (3) Spartan emblems and two (2) Advanced Protection System shield emblems. The emblems shall be included in the cab shipped loose components for installation by the body builder.

Y\_\_ N\_\_

**IGNITION**

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

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

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

Y\_\_ N\_\_

**BATTERY**

The single start electrical system shall include six (6) Delco BCI 31 700 CCA batteries with a 180 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541.

**BATTERY TRAY**

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

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

Y\_\_ N\_\_

**BATTERY BOX COVER**

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

Y\_\_ N\_\_

**BATTERY CABLE**

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

Y\_\_ N\_\_

**BATTERY JUMPER STUD**

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure. A label stating "12V Jumper Studs" will be provided below the battery jump studs.

Y\_\_ N\_\_

**ALTERNATOR**

The charging system shall include a 320 amp Leece-Neville 12 volt alternator. The alternator shall include a self-exciting integral regulator.

Y\_\_ N\_\_

**STARTER MOTOR**

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

Y\_\_ N\_\_

**BATTERY CONDITIONER**

A Kussmaul 35/10 battery conditioner shall be supplied. The battery conditioner shall provide a 35 amp output for the chassis batteries and a 10 amp battery saver output. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position.

Y\_\_ N\_\_

**BATTERY CONDITIONER DISPLAY**

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

Y\_\_ N\_\_

**ELECTRICAL INLET**

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

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

**Amp Draw Reference List:**

*Kussmaul 1000 Charger - 3.5 Amps*

*Kussmaul 1200 Charger - 10 Amps*

*Kussmaul 35/10 Charger - 10 Amps*

*1000W Engine Heater - 8.33 Amps*

*1500W Engine Heater - 12.5 Amps*

*120V Air Compressor - 4.2 Amps*

Y\_\_ N\_\_

**ELECTRICAL INLET LOCATION**

An electrical inlet shall be installed on the left hand side of the cab ahead of the front door.

Y\_\_ N\_\_

**ELECTRICAL INLET CONNECTION**

The electrical inlet shall be connected to the battery conditioner.

Y\_\_ N\_\_

**ELECTRICAL INLET COLOR**

The electrical inlet connection shall include a red cover.

Y\_\_ N\_\_

**HEADLIGHTS**

Two (2) headlamp and combination side marker/turn lamp modules shall be part of the front cab fascia. Each module shall include one (1) rectangular LED high/low beam headlamp.

Y\_\_ N\_\_

**FRONT TURN SIGNALS**

The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch programmable LED amber turn signals which shall be installed above the headlights.

Y\_\_ N\_\_

**HEADLIGHT LOCATION**

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

Y\_\_ N\_\_

**SIDE TURN/MARKER LIGHTS**

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

Y\_\_ N\_\_

**MARKER AND ICC LIGHTS**

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

Y\_\_ N\_\_

**HEADLIGHT AND MARKER LIGHT ACTIVATION**

The headlights and marker lights shall be controlled via a virtual button on the Vista display. There shall be a virtual dimmer control on the Vista display to adjust the brightness of the dash lights.

Y\_\_ N\_\_

**CORNERING LIGHTS**

The bumper tail shall include two (2) Whelen 500 Series TIR6™ Super-LED® steady-on cornering lights with clear lenses and in chrome bezels, one (1) each side. The light heads shall illuminate when the turn signals are activated or when the vehicle is placed in reverse.

Y\_\_ N\_\_

**GROUND LIGHTS**

Each door shall include an NFPA compliant LED ground light mounted to the underside of the cab step below each door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life. The ground lighting shall be activated by the opening of the door on the respective cab side, when the parking brake is set and through a virtual button on the Vista display and control screen.

Y\_\_ N\_\_

**LOWER CAB STEP LIGHTS**

The middle step located at each door shall include a recess mounted 4.00 inch round LED light which shall activate with the opening of the respective door.

Y\_\_ N\_\_

**INTERMEDIATE STEP LIGHTS**

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

Y\_\_ N\_\_

### **UNDER BUMPER LIGHTS**

There shall be two (2) 4.00 inch round LED NFPA compliant ground lights mounted under the bumper. The lights shall include a polycarbonate lens, a housing which is vibration welded, and LEDs which shall be shock mounted for extended life. The under bumper ground lighting shall be interlocked with the park brake and the marker light activation.

Y\_\_ N\_\_

### **ENGINE COMPARTMENT LIGHT**

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

Y\_\_ N\_\_

### **LIGHTBAR PROVISION**

There shall be one (1) light bar installed on the cab roof. The light bar shall be provided and installed by Spartan Chassis. The light bar installation shall include mounting and wiring to a control switch on the cab dash.

Y\_\_ N\_\_

### **CAB FRONT LIGHTBAR**

The lightbar provisions shall be for one (1) Whelen brand Freedom IV LED lightbar mounted centered on the front of the cab roof. The lightbar shall be 72.00 inches in length. The lightbar shall feature twelve (12) red LED light modules and two (2) clear LED light modules. The entire lightbar shall feature a clear lens. The clear lights shall be disabled with park brake engaged. The cable shall exit the lightbar on the right side of the cab.

Y\_\_ N\_\_

### **LIGHTBAR SWITCH**

The light bar shall be controlled by a virtual button on the Vista display and control screen. This button shall be clearly labeled for identification.

Y\_\_ N\_\_

### **FRONT SCENE LIGHTS**

The front of the cab shall include two (2) Whelen Pioneer model PFS2 contour roof mount scene lights installed on the brow of the cab.

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

Y\_\_ N\_\_

### **FRONT SCENE LIGHTS ACTIVATION**

The front scene lighting shall be activated by a virtual button on the Vista display and control screen.

Y\_\_ N\_\_

### **FRONT SCENE LIGHT LOCATION**

There shall be two (2) scene lights mounted to the front brow of the cab inboard of the outer front marker lights in a position which blocks neither the drivers view nor the visibility of the lightbar.

Y\_\_ N\_\_

### **SIDE SCENE LIGHTS**

The side of the cab shall include two (2) Whelen 900 series 9SC0ENZR model scene lights, one (1) each side which shall be surface mounted with a chrome bezel. The Whelen lights shall offer LED lighting at a gradient 32-degree angle.

Y\_\_ N\_\_

### **SIDE SCENE LIGHT LOCATION**

The scene lighting located on the left and right sides of the cab shall be mounted rearward of the cab "B" pillar in the 10.00 inch raised roof portion of the cab between the front and rear crew doors.

Y\_\_ N\_\_

### **SIDE SCENE ACTIVATION**

The scene lights shall be activated by two (2) virtual buttons on the Vista display and control screen(s), one (1) for each light, and by opening the respective side cab doors.

Y\_\_ N\_\_

### **INTERIOR OVERHEAD LIGHTS**

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

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

Y\_\_ N\_\_

### **MAP LIGHTS**

Two (2) Federal Signal gooseneck style map lights shall be provided. Each light shall have red and white LEDs to eliminate the need for a filter, shall be 18.00 inches tall, and shall have a control switch on the base. The lights shall be installed on the ceiling in the front of the cab, one (1) each side.

Y\_\_ N\_\_

### **SPOTLIGHT**

The cab shall include one (1) 12 volt Optronics KB-4003 hand-held spotlight which shall be mounted in the center of the engine tunnel. The spotlight shall provide 400,000 candlepower of illumination and shall include a 10.00 foot coil cord and a momentary push button switch.

Y\_\_ N\_\_

### **DO NOT MOVE APPARATUS LIGHT**

The front headliner of the cab shall include a flashing red Whelen 500 Series TIR6™ Super-LED® light with a clear lens clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated.

The flashing red light shall be 5.40 inches long X 1.70 inches wide X 0.90 inches high and shall be located centered left to right for greatest visibility.

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

Y\_\_ N\_\_

### **MASTER WARNING SWITCH**

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

Y\_\_ N\_\_

### **HEADLIGHT FLASHER**

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

Activation of the headlights will override the flashing function until the headlights are turned off. Per NFPA, these clear flashing lights will also be disabled "On Scene" when the park brake is applied.

Y\_\_ N\_\_

### **HEADLIGHT FLASHER SWITCH**

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

Y\_\_ N\_\_

### **INBOARD FRONT WARNING LIGHTS**

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

Y\_\_ N\_\_

**INBOARD FRONT WARNING LIGHTS COLOR**

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

Y\_\_ N\_\_

**OUTBOARD FRONT WARNING LIGHTS**

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

Y\_\_ N\_\_

**OUTBOARD FRONT WARNING LIGHTS COLOR**

The warning lights mounted on the cab front fascia in the outboard position shall be red with a clear lens.

Y\_\_ N\_\_

**FRONT WARNING SWITCH**

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

Y\_\_ N\_\_

**INTERSECTION WARNING LIGHTS**

The chassis shall include two (2) Whelen 600 series Super LED intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted within a chrome bezel.

Y\_\_ N\_\_

**INTERSECTION WARNING LIGHTS COLOR**

The intersection lights shall be red with a clear lens.

Y\_\_ N\_\_

**INTERSECTION WARNING LIGHTS LOCATION**

The intersection lights shall be mounted on the side of the bumper in the rearward position.

Y\_\_ N\_\_

**SIDE WARNING LIGHTS**

The cab sides shall include two (2) Whelen 600 series Super LED warning lights, one (1) on each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the sides of the cab within a chrome bezel.

Y\_\_ N\_\_

**SIDE WARNING LIGHTS COLOR**

The warning lights located on the side of the cab shall be red with clear lens.

Y\_\_ N\_\_

**SIDE WARNING LIGHTS LOCATION**

The warning lights on the side of the cab shall be mounted over the front wheel well directly over the center of the front axle.

Y\_\_ N\_\_

**SIDE AND INTERSECTION WARNING SWITCH**

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

Y\_\_ N\_\_

**TANK LEVEL LIGHTS**

There shall be two (2) Whelen PSTANK water level light strips surface mounted vertically, one (1) on each side of the cab behind the rear cab doors.

The light strips shall feature four (4) colors of LED lights to indicate the fluid level of a tank. The colors from top to bottom shall be green, blue, amber, and red.

Y\_\_ N\_\_

**SIREN CONTROL HEAD**

A Federal EQ2B electronic siren control head shall be provided and installed in the switch panel with a location specific to the customer’s needs. The siren shall feature 200-watt output, “Q” wail, yelp, air horn, PA, radio broadcast and “Q” brake. The siren shall include a noise cancelling microphone.

Y\_\_ N\_\_

**HORN BUTTON SELECTOR SWITCH**

A virtual button on the Vista display and control screen shall be provided to allow control of the electric horn, the air horn, or the electronic siren from the steering wheel horn button. The horn button selection shall default to the air horn each time the Vista screen power is cycled off and on. When the emergency master switch is on the horn button selector shall default to electronic siren activation. The electric horn shall sound by default when the selector switch is in any position to meet FMCSA requirements.

Y\_\_ N\_\_

## **AIR HORN ACTIVATION**

The air horn activation shall be accomplished by the steering wheel horn button for the driver and a right hand side Linemaster model SP491-S81 foot switch for the officer. The foot switch shall be mounted against the engine tunnel on the left side of the officer side floor area approximately 25.00 inches forward of the officer's seat frame. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector. (This was 5512-112)

Y\_\_ N\_\_

## **ELECTRONIC SIREN AUXILIARY ACTIVATION**

The electronic siren shall include activation by the steering wheel horn button.

Y\_\_ N\_\_

## **BACK-UP ALARM**

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

Y\_\_ N\_\_

## **INSTRUMENTATION**

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

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

The instrument panel shall contain the following gauges:

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

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

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, voltmeter, and transmission temperature shall be included. The scale on the engine oil pressure gauge shall read from 0 to 100 pounds PSI with a red line zone indicating critical levels of oil pressure. A red indicator light in the gauge and audible alarm shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (°F) with a red line zone indicating

critical coolant temperatures. A red indicator light in the gauge and audible alarm shall indicate high coolant temperature. The scale on the voltmeter shall read from 9 to 18 volts with a red line zone indicating critical levels of battery voltage. A red indicator light in the gauge and an audible alarm shall indicate high or low system voltage. The low voltage alarm shall indicate when the system voltage has dropped below 11.8 volts for more than 120 seconds in accordance with the requirements of NFPA 1901. The scale on the transmission temperature gauge shall read from 100 to 300 degrees °F with a red line zone indicating critical temperatures. A red indicator light in the gauge and an audible alarm shall indicate a high transmission temperature.

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

### **RED INDICATORS**

Stop Engine - indicates critical engine fault

Air Filter Restricted - indicates excessive engine air intake restriction

Park Brake - indicates parking brake is set

Seat Belt - indicates a seat is occupied and corresponding seat belt remains unfastened

Low Coolant - indicates critically low engine coolant

Cab Tilt Lock - indicates the cab tilt system locks are not engaged.

### **AMBER INDICATORS**

Malfunction Indicator Lamp (MIL) - indicates an engine emission control system fault

Check Engine - indicates engine fault

Check Transmission - indicates transmission fault

Anti-Lock Brake System (ABS) - indicates anti-lock brake system fault

High exhaust system temperature – indicates elevated exhaust temperatures

Water in Fuel - indicates presence of water in fuel filter

Wait to Start - indicates active engine air preheat cycle

Windshield Washer Fluid – indicates washer fluid is low

DPF restriction - indicates a restriction of the diesel particulate filter

Regen Inhibit-indicates regeneration of the DPF has been inhibited by the operator

Range Inhibit - indicates a transmission operation is prevented and requested shift request may not occur.

SRS - indicates a problem in the supplemental restraint system

Check Message - indicates a vehicle status or diagnostic message on the LCD display requiring attention.

### **GREEN INDICATORS**

Left and Right turn signal indicators

ATC - indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system

High Idle - indicates engine high idle is active.

Cruise Control - indicates cruise control is enabled

OK to Pump - indicates the pump is engaged and conditions have been met for pump operations

Pump Engaged - indicates the pump transmission is currently in pump gear

Auxiliary Brake - indicates secondary braking device is active

### **BLUE INDICATORS**

High Beam indicator

### **AUDIBLE ALARMS**

Air Filter Restriction

Cab Tilt Lock

Check Engine

Check Transmission

Open Door/Compartment

High Coolant Temperature

High or Low System Voltage

High Transmission Temperature

Low Air Pressure

Low Coolant Level

Low DEF Level

Low Engine Oil Pressure

Low Fuel

Seatbelt Indicator

Stop Engine

Water in Fuel

Extended Left/Right Turn Signal On

ABS System Fault

Y\_\_ N\_\_

**BACKLIGHTING COLOR**

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

Y\_\_ N\_\_

**CAMERA**

An Audiovox Voyager heavy duty rearview camera system shall be supplied. One (1) camera with a teardrop shaped chrome plated housing shall be shipped loose for OEM installation in the body to afford the driver a clear view to the rear of the vehicle.

The camera shall be wired to a single Weldon Vista display. The camera shall activate when the transmission is placed in reverse and by a button on the Vista display.

Y\_\_ N\_\_

**CAB EXTERIOR PROTECTION**

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

Y\_\_ N\_\_

**FIRE EXTINGUISHER**

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

Y\_\_ N\_\_

**DOOR KEYS**

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

Y\_\_ N\_\_

**DIAGNOSTIC INTERFACE MODULE**

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

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

The software shall be supported by Windows 2000, XP, Vista, and Windows 7.

Y\_\_ N\_\_

**DIAGNOSTIC SOFTWARE OCCUPANT PROTECTION**

Diagnostic software for the Spartan Advanced Protection System shall be available for free download from the Spartan Chassis website to Spartan authorized OEMs, dealers and service centers, as well as the vehicle owner.

The software has been validated to be compatible with the following RP1210 interface adapters:

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

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

Y\_\_ N\_\_

**WARRANTY**

Y\_\_ N\_\_

The chassis manufacturer shall provide a limited parts and labor warranty to the purchaser of the custom built cab and chassis for a period of sixty (60) months, or the first 75,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the first end user.

Y\_\_ N\_\_

**CHASSIS OPERATION MANUAL**

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

Y\_\_ N\_\_

**ENGINE AND TRANSMISSION OPERATION MANUALS**

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

- (2) Hard copies of the Engine Operation and Maintenance manual with CD
- (2) Digital copies of the Transmission Operator’s manual
- (2) Digital copies of the Engine Owner’s manual

Y\_\_ N\_\_

**CAB/CHASSIS AS BUILT WIRING DIAGRAMS**

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

Y\_\_N\_\_

**CUSTOM MIDSHIP PUMPER**

Y\_\_N\_\_

**APPROVAL DRAWINGS**

Two (2) sets of engineering blueprints, CAD drawn to scale specifically for this apparatus, shall be provided. The Fire Department shall review and approve these drawings prior to actual construction of the apparatus.

Both left and right side views, a front view, a rear view and a top view shall be provided. The blueprints shall also show the overall dimensions of the apparatus, proposed compartment sizes and features, booster tank position, and the location of all emergency warning and work lights that are to be provided by the body builder.

Y\_\_N\_\_

**THIRD PARTY TESTING**

The complete apparatus shall be third party tested and certified as a class "A" triple combination pumper by Underwriters Laboratories (UL). Unit shall also meet or exceed all N.F.P.A. Pamphlet No. 1901 (latest edition) specifications and standards.

Y\_\_N\_\_

**PERFORMANCE REQUIREMENTS**

The apparatus, when fully equipped and loaded, shall be capable of the following performance on dry, level, paved roads in good condition:

From a standing start the vehicle shall attain a true speed of 35 mph within 25 seconds.

From a steady speed of 15 mph the vehicle shall accelerate to a true speed of 35 mph within 30 seconds. This shall be accomplished without moving the gear selector.

The vehicle shall attain a minimum top speed of not less than 50 mph.

The apparatus shall be able to maintain a speed of at least 20 mph on any grade up to and including six percent.

Y\_\_N\_\_

**MODIFICATIONS TO CHASSIS**

The following modifications shall be performed on the chassis upon arrival at the body builder's facility:

A Havis Shield #UT-101 computer bracket shall be mounted on the slide out tray in front of the officer.

Y\_\_N\_\_

**FUEL FILL**

The chassis furnished fuel tank shall be located behind the rear axle. The body builder shall install the fuel fill on the road side, also behind the rear axle. The fuel fill will hook up with flexible fuel hose and will have a polished cast aluminum recessed filler with a hinged door. A nametag shall be provided as to the type of fuel the vehicle shall use.

When possible a rear access panel will be provided in rear compartment wall to gain access to the fuel tank sending unit.

Y\_\_N\_\_

**CAB TILT INSTALLATION**

Installation shall be provided for the cab tilt receptacle that is shipped loose with the chassis. The receptacle shall be located on the curbside pump panel.

Y\_\_N\_\_

**APPARATUS INFORMATION LABEL**

A label shall be provided in the area of the driver seat to notify the driver of the maximum amount of personnel to be carried on the vehicle as well the overall height, overall length, and the GVWR.

Y\_\_N\_\_

**HELMET LABEL**

A label stating "DO NOT WEAR HELMET WHILE SEATED" shall be provided and visible from each seating location.

Y\_\_N\_\_

**CHASSIS EXHAUST**

The chassis exhaust shall be extended just past the body side away from the pump operator. A stainless steel exhaust deflector shall be located just above the exhaust pipe and below the body to prevent discoloration of the body side panels.

Y\_\_N\_\_

**REAR TOW EYES**

Two (2) heavy rear tow eyes, .75" x 4" with a 2.375" elongated hole, shall be bolted directly to the frame, at the rear of the apparatus. They shall be furnished with stainless steel trim plates.

Y\_\_N\_\_

**PAINTED TOW EYES - BLACK**

Tow eyes will be painted black.

Y\_\_N\_\_

**REAR SPRING SHACKLE ACCESS**

The rear axle spring shackles, if equipped with grease fittings, shall have the fittings replaced with 90 degree fittings for ease of service once the body is in place.

Y\_\_N\_\_

**FLUID ID PLATE**

The following quantity and type of fluids used in the vehicle will be programmed on the Multiplexing display that is located in the cab:

- Engine oil
- Engine coolant
- Transmission fluid
- Pump transmission lubrication fluid
- Pump primer fluid
- Drive axle lubrication fluid
- Air-conditioning refrigerant
- Air-conditioning lubrication oil
- Power steering fluid
- Equipment rack fluid
- Air compressor system lubricant
- Generator system lubricant
- Front tire cold pressure
- Rear tire cold pressure
- Maximum tire speed ratings

Y\_\_N\_\_

**REAR MUDDLAPS**

A black hard rubber mudflap with the manufacturer's logo on it shall be installed behind the rear wheels, one (1) each side.

Y\_\_N\_\_

**CHROME NUT & HUB COVERS, INSTALL CHASSIS FURNISHED**

The chassis furnished chrome hub and nut covers shall be installed on the chassis wheels.

Y\_\_N\_\_

**CABINET WITH ROLL-UP DOOR**

Two (2) .125" smooth aluminum cabinet(s) will be provided on the rear cab wall, one on each side of the forward facing rear seats and equipped with an Amdor brand roll-up aluminum door. The door shall be constructed of double wall slats that provide a smooth surface on the interior of the door to prevent interference with compartment contents. The slats shall have recessed bulb type slat seals which provide a weatherproof compartment and reduce the effects of vehicle vibration. The aluminum extrusions shall be equipped with nylon universal end shoes with positive snap-in securement's that slide in the track and side frame section. The bottom rail will include a pivoting latch cam assembly for quick and reliable access to compartments. The dimensions will be approximately 66" high x 19" wide x 16" deep, not extend past / into the door opening, and sized to maximize the available rear wall space. The final dimensions will be determined at the preconstruction conference. The cabinet exteriors will be finish painted to match the cab's multi-tone silver gray textured finished area and the interiors will be unfinished. The top of the cabinet and shelves are to have 1.5" lips to retain equipment. The clear door opening will be reduced approximately 8" in height due to the roller assembly and the door lock mechanism.

Y\_\_N\_\_

### **ADJUSTABLE SHELVES, INTERIOR CABINETS**

Six (6) adjustable shelves will be fabricated from .188" high strength 5052-H32 aluminum. The shelves are to have a bend both front and rear with one bend in the opposite direction so that the shelf is reversible to provide either a lip to retain equipment or a smooth sweep-out front. The shelves shall be located three (3) in each rear cab wall cabinet, with the bottom shelf just high enough to remove the handlights.

For ease of adjustment and as additional shelving reinforcement, the shelves shall not be bolted directly to the standards but shall be supported by an angled gusset that in turn is fastened to the standards.

Heavy duty adjustable shelving standards will be furnished, one each side of cabinet. These standards are to be the infinitely adjustable type of 6061-T6 extruded aluminum.

Y\_\_N\_\_

### **ON SCENE SOLUTIONS COMPARTMENT LED STRIP LIGHTS**

Compartment(s) specified in the cab shall have two (2) OnScene Solutions Night Axe LED strip lights provided. The light tube shall include light emitting diodes every 3".

Y\_\_N\_\_

### **OUTLET, INTERIOR**

Two (2) 120 volt AC powerstrips shall be furnished and located vertically on the inboard walls (toward the back wall), one (1) strip in each cab rear wall cabinet. The powerstrips shall be wired to the transfer switch, and be surface mounted and labeled with a permanent nameplate listing the voltage, type of current, phase and amp rating.

Y\_\_N\_\_

### **TIRE CHAIN INSTALLATION**

The chassis furnished tire chain installation shall be completed after the body is loaded.

Y\_\_N\_\_

### **HELMET HOLDERS**

The chassis manufacturer shall provide and install near each seat position (in locations to be determined at the preconstruction meeting) helmet holders to meet compliance to the 2009 edition of NFPA 1901 for use inside of crew cabs. The holders shall secure traditional and contemporary style helmets without any adjustment being required.

Y\_\_N\_\_

### **FIRE PUMP**

The pump shall be a Class "A" Midship Waterous 2000 GPM Single Stage Model CSU Centrifugal Fire Pump, U.L. Certified.

The pump shall be a centrifugal class "A" rated fire pump, designed specifically for the fire service.

The fire pump shall be tested and certified by Underwriters Laboratories to perform as listed below:

100% of rated capacity at 150 pounds net pressure.

70% of rated capacity at 200 pounds net pressure.

50% of rated capacity at 250 pounds net pressure.

100% of rated capacity at 165 pounds net pressure.

The pump shall comply with the applicable requirements of "Standard for Automotive Fire Apparatus" of the National Fire Protection Association Pamphlet 1901, latest revision.

The pump shall be free from objectionable pulsation under all normal operating conditions.

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

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

Y\_\_N\_\_

### **IMPELLER HUB**

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

Y\_\_N\_\_

### **PUMP ANODES**

Sacrificial anodes will be provided in the pump housing, one (1) for the discharge part of pump and one (1) for the suction part of pump.

Y\_\_N\_\_

### **PUMP SEAL**

Seal housings on packed pumps shall be equipped with two-piece, fully adjustable packing glands. Grafoil packing shall be used, providing optimum sealing characteristics, minimizing shaft wear, and virtually eliminating repacking.

Flinger rings shall be located on the impeller shaft between the seal and bearing housings, providing added protection, keeping water and foreign matter out of the bearings.

Y\_\_N\_\_

### **PUMP CASING**

The pump casing shall be cast as two (2), horizontally split pieces. The casing shall be made of high tensile, close grained gray iron with a minimum tensile strength of 40,000 PSI.

The pump shall be equipped with replaceable bronze wear rings for increased pump life and minimum maintenance cost.

The wear rings shall be designed to fit into a groove in the face of the impeller hubs forming a labyrinth that, as the clearance increased with age, directs water from the discharge side in several directions eventually exiting outward, away from the eye of the hub.

There shall be two (2) copies of the pump operation & maintenance manuals provided.

Y\_\_N\_\_

### **DRIVE UNIT**

The pump transmission shall be of the latest design, incorporating a high strength involute tooth-form Morse Hy-Vo chain capable of operating at high speeds while providing smooth and quiet transmission of power. Drive and driven sprockets shall be made of alloy steel with teeth of an involute form.

Drive line shafts shall be made from alloy steel forgings, hardened and ground to size. Deep groove, anti-friction ball bearings shall be used throughout the pump transmission. The pump shift engagement shall be accomplished by a free sliding collar that uses an internal locking mechanism to insure that the collar will stay in road or pump position.

Primary lubrication for the pump transmission bearings, sprockets and chain shall be provided by a splash system. A supplementary pressure system shall also be employed which shall include a strainer, an oil circulation pump driven by the impeller shaft, and a spray bar inside the case to apply oil to the inside of the chain just before it engages the driven sprocket.

The pump and transmission shall be easily separable. A two piece shaft shall be splined and connected between the flinger ring and packing gland allowing for individual repair of either the pump or transmission, to keep down time to a minimum.

All drive line components shall have a torque rating equal to or greater than the net engine torque multiplied by the torque converter ratio and the first gear ratio.

Y\_\_N\_\_

### **PUMP SHIFT**

The pump shift shall be a toggle type control, located in the cab at a location to be determined at the preconstruction meeting, with a spring loaded cover to prevent it from accidentally being bumped out of gear. The shift from road to pump shall be power operated by the chassis air supply and have a pump in gear indicator light on the pump shift valve nameplate.

An electronic lock up shall be provided in the transmission to lock the transmission into pumping gear when the proper range is selected.

A nameplate indicating the chassis transmission control lever position to be used for pumping shall be provided in the cab and located with the pump shift switch control so that it can be read from the driver's position.

Y\_\_N\_\_

### **PUMP SHIFT INDICATORS**

For trucks with automatic transmissions, three (3) green indicator lights shall be provided to indicate to the pump operator when the pump has completed the shift from the Road to the Pump position.

Two (2) green lights to be located in the cab. One is to be labeled "Pump Engaged" which illuminates when the pump shift has been successfully completed. The other light is to be labeled "OK to Pump" and is to illuminate when the pump shift has been completed and the transmission is engaged in the proper pumping gear. The labeling and lights shall be included with the pump shift nameplate.

An "OK to Pump" indicator light shall also be furnished on the pump operator's control panel adjacent to the throttle control unless provided on the governor. A warning label stating "Warning: Do Not Open Throttle Unless Light Is On." shall be installed adjacent to the throttle control.

Y\_\_N\_\_

### **PUMP PRIMING SYSTEM**

There shall be a Trident air primer pump with a push button control on the pump panel for pump priming. The air primer utilizes air brake system air to power a non moving parts jet pump. The noiseless primer requires no lubrication, and has non wearing components.

Y\_\_N\_\_

### **DRIVE LINES**

The original drive lines furnished with the chassis shall be reworked to fit the pump installation. The tube, if needed to be lengthened, shall be completely replaced. Splicing of the tube is not acceptable. Tube shall be D.O.M. (Drawn over Mandrel) made for drive shafts.

They shall be electrically MIG welded by a certified welder on a specially designed drive shaft fabrication machine. After welding, the drive shaft shall be checked for straightness and be dynamically balanced by computerized machinery. All drive shafts shall be balanced.

Y\_\_N\_\_

### **AUXILIARY COOLING SYSTEM**

A Sen-Dure model #4373-1-5 supplementary remote heat exchange cooling system of brass and copper construction shall be installed. The unit shall be mounted in the pump compartment and be complete with all proper valving. Controls shall be at the pump operator's panel. Unit shall permit the use of water from the discharge side of the pump for cooling of the coolant circulating through the engine cooling system without intermixing.

The heat exchanger shall have an added tap for a radiator fill if required, elsewhere in these specifications.

The auxiliary cooler lines shall be routed away from the engine exhaust and be properly secured to the truck frame.

Y\_\_N\_\_

### **MASTER DRAIN VALVE**

Suitable line drains shall be mounted for properly draining all piping lines and pump. The pump shall be equipped with a single master drain valve that includes individually ported drains that do not require check valves. This drain shall also include all relief valves, auxiliary engine cooler, and pump transmission.

Y\_\_N\_\_

### **DRAIN VALVES - QUARTER TURN**

The drain valves shall be 3/4" nickel plated brass with chrome-plated quarter turn handles. Each handle shall include a recessed color-coded label identifying each valve.

Y\_\_N\_\_

### **INTAKE RELIEF VALVE**

There shall be a relief/dump valve bolted directly to the suction manifold on the pump. It shall be preset to 125 PSI and be field adjustable behind the curb side pump access door.

There shall be a permanent label affixed near the outlet which states "Intake relief valve outlet - Do not cap."

Y\_\_N\_\_

### **RELIEF VALVE, FRONT SUCTION**

There shall be a Class One stainless steel relief/dump valve bolted directly to the front suction pipe. It shall be preset to 125 PSI and will be field adjustable from under the truck.

Y\_\_N\_\_

### **PUMP PIPING & AKRON VALVES**

All discharge valves under 4" shall be Akron brand HD 8800 series or Waterous type as required. All discharge valves, 4" or larger, when specified shall be Akron 8840 series and shall be equipped with a mechanism to restrict the speed of operating the valve from full closed to full open or vice versa in less than 3 seconds. All threads shall be NST unless specified otherwise.

Discharge and suction piping shall be 100% stainless steel or where more flexibility is required, the discharge and suction lines shall be plumbed with high pressure reinforced flexible hoses which have threaded stainless steel or victaulic fittings. Victaulic couplings shall be used wherever needed to prevent vibration damage and to aid in servicing the pump and related plumbing. **Galvanized piping or fittings will not be accepted (NO EXCEPTIONS).**

Y\_\_N\_\_

### **MAIN SUCTION INLETS**

There shall be a 6" pump manifold inlet with removable, cleanable screen furnished on each side of the body. Each side of the pump is to be provided with a short suction tube to provide better clearance for externally mounted valves and adapters. The inlets shall be furnished with long handled chrome plated female pressure caps designed to fit the intake caps.

Y\_\_N\_\_

### **BUTTERFLY VALVE, AIR OPERATED**

An air operated butterfly valve shall be provided for the front suction inlet. The valve shall be installed on the pump with control located on the pump operator's panel.

Y\_\_N\_\_

### **5" FRONT SUCTION, GATED**

A 5" gated suction inlet shall be located on the right side of the front of the cab. This line shall have victaulic type couplings front and rear with drains located where necessary at the lowest points of the piping.

The inlet shall have a long handle chrome plated cap designed to fit the intake.

The 5" suction pipe shall be furnished and installed by the chassis manufacturer.

Y\_\_N\_\_

### **FRONT SWIVEL**

A Trident 5" 90 degree locking chromed swivel shall be furnished on the suction pipe at the front bumper.

Y\_\_N\_\_

### **2-1/2" ROAD SIDE AUXILIARY INLET**

One (1) auxiliary 2-1/2" NST gated suction inlet shall be provided at the road side pump panel. Valve shall be the 1/4 turn ball type with a lever style control located at the valve. The valve shall be located behind the pump panel.

The auxiliary inlet shall be equipped with a chrome swivel, removable cleanable strainer, male plug and retainer chain. An individual 3/4" bleeder drain with a quarter turn control handle shall be furnished. The drain shall be piped toward the ground.

Y\_\_N\_\_

**2-1/2" CURB SIDE AUXILIARY INLET(S)**

In addition to the road side auxiliary inlet, one (1) 2-1/2" NST gated suction inlet(s) shall be located as curb side. Valve shall be the 1/4 turn ball type with lever style control located on the valve. The valve shall be located behind the pump panel.

The auxiliary inlet(s) shall be equipped with a chrome swivel, removable cleanable strainer, male plug and retainer chain. An individual 3/4" bleeder drain with a quarter turn control handle shall be furnished. The drain shall be piped toward the ground.

Y\_\_N\_\_

**VALVED INLET LABEL**

Any valved inlet located at the pump operator's position shall be provided with a permanent mechanically fastened label that states "Warning - serious injury or death could occur if inlet(s) is supplied by a pressurized source when the valve is closed".

Y\_\_N\_\_

**2-1/2" MAIN DISCHARGE VALVE, ROAD SIDE**

There shall be two (2) 2-1/2" discharge(s) provided at the road side. Discharge valve shall be 1/4 turn, full flow, drop out, self-locking type and shall be mounted behind the pump panel.

The discharge valve shall be gated with easy operating push pull controls. The outlet shall have a stainless steel NST elbow capped with a chrome plated female cap and chain. Unless otherwise specified the 2-1/2" valve shall have a 45 degree elbow with a 2-1/2" cap.

The discharge shall have an individual bleeder drain which shall be piped toward the ground.

Y\_\_N\_\_

**2-1/2" MAIN DISCHARGE VALVE, CURB SIDE**

There shall be two (2) 2-1/2" discharge(s) provided at the curb side. Discharge valve shall be 1/4 turn, full flow, drop out, self-locking type and shall be mounted behind the pump panel.

The discharge valve shall be gated with easy operating push pull controls. The outlet shall have a stainless steel NST elbow capped with a chrome plated female cap and chain. Unless otherwise specified the 2-1/2" valve shall have a 45 degree elbow with a 2-1/2" cap.

The discharge shall have an individual bleeder drain which shall be piped toward the ground.

Y\_\_N\_\_

**DECK GUN DISCHARGE**

There shall be one (1) 3" NPT discharge located above the pump for installation of a deck gun. The discharge valve shall be bronze, 3", 1/4 turn, full flow, drop out, and be of the self-locking type.

The 3" discharge valve shall be gated with easy operating push-pull controls. Valve to be controlled from the pump operator's panel.

An automatic drain shall be provided at the lowest point of the piping and the drain shall be piped toward the ground.

Y\_\_N\_\_

**DECK GUN FLANGE**

The outlet of the deck gun discharge pipe shall be provided with a 4-bolt ASA flange to allow for installation of a deck gun.

Y\_\_N\_\_

**DECKGUN**

There shall be Elkhart # 8297-25 Stinger 2.0 portable monitor with a #8298 top mount adapter. To be complete with portable base with two 2-1/2" clappered inlets. Base to have fold up legs for easy storage. Monitor to be complete with a # 282A stream shaper, a #ST194 quad stacked tips, and a 300-1000 gpm automatic master stream nozzle.

Y\_\_N\_\_

**2-1/2" REAR DISCHARGE**

There shall be one (1) 2-1/2" discharge at the curbside rear of the body. The discharge valve shall be a 2-1/2", 1/4 turn, full flow, drop out and be the self-locking type. It shall be gated with easy operating push pull controls located on the pump operator's panel. Unless otherwise specified the 2-1/2" valve shall have a 45 degree elbow with a 2-1/2" cap.

The 2-1/2" discharge shall have an individual bleeder drain with a quarter turn control handle. The drain shall be piped toward the ground.

Y\_\_N\_\_

**2-1/2" REAR DISCHARGE**

There shall be one (1) 2-1/2" discharge at the roadside rear of the body. The discharge valve shall be a 2-1/2", 1/4 turn, full flow, drop out and be the self-locking type. It shall be gated with easy operating push pull controls located on the pump operator's panel. Unless otherwise specified the 2-1/2" valve shall have a 45 degree elbow with a 2-1/2" cap.

The 2-1/2" discharge shall have an individual bleeder drain with a quarter turn control handle. The drain shall be piped toward the ground.

Y\_\_N\_\_

**2-1/2" FRONT PRECONNECT - ROADSIDE**

There shall be one (1) 2-1/2" pre-connect(s) located at the front bumper. The discharge valve shall be a 2-1/2", 1/4 turn, full flow, drop out and be the self-locking type. It shall be gated with easy operating push pull controls located on the pump operator's panel. The piping will be 2-1/2" with the outlet equipped with a male chrome plated 2-1/2" NST 90 degree swivel elbow.

The 2-1/2" pre-connect shall have an individual bleeder drain that shall be piped toward the ground.

Y\_\_N\_\_

**CROSSLAYS**

Three (3) 1-1/2" crosslay(s) shall be mounted above the pump. Each shall have the capacity of 200 ft. of 1-3/4" double jacket fire hose. Each crosslay shall be individually plumbed with a 2", 1/4 turn full flow drop out valve, 2" piping, and a 90 degree 1-1/2" male NST chicksan swivel adapter. Easy operating push pull controls shall be located on the pump panel.

The crosslay compartment floor shall be fitted with aluminum flooring to allow for proper ventilation and drainage. To reduce maintenance and paint chips, the divider and crosslay sidewalls shall have an unpainted oscillated aluminum finish.

The crosslays shall have an individual bleeder drain with a quarter turn control handle. The drain shall be piped toward the ground.

If more than one (1) crosslay is provided a divider shall separate the hose loads.

Y\_\_N\_\_

**CROSSLAY ROLLERS**

There shall be two (2) vertical stainless steel roller on each side to aid in the quick deployment of hose.

Y\_\_N\_\_

**CROSSLAY DIVIDER**

Two (2) removable crosslay divider(s) shall be provided.

Y\_\_N\_\_

**CROSSLAY STRAPS**

Two (2) double loop Velcro straps shall be provided to secure the hose in place.

Y\_\_N\_\_

**MESH COVERS FOR CROSSLAY ENDS - ONE EACH END**

Two black open mesh nylon, 1" web with 1" squares will be provided on each end of the crosslays. The mesh will be fastened so it can be detached and flipped to the side for quick deployment.

Y\_\_N\_\_

**FOAM EDUCTOR**

There shall be an Elkhart Model 240-95P, 95 g.p.m. by-pass foam eductor permanently installed in the 1-1/2" discharge line serving the forward crosslay. It shall be all brass construction with a metering device to allow settings of 0% to 6% mixture.

Full flow check valves shall be provided to prevent foam contamination water contamination of foam tank.

All controls shall be on the pump operator's panel and shall include the following:

- Foam supply valve with an in-line valve

Foam cell drain valve

Eductor valve

Metering valve

Flush Valve

Stainless steel instruction plate

There shall also be a foam pick-up tube plumbed to the system and mounted on the pump panel in a location to be determined at the preconstruction meeting.

Y\_\_N\_\_

### **FOAM SYSTEM CERTIFICATION**

The manufacturer shall certify the following:

1. - The foam system, as installed, complies with the foam equipment manufacturer's installation recommendations.
2. - The foam system has been calibrated and tested to meet the foam equipment manufacturer's and the purchaser's performance specifications.
3. - The accuracy of the foam proportioning system meets the requirements of NFPA, section 20.11.1.

Upon delivery of the fire apparatus, documentation shall be provided declaring the foam proportioning system, as installed, meets the requirements of NFPA sections 20.10.2 or 20.10.3 across the foam proportioning system manufacturer's declared range of waterflow, water pressure, foam percentage (or foam proportioning system capacity) , and concentrate viscosity at the test points defined in Table 20.11.1.

Y\_\_N\_\_

### **TANK TO PUMP LINE**

The piping from the tank to pump shall be one (1) 3" line and shall deliver not less than 500 GPM. Valve to be 3.5" 1/4 turn ball type with an easy operating push pull control at the pump operator's control panel. A flexible line shall be used between the tank sump and the tank to pump valve. A check valve shall be included in the tank to pump line.

Y\_\_N\_\_

### **TANK FILL LINE**

Pump to tank line shall be 2-1/2". Valve to be 2-1/2" 1/4 turn ball type with an easy operating push pull control at the pump operators panel. This line is to be hooked to the tank with a flexible hose as not to put any undue strain on the piping or tank.

Y\_\_N\_\_

### **PUMP COMPARTMENT**

The pump compartment is to be made of all aluminum. The compartment shall be supported by aluminum extrusions; 3" x 2" at the front and 2" x 2" at the rear. Both extrusions will have a .25 wall

thickness 6061-6 aluminum extruded rectangular tubing that have an integral support built in for the side panels and running boards.

The pump compartment shall be a completely separate module. A minimum of a 1" space shall be provided between the chassis cab and the pump compartment and between the pump compartment and the main body. Spacing is to allow for chassis flexing when driving over uneven terrain.

There shall be a bright aluminum diamond plate top hinged door with two (2) chrome plated lift and turn latch on the curb side for fast and clear access to the pump for service and inspection.

The pump compartment shall be mounted on breaker strips to separate the chassis frame from the aluminum pump compartment.

Any available area above the pump shall be an open storage compartment. It shall have a bright aluminum diamond plate floor in removable sections for access to the pump. The interior side walls and floor shall have an unpainted natural aluminum finish.

Y\_\_N\_\_

46" - 49" Side Mount Pump Compartment

Y\_\_N\_\_

### **PUMP PANELS**

Road side and curb side pump panels shall be constructed of 12 gauge brushed stainless steel. The pump panels shall also be removable and held in place with stainless steel fasteners. All pump controls shall be located on the road side panel except for the curb side auxiliary suction inlet if so equipped.

Suction and discharge openings shall be trimmed with color coded collars.

The drain handles will be installed in a separate panel to allow for easy maintenance.

### **PUMP GAUGE PANEL**

The pump gauge panel shall be constructed of 12 gauge brushed stainless steel and be located above the road side pump panel. It shall be hinged at the side to swing open for ease of service and inspection. It shall be full width of the pump panel and have two (2) chrome plated lift and turn latches.

Y\_\_N\_\_

### **PUMP PANEL DRAWINGS**

A pump panel CAD drawing showing the proposed locations of the switches, valve controls, gauges, etc. shall be submitted to the Fire Department prior to the fabrication of these panels. This will allow the Fire Department to make minor location requests prior to the fabrication of these panels (no plumbing changes allowed).

Y\_\_N\_\_

### **RUNNING BOARDS**

The running boards shall be constructed of .188" serrated bright aluminum treadplate. They shall be reinforced with a 2" downward break at the front, rear and outboard edges with an additional 1" minimum return break underneath the front edge for superior strength. The front corner of the runningboard shall be tapered to avoid injuries. For ease of replacement if damaged, the running boards shall be bolted in place. A drain gap shall be provided between the pump compartment and the running boards.

There shall be a 4" aluminum treadplate kickplate on the lower edge of each side pump panel, just above the running boards.

The running boards shall be a minimum of 13" deep, (when rubrails are present) to provide adequate clearance for externally mounted valves and appliances and to provide better footing for access to storage areas above the pump.

Y\_\_N\_\_

### **VALVE CONTROLS**

Unless otherwise stated in these specifications, the suction and discharge valves shall be operated by remote controls. Valve control handles shall be chrome plated ergonomic handles with a color coded function label and numbered consecutively, as far as plumbing will permit. For each discharge with a gauge the control and gauge shall be in the same bezel for pump operator ease.

Y\_\_N\_\_

### **MICROPHONE COMPARTMENT**

There shall be a radio microphone compartment, 10" H x 8" W. x 6" D., recessed into the front wall of the upper left high side compartments adjacent to the pump operator's control panel. Compartment to have a bright aluminum treadplate door.

Y\_\_N\_\_

### **PUMP PANEL LIGHTING, LED**

An extruded aluminum shield shall be mounted above the road side gauge panel. The light shields shall be made as large as possible to provide maximum light distribution. Two (2) TecNiq #E10-W000-1 LED lights shall be furnished under the shield. Bulbs which are exposed are unacceptable. The lights shall be switched on at the pump operator's control panel.

Y\_\_N\_\_

### **PUMP PANEL LIGHTING, LED**

An extruded aluminum shield shall be mounted above the curb side gauge panel. The light shields shall be made as large as possible to provide maximum light distribution. Three (3) TecNiq #E10-W000-1 LED lights shall be furnished under the shield. Bulbs which are exposed are unacceptable. The lights shall be switched on at the pump operator's control panel.

Y\_\_N\_\_

### **COLOR CODED IDENTIFICATION PLATES**

Each control valve, gauge and discharge outlet shall be labeled with a color coded identification plate which shall be mechanically fastened (no glue). For ease of viewing and quick identification, the plates

shall be a minimum of .75" high x 2.5" wide. For standardization, color coding shall be in accordance with the recommendations of Section A.16.9.1 of NFPA 1901.

Y\_\_N\_\_

### **WARNING LABEL, PUMP OPERATOR**

A sign shall be provided on the pump operators 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.

Y\_\_N\_\_

### **TOTAL PRESSURE GOVERNOR**

The apparatus shall be equipped with a Class1 "Total Pressure Governor" (TPG) that is connected to the Electronic Control Module (ECM) mounted on the engine. The "TPG" shall operate as a pressure sensor (regulating) governor (PSG) utilizing the engine's J1939 data for optimal resolution and response when supported by the engine manufacturer. If J-1939 engine control is not supported, then analog remote throttle control shall be provided by the TPG. The "TPG" is to operate as a pressure sensor (regulating) governor (PSG) eliminating any need for relief valve on the discharge side of the pump.

The TPG shall utilize control algorithms that minimize pressure spikes during low or erratic water supply situations. The TPG shall be backwards compatible to any engine that supplies J1939 RPM, Temperature and Oil Pressure information providing the ability to maintain a consistent fleet fire-fighting capability and reduce operator cross training and confusion.

The TPG shall have the ability to use either a 300 PSI or a 600 PSI transducer for best operation. PSG system diagnostics shall be built in and accessible by technicians. Programmable presets for RPM and Pressure settings shall be easily configurable.

The "TPG" shall also include indication of engine RPM, system voltage, engine oil pressure and engine temperature with audible alarm output for all. The "TPG" uses the J1939 data bus for engine information, requiring no additional sensors to be installed. The TPG shall use J1939 broadcast warnings for the alarm as a standard and allow the "user" to select warning values if "SOP's" dictate.

The pump engaged and "OK to pump" indicator lights shall also be displayed on the "TPG".

Y\_\_N\_\_

### **PUMP OPERATOR'S CONTROL PANEL**

All controls will be mounted so they do not exceed 72" from the operating stand and gauges will be mounted so they do not exceed 84" from the operating stand.

Y\_\_N\_\_

### **MASTER GAUGE ASSEMBLY**

There shall be One (1) 4" white faced master pressure gauge, liquid filled, 0-400 PSI and one (1) 4" faced master vacuum gauge, liquid filled, -30-0-400 PSI along with test ports provided into one assembly with integrated labeling.

Y\_\_N\_\_

**DISCHARGE GAUGE AND CONTROL ROD**

One (1) 2.5" white faced, brass cased individual pressure gauge, liquid filled, 0-400 PSI for each discharge. Each gauge shall have a color coded bezel with the control rod incorporated into the bezel assembly.

Y\_\_N\_\_

**SWITCH CONTROL PANEL**

There shall be (1) soft touch switch assembly provided on the gauge panel for switching controls. The assembly shall be equipped with either 2, 4, or 8 switches.

Y\_\_N\_\_

**PUMP TEST ADAPTER**

A pump test gauge adapter will be provided on the pump panel.

Y\_\_N\_\_

**ACCEPTANCE PLATE**

A third party acceptance plate will be provided on the pump panel.

**PUMP IDENTIFICATION**

Y\_\_N\_\_

One (1) pump identification nameplate shall be provided on the pump panel.

Y\_\_N\_\_

**WATER LEVEL INDICATOR**

One (1) Class One water level indicator shall be provided on the pump operator's gauge panel. Indicator to have a pressure transducer that mounts on the outside of the booster tank.

Y\_\_N\_\_

**FOAM LEVEL INDICATOR**

One (1) Class One foam level indicator model #ITLF-40M shall be provided on the pump operator's gauge panel. The tank level gauge shall indicate the foam level on an LED display and show increments of 1/8 of a tank indicated by multi-color LEDs of red, yellow, green or blue. The gauge shall have a super bright LED display viewable from 180 degrees with a visual indication at nine accurate levels. The indicator shall have a pressure transducer that mounts on the outside of the booster tank.

Y\_\_N\_\_

**TANK LEVEL INDICATOR, CHASSIS FURNISHED**

The chassis furnished tank indicator(s) installation shall be completed and finish wired to the tank level sensor.

**BOOSTER TANK**

The tank shall have a capacity of 1250 U.S. Gallons.

The booster tank shall be constructed of .50" to 1" thick PT3™ polypropylene, a non-corrosive stress relieved thermo-plastic and UV stabilized material, black in color. The booster and/or foam tank shall be designed to be completely independent of the body and compartments. All joints and seams are to be nitrogen fused for 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.

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.

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 will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall accommodate the necessary lifting hardware.

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. There shall be a 3" schedule 40 polypropylene pipe installed that will incorporate a dip tube from the front of the tank to the sump location. An anti-swirl plate will be mounted inside the sump approximately 3" above the inside floor. The sump shall have a minimum 3" N.P.T. threaded outlet on the bottom for a drain plug per NFPA.

**TANK OVERFLOW**

The vent overflow shall be a schedule 40 polypropylene pipe with a minimum I.D. of 4" that is designed to run through the tank and piped to discharge behind the rear wheels.

Y\_\_N\_\_

### **BOOSTER TANK WARRANTY**

The tank shall carry "**THE ALL OUT NO FAULT LIFETIME WARRANTY**" which is to be provided by the tank manufacturer.

Y\_\_N\_\_

### **TANK MOUNTING**

The booster tank will rest on body crossmembers that are spaced to allow no more than 530 square inches of unsupported area under the tank if the tank height is 40" or less. Where the overall height of the tank exceeds 40", crossmember spacing must be reduced to allow for not more than 400 square inches of unsupported area. In addition, the tank must be isolated from crossmembers through the use of hard rubber strips with a minimum .25" thickness x 1.50" width and a minimum of 60 durometer hardness. The rubber will be a channel shape extrusion so it interlocks over the crossmembers to prevent movement (**NO EXCEPTIONS**).

The tank will sit cradle-mounted using four (4) corner angles approximately 4" x 4" x 6" high x .25" welded to the body crossmembers. The angles will keep the tank from shifting left to right or front to rear. The tank design is based on a free floating suspension principal. To minimize the movement of an empty tank during vehicle operation, the hosebed slats and dividers will act as a retainer and be fastened front and rear. The tank shall be completely removable without disturbing or dismantling the apparatus body structure.

Y\_\_N\_\_

### **FOAM TANK**

There shall be a Class A foam tank built into the booster tank with a capacity of 50 U.S. Gallons of foam concentrate.

The foam tank shall have a separate fill tower constructed of 1/2" PT3™ polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. Each foam fill tower shall be constructed of a colored material (green for Class A foam, yellow for Class B foam and black for other foams) indicating which tower is to receive each type of foam utilized. The capacity of the tank shall be engraved on the top of the fill tower lid.

The tower shall be located in the right front corner of the tank unless otherwise specified. The tower shall have a 1/4" thick removable polypropylene screen and a cover with a stainless steel hinge. Inside the fill tower, approximately 1.5" down from the top, there shall be an anti-foam fill tube that extends down to the bottom of the tank.

The foam tank shall be furnished with a pressure/vacuum vent that allows the tank to adjust automatically for changes in pressure or vacuum when filling or withdrawing foam concentrate from the tank. The vent shall not permit outside air to enter the tank freely except during operation or for normal changes in volume due to changes in temperature. The vent shall be installed in the lid of the fill tower.

A label shall be placed at or near any foam concentrate tank fill opening that specifies the type of foam concentrate the system is designed to use, any restrictions on the type of foam concentrate that can be used with the system, and a warning message that reads "Warning: Do Not Mix Brands and Types of Foam."

Y\_\_N\_\_

### **HOSE BED**

The inside body width between panels shall be seventy (70") inches.

The capacity of the hose bed shall meet all requirements set by the N.F.P.A. Pamphlet No. 1901. There shall be a minimum of 55 cu. ft. of storage space.

The interior shall be free of any projections or sharp edges that might damage fire hose or other equipment.

The floor of the hose bed shall be .125" aluminum formed decking with ventilation and drainage holes. The entire bed shall be easily removable from the body. The floor shall allow ample air circulation between the top of the tank, and the underside of the hose bed floor.

To reduce maintenance and eliminate paint chips, the sides of the hose body that are above the hose bed floor shall have an unpainted oscillated finish and a polished stainless steel scuff strip shall be provided at the rear of the hosebed.

Y\_\_N\_\_

### **HOSE LOAD**

The hosebed will be sized to accommodate the following hose load:

1200' of 4" hose with Storz connectors

400' of 3" hose

200' of 2-1/2" hose

200' of 1-3/4" hose

Y\_\_N\_\_

### **HOSE BED DIVIDER(S)**

Three (3) adjustable hose bed divider(s) shall be provided to separate the different hose loads. To reduce maintenance and eliminate paint chips all hose bed dividers shall have an unpainted buffed aluminum finish. The divider(s) shall be constructed of .18" smooth aluminum with a round radius corner at the rear. The bottom of each divider shall be welded to a heavy duty, full length slotted extrusion for extra divider rigidity.

Y\_\_N\_\_

### **HAND HOLE CUT-OUTS**

The hose bed dividers will have hand hold cut-out in the rear edge. This hole will be sized so a gloved hand can fit into easily.

Y\_\_N\_\_

### **HOSE BED STRAPS**

Two (2) seat belt type straps will be provided on top of hose bed to secure the hose in place.

Y\_\_N\_\_

### **MESH COVER, HOSE BED END**

Black open mesh nylon, 1" web with 1" squares will be provided on the rear of the hose bed. The mesh will be fastened so it can be detached on the bottom and flipped up for quick deployment of hose. The top will be fastened so the entire mesh can be removed during repacking of the hose.

Y\_\_N\_\_

### **BODY CONSTRUCTION**

All body framing, doors, skin, etc. shall be of all aluminum construction to enhance vehicle performance, reduce overall maintenance and maximize available payload by minimizing the body weight. For maximum strength, the body framing shall be all extruded construction.

The body shall be modular in construction, completely separate from the pump compartment, so it may easily be removable from the apparatus chassis without disturbing the fire pump. A minimum of a 1" space shall be provided between the pump compartment and the body module. Spacing is to allow for chassis flexing when driving over uneven terrain to avoid potential stress cracking.

Y\_\_N\_\_

### **CROSSMEMBERS**

There shall be a minimum of three (3) body structural crossmembers of 3" x 2" x .25" wall thickness, 6061-T6 aluminum extruded rectangular tubing.

To eliminate corrosion, all crossmembers and structural tubing will have the ends capped and solidly welded shut on all sides to eliminate the possibility of dirt, water, and salt from entering (NO EXCEPTIONS).

Y\_\_N\_\_

### **UPRIGHTS**

There shall be 3" x 2" x .125" wall thickness, 6061-T6 aluminum extruded rectangular tubing between the exterior side compartments. These shall be tied into the main crossmembers to give the side sheets and any equipment mounted on them adequate support.

Y\_\_N\_\_

### **ROOF COVE AND CORNER POSTS**

For body strength, the corner posts and roof cove perimeter shall have a 1.5" radius of 6061-T6 extruded .125" aluminum. All corners shall have a 1.5" radius cast aluminum ball cap at the top corners of the body.

Y\_\_N\_\_

### **RUBRAILS, REMOVABLE EXTRUDED CHANNEL**

Rubrails will be heavy duty extruded aluminum C-channel design with a bright dipped anodized finish. The top edge of the rubrail will include a ribbed design to help hide scratches and the inside of the channel will be striped with 3M diamond grade red-white reflective tape for improved safety. The rubrails shall have a .25" drain gap and will be located under each compartment door flush with the rear step and pump compartment running boards. These shall be fastened to the threshold extrusion on for ease of service and replacement in case of damage.

Y\_\_N\_\_

### **STONE SHIELDS - FRONT**

Full height stone shields shall be located on the front body corner posts and fastened with stainless steel torx head screws. Shields are to be .100" bright aluminum treadplate construction and wrap around the corner posts.

Y\_\_N\_\_

### **BODY GUARDS**

The left and right body side compartment front panels shall be bright aluminum treadplate.

Y\_\_N\_\_

### **FENDERS**

Fenders are to be sized to allow ample clearance for tire chains. The fender liners shall extend full depth to the rear springs and be welded to the rear body panels. The fender liners are to be sealed with continuous welds to the outside and inside body panels to provide maximum strength, elimination of any pockets for the accumulation of dirt and road salt, and to provide ease of cleaning.

Y\_\_N\_\_

### **FENDERETTES**

The fenderettes shall be polished stainless steel held in place to the wheel housing with stainless steel cap screws and well-nuts for easy replacement. The fenderettes and the fasteners shall be isolated from the wheel housing to prevent electrolysis. A trim molding shall be provided between the fenderettes and wheel housing. The fenderettes shall be mounted to the body thereby affording superior protection from debris hitting the sides of the body.

Y\_\_N\_\_

### **FENDER PANELS**

The body panels above the wheel housing shall be .10" bright aluminum treadplate overlay fastened with stainless steel torx head screws for ease of replacement in case of an accident.

Y\_\_N\_\_

### **HOSE BODY SIDES**

The hose body sides shall be reinforced with 2" x 3" x .125" 6061-T6 extruded aluminum rectangular vertical supports welded to the outside of the panels for support of ladders and equipment and shall be tied into the main crossmembers for support.

The hose bed walls shall be capped with 2" x 2" x .125" aluminum tubing and wrapped on both sides with .125" aluminum to increase the panel strength and provide for a smooth hose body.

Y\_\_N\_\_

### **BODY MOUNTS - NYLON**

There shall be 75,000-90,000 PSI yield high strength .625" bolts to attach the body brackets to the chassis frame, mounted so as to prevent any movement of the body. Full length nylon sills shall be located between the chassis frame rails and the body.

Y\_\_N\_\_

### **COMPARTMENT VENTS**

Vents shall be provided in each compartment and so located that water cannot normally enter the compartment through the openings. Vents shall be fabricated integrally into the wall of the compartment. Each compartment shall have sufficient vents to provide good air circulation to dry out compartment interiors and equipment.

Y\_\_N\_\_

### **EXTERIOR COMPARTMENTS**

All general framing to be aluminum. Compartments shall be an integral part of the body construction and shall also be suspended by the floor crossmembers. The floor crossmembers shall be attached to the main body uprights located between the compartment openings.

Y\_\_N\_\_

### **COMPARTMENT FLOORS**

Compartment floors will be 100% welded to the threshold extrusion. Floor material to be .125" smooth aluminum and to be of integral support to the front, rear and side compartment walls.

The center portion of the floor will be reinforced with an extruded aluminum channel to prevent buckling and oil-canning. To eliminate corrosion the channels will be inverted to eliminate the possibility of dirt, water, and salt from entering (**NO EXCEPTIONS**).

### **DOOR THRESHOLD**

The door threshold shall be constructed from a sealed box type 6061-T6 aluminum extrusion. The extrusion shall be tied into the extruded uprights and shall provide a flush "sweep-out" style floor with no lip. The extrusion shall run under the compartment floor to prevent damage when heavy equipment is dropped on the front lip of the floor. A formed up compartment floor providing the sweep out lip area shall not be acceptable.

Y\_\_N\_\_

### **TURTLE TILE GRATING**

Black Turtle Tile compartment grating material shall be furnished in all compartments, shelves, trays, and drawers. It shall be sized to fit each location. Where appropriate the grating shall have a beveled edge facing the front of the compartment to prevent snagging while loading equipment.

Y\_\_N\_\_

### **COMPARTMENT WALLS**

The compartment sidewalls and rear wall to be .125" smooth aluminum. All compartment seams will be 100% sealed so to provide a water tight compartment.

The side compartment walls will be double wall design so all wiring can be hidden and also allow outlets, switches, reel buttons, breaker boxes, etc. to be recessed into the walls. **Separating the compartments with a single shared wall will not be acceptable. (NO EXCEPTIONS)**

Y\_\_N\_\_

### **ROLL-UP COMPARTMENT DOORS**

The body side compartments shall be equipped with AMDOR brand roll up doors.

The doors shall be constructed of double wall slats that provide a smooth surface on the interior of the door to prevent interference with compartment contents. The slats shall have recessed bulb type slat seals which provide a weatherproof compartment and reduce the effects of vehicle

vibration. The aluminum extrusions shall be equipped with nylon universal end shoes with positive snap-in securement's that slide in the track and side frame section. The top frame section shall include a gutter, non-marring top seal and bumper to cushion the bottom rail.

The latching mechanism will be a lift bar arrangement, which utilizes a door-wide spring loaded bar and two (2) cam-surfaced latch points. Any roll door that exceeds a 63" high door opening from the rubrail or above 30" if over a wheel well shall include a Flex-HD pull down strap to make for easy closing.

Y\_\_N\_\_

### **ROLL-UP COMPARTMENT DOOR**

The rear compartment shall be equipped with AMDOR brand roll up door.

The door shall be constructed of double wall slats that provide a smooth surface on the interior of the door to prevent interference with compartment contents. The slats shall have recessed bulb type slat seals which provide a weatherproof compartment and reduce the effects of vehicle

vibration. The aluminum extrusions shall be equipped with nylon universal end shoes with positive snap-in securement's that slide in the track and side frame section. The top frame section shall include a gutter, non-marring top seal and bumper to cushion the bottom rail.

The latching mechanism shall be a lift bar arrangement, which utilizes a door-wide spring loaded bar and two (2) cam-surfaced latch points. Any roll door that exceeds a 63" high door opening from the rubrail or above 30" if over a wheel well shall include a pull down strap to make for easy closing.

Y\_\_N\_\_

### **DOOR FINISH**

The body side compartment roll up doors shall have a natural anodized finish.

Y\_\_N\_\_

**DOOR FINISH**

The rear compartment roll up door shall have a natural anodized finish.

Y\_\_N\_\_

**BUMPER STEP**

The rear bumper step shall be 18" deep and full width. The outside corners will be a 45 degree chamfer to avoid injuries. A space shall be maintained between the body and the step. The step shall be supported by formed angles welded directly to the body.

The step will be fabricated from .188" serrated bright aluminum treadplate.

There shall be a warning label mounted above the rear step.

"DANGER - DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION. DEATH OR SERIOUS INJURY MAY RESULT."

Y\_\_N\_\_

**STEP, FOLDING, CHROME PLATED**

Eight (8) heavy duty Cast Products #SP4401-1CH-BL chrome plated folding step(s) with a slip resistant surface, shall be provided on the roadside rear of the body. The step(s) shall include a built-in LED light, located above and below the stepping surface, to provide better visibility.

Y\_\_N\_\_

**12" ACCESS RAIL**

Access rails(s) shall be 1.25" diameter extruded aluminum tubing in chrome plated stanchions.

Two (2) 12" access rails shall be provided at the rear of the body to assist in egress to and from the hosebed.

Y\_\_N\_\_

**ACCESS RAILS**

Access rails shall be 1.25" diameter extruded aluminum tubing in chrome plated stanchions.

There shall be two (2) 48" long access rails mounted on the rear of the body.

Y\_\_N\_\_

**COMPARTMENT TOP OVERLAY**

Compartment top framing shall be covered with a bright aluminum treadplate.

Y\_\_N\_\_

**BODY PAINT**

The complete apparatus body and any applicable doors shall be painted. All exposed metal surfaces which are not chrome plated or polished shall be thoroughly cleaned and prepared.

To prevent corrosion and to insure bonding of primer, the body shall be cleaned and degreased with the paint manufacturer's recommended wax and grease remover. All irregularities in primed surfaces shall be sanded down before application of the finished coats. All removable items such as compartment doors shall be removed and painted separately.

To prevent electrolysis around fasteners, special attention must be given to how components are fastened to the exterior of body. All vendor-supplied screws shall be discarded and the manufacturer shall replace them with their own stainless steel screws. In addition, every screw hole possible that protrudes into the body shall be punched with a square hole and then a plastic insert will be installed to isolate the dissimilar metals. Where an insert cannot be used, a zinc-rich type coating will be applied to each screw before they are installed. **(NO EXCEPTION TO THIS REQUIREMENT)**

PPG polyurethane "Delfleet® Evolution" lead free paint shall be used on the body. Consistent with this requirement and to insure optimum adhesion of final paint and long service of paint, all related materials shall be those specified by the paint manufacturer for use with their finish. These related products shall include, but not be limited to the following: PPG Epoxy primer, catalysts, thinners, and hardeners.

The body shall be painted the same color as the chassis. When the chassis is two-tone, the body shall be painted the lower/primary color unless specified otherwise.

Y\_\_N\_\_

**PUMP COMPARTMENT (UN-PAINTED)**

The pump will be black and the stainless plumbing will be left natural. The open bin area and the crosslays above the pump shall remain in a natural finish.

Y\_\_N\_\_

**CAB PAINT**

The cab and wheel exteriors shall be supplied in the proper color and shall not be repainted. Fire Department to use an available color from the chassis manufacturer.

Y\_\_N\_\_

**COMPARTMENT FINISH**

To reduce marring and scuffing, the insides of the exterior compartments shall be painted with a durable light gray spatter type coating.

Y\_\_N\_\_

**SHELF & TRAY FINISH**

Any shelves, trays, etc. shall be left a natural aluminum oscillated finish to allow for easy equipment mounting. The sides and forward face edges of all the roll-out items will include a 3M diamond grade red-white reflective stripe to improve safety.

Y\_\_N\_\_

**UNDERCOATING**

The body undercarriage shall be undercoated to provide a corrosion resistant surface and dampen road noise. This shall include the underside of the compartments, rear step, and wheel well liners. The undercarriage of the chassis shall be as is provided by the chassis manufacturer unless specified otherwise.

Y\_\_N\_\_

**REFLECTIVE MATERIAL**

All crew compartment doors shall have a minimum of 96 square inches of reflective material affixed to the inside of each door.

Y\_\_N\_\_

**ENCAPSULATED GOLD LEAF LETTERING**

Sixty (60) 1"-3" high laminated encapsulated gold leaf letters shall be furnished on the apparatus. The lettering shall be gold leaf (smart gold) and have a burnished (engine turned) finish. The letters shall be encapsulated to protect them from the elements. Letters shall be outlined and drop shaded in black. Lettering layout shall be determined at the preconstruction meeting.

Y\_\_N\_\_

**ENCAPSULATED GOLD LEAF LETTERING**

Forty (40) 7"-9" high laminated encapsulated gold leaf letters shall be furnished on the apparatus. The lettering shall be gold leaf (smart gold) and have a burnished (engine turned) finish. The letters shall be encapsulated to protect them from the elements. Letters shall be outlined and drop shaded in black. Lettering layout shall be determined at the preconstruction meeting.

Y\_\_N\_\_

**MALTESE CROSS, GOLD LEAF, ENCAPSULATED**

A pair of hand painted encapsulated gold leaf Maltese Crosses will be applied on vehicle. The gold leaf will be genuine 23 carat with a burnished (engine turned) finish. The Fire Department will send photos for artist to match.

Y\_\_N\_\_

**REFLECTIVE STRIPING**

A 4" horizontal white Scotchlite reflective cab and body stripe shall be provided as determined at the preconstruction meeting.

Stripe shall break at all unpainted surfaces. Where necessary, the striping material shall be applied to a smooth aluminum plate mechanically fastened to the apparatus.

Y\_\_N\_\_

**“Z” REFLECTIVE STRIPING**

A “Z” striping configuration shall be provided in the horizontal Scotchlite reflective striping.

Y\_\_N\_\_

**REFLECTIVE STRIPING**

A 2" horizontal white Scotchlite reflective cab and body stripe shall be provided as determined at the preconstruction meeting.

Stripe shall break at all unpainted surfaces. Where necessary, the striping material shall be applied to a smooth aluminum plate mechanically fastened to the apparatus.

Y\_\_N\_\_

**REFLECTIVE STRIPING CHEVRON**

A two color 6" Scotchlite diamond grade reflective V pattern Chevron shall be applied to the rear of the apparatus. The Chevron stripe shall alternate between yellow green with red stripes with overlaminates and shall cover the entire rear painted body surface.

Y\_\_N\_\_

**PIN STRIPING**

A black 1/8" pin stripe will outline each of the two (2) Scotchlite stripes.

Y\_\_N\_\_

**COMPARTMENT SIZES**

**Road Side - front to rear (Nominal door opening size.)**

1. 63" high x 46" wide x 27" deep-lower, 13" deep-upper. Clear depth. Roll-up door.
2. 30" high x 57" wide x 13" deep. Clear depth. Roll-up door.
3. 63" high x 46" wide x 27" deep-lower, 13" deep-upper. Clear depth. Roll-up door.

Compartment Sizes, 46", High Side w/Ladder Rack Notch, Split Depth, C.S., Rollup

**Curb Side - front to rear (Nominal door opening size.)**

4. 63" high x 46" wide x 27" deep-lower, 13" deep-upper. Clear depth. Roll-up door.
5. 30" high x 38.75" wide x 13" deep. Clear depth. Roll-up door.
6. 63" high x 46" wide x 27" deep-lower, 13" deep-upper. Clear depth. Roll-up door.

Y\_\_N\_\_

**Rear Compartment (Nominal door opening size)**

62" high x 42" wide x 26" deep. Clear depth. Amdor roll-up door.

Y\_\_N\_\_

**DUALSCBA BOTTLE COMPARTMENT**

Three (3) SCBA bottle compartment(s) shall be provided in the rear fender housing area. Compartment shall be constructed from aluminum to fit the Smyrna Fire Department's bottles with the

bottle storage having lining to protect scuffing of the SCBA bottles. The compartment shall have a polished stainless steel door and shall include spring-loaded latches.

Y\_\_N\_\_

**FIXED SHELVES (28" MAX DEPTH)**

Two (2) fixed shelf(s) shall be provided and fabricated from .188" 5052-H32 aluminum. The shelf is to have a 1.5" lip on the front edge to retain equipment. Shelf locations will be determined at the preconstruction meeting.

Y\_\_N\_\_

**ADJUSTABLE SHELVES (28" MAX DEPTH)**

Sixteen (16) adjustable shelf(s) shall be provided and fabricated from .188" high strength 5052-H32 aluminum. The shelves are to have a double channel break both front and rear to form a reinforced channel. The rear channel is to be bent in the opposite direction of the front so that the shelf is reversible to provide either a lip to retain equipment or a smooth sweep-out front. The shelf locations will be determined at the preconstruction meeting.

For ease of adjustment and as additional shelving reinforcement, the shelves shall not be bolted directly to the standards but shall be supported by angle shelf holders that in turn are fastened to the standards.

Y\_\_N\_\_

**SHELVING STANDARDS FOR ADJUSTABLE SHELVES**

Eight (8) compartments shall be equipped with heavy duty adjustable shelving standards, one per wall on all depths 20" or less and two per wall on depths greater than 20". These standards are to be the infinitely adjustable type of 6061-T6 extruded aluminum, located 2" up from floor and 12" down from ceiling.

Y\_\_N\_\_

**ROLL-OUT TRAY, 1,000 LB CAPACITY, 25-36" EXTENSION**

Two (2) roll out tray(s) shall be provided in the compartments determined at the preconstruction meeting. The floor of the tray shall be fabricated of .188" smooth 5052 aluminum and will fit down into the slides, providing 1" high lips on all four sides. The slides will be Slidemaster 1,000 lb. capacity, model M2-AL all aluminum that extends 70% of the compartment depth. Track will allow the tray to lock in the open and closed position.

Y\_\_N\_\_

**ROLL-OUT TRAY, 600 LB CAPACITY**

Two (2) roll out tray(s) shall be provided in the compartments determined at the preconstruction meeting. Trays shall be fabricated of .188" smooth 5052 aluminum and have a 3" high lip on all four sides. The tray shall be mounted on Slidemaster 600 lb. capacity, model SM3 slides that extend 100%

of the compartment depth. Track will have a powder coating to prevent corrosion and a spring loaded lock to allow the drawer to lock in the open and closed position.

Y\_\_N\_\_

**ROLL-OUT/DROP-DOWN TRAY, 250 LB CAPACITY, 45" MAX EXTENSION**

Four (4) roll-out/drop down tray(s) shall be provided in the compartments as determined at the preconstruction meeting. Trays shall be fabricated of .188" smooth 5052 aluminum and have a 3" high lip on all four sides. The tray shall be mounted on Slidemaster #SMT-R, 250 lb. capacity, side mount slides with a powder coating to prevent corrosion. Tray will extend out as far as possible (45" max) and will tilt down approximately 30 degrees. A chrome plated handle will be installed on the center face of the tray and a latch shall be provided to hold the tray in the closed position.

Y\_\_N\_\_

**REAR VIEW CAMERA**

The Camera provided by Spartan Motors shall be recessed at the rear of the apparatus and hooked to the VMUX display installed in the cab.

Y\_\_N\_\_

**REAR VIEW CAMERA**

The Spartan provided rear view camera shall be integrated into the display module screen that is located in the cab.

Y\_\_N\_\_

**WIRING DIAGRAMS**

Two (2) complete copies of the body electrical wiring diagrams shall be supplied with the unit.

Separate diagrams for the 12 volt DC and 120 volt AC (if applicable) electrical systems shall be provided. Diagrams shall be custom drawn for this specific apparatus. Generic wiring diagrams are not acceptable.

Y\_\_N\_\_

**12 VOLT WIRING – MULTIPLEXING, V-MUX**

All of the emergency electrical equipment shall be served by circuits separate and distinct from the vehicle circuits. Body wiring shall be thermo plastic harness type, GXL (125 degree Centigrade) color and number or function coded. The wiring shall be grease, oil and moisture resistant, routed in convoluted looms and in protected locations. Wires and looms shall be neatly and securely fastened, and all apertures with proper grommets for passing wiring.

Solderless insulated crimp connectors shall be provided. Wire nut, insulation displacement, and insulation piercing connections shall not be used. All electrical connections that are exposed to the elements shall be of the heat shrink sealant type **(NO EXCEPTIONS)**.

The body electrical shall incorporate a system for controlling the electrical devices of the vehicle. This system shall utilize a Controller Area Network (CAN) protocol providing multiplexing control signals for "real time" operation. It shall consist of several modules strategically located throughout the vehicle

and interconnected via "twisted pair" control wiring. Each module shall be readily available for inspection or service. The multiplexed system shall consist of a universal System Manager Control Module, Vocational Module, input/output switch modules and Power Distribution Modules (**NO EXCEPTION**).

Junction areas with a removable aluminum cover shall be located inside the front and rear side compartments for ease of service.

A wiring trough shall be built into the upper body roof rail and above the exterior compartment doors. Easily removable panels shall be furnished to gain access to these wiring troughs.

Y\_\_N\_\_

### **ELECTRICAL TESTING**

Electrical continuity shall be verified from the chassis or body to all line voltage electrical enclosures, light housings, motor housings, light poles, switch boxes, and receptacle ground connections that are accessible to fire fighters in normal operations as per NFPA section 22.15.4.

Y\_\_N\_\_

### **DISPLAY MODULE**

A display will be provided in the cab to assist in management of the electrical system. The display will be a 7", full color LCD display with (3) video inputs. The (14) display buttons will be configured to allow for the control of emergency master and non-emergency master functions and are backlit for ease of viewing.

The display will provide the following:

- Switches for warning, generator, etc.
- Door ajar visual aid
- Diagnostic access
- Fluid ID information
- Custom logo start-up screen
- Back-up camera (optional)
- Toggle to second screen program (if applicable)

Y\_\_N\_\_

### **CAB CONSOLE PANEL - CHASSIS FURNISHED**

The cab control switch console panel provided by the chassis manufacturer shall be a Weldon Vista 4 touchscreen. The switches shall control all warning lights and accessories.

Y\_\_N\_\_

### **MASTER WARNING LIGHT SWITCH - CHASSIS FURNISHED**

A master warning light switch shall be provided on the cab switch console. The switch shall permit preselection of the emergency warning lights so that all warning lights can be turned on simultaneously through the sequencer.

There shall also be an interlock provided with the parking brake to change the visual warning to indicate "BLOCKING RIGHT OF WAY" mode.

Y\_\_N\_\_

**LAMP SEQUENCER/LOAD MANAGER**

Provisions will be provided within the Multiplexing system for sequencing and load management.

In case of a low voltage situation, the system will shed the selected load until the proper voltage is maintained. After the voltage is stabilized the lights will then again switch on sequentially.

Y\_\_N\_\_

**LOW VOLTAGE ALARM - CHASSIS FURNISHED**

An audible alarm and visual warning light will be installed in the cab to alert of a low voltage situation. The alarm and light will be activated when the voltage at the batteries or at the master load disconnect switch drops below 11.8 volts for more than 120 seconds.

Y\_\_N\_\_

**RUNNING LIGHTS, LED**

Body shall be equipped with all lighting and reflectors as required by Federal Motor Vehicle Safety Standards.

Clearance lights shall be LED type.

Y\_\_N\_\_

The license plate light shall be Ri-Tar model #M27 LED license plate light with chrome housing.

Y\_\_N\_\_

**MARKER/DIRECTIONAL LIGHTS**

Two (2) amber led marker/directional lights shall be provided, one each side, in rear fenderwells.

Y\_\_N\_\_

**STOP, TAIL, AND TURN LIGHTS**

One (1) rectangular Whelen 600 series LED amber arrow light each side of body for turn signals.

One (1) rectangular Whelen 600 series LED light with red lens each side of body for stop and tail.

Y\_\_N\_\_

**BACKUP LIGHTS**

One (1) Whelen 600 series maximum intensity LED light shall be provided on each side of body for the backup light, wired to the reverse circuit of the truck transmission.

Y\_\_N\_\_

**TRIM RINGS, STOP, TURN, BACK-UP, TAIL LIGHTS, & LOWER WARNING**

Bright polished cast aluminum trim rings will be installed at rear and will house the stop, turn, back-up, tail lights, & lower warning light of the 600 Whelen series. The lower warning light shall be the lowest device in the bezel.

Y\_\_N\_\_

### **ON SCENE SOLUTIONS NIGHT AXE COMPARTMENT LED STRIP LIGHTS**

All body exterior compartments shall have two (2) Night Axe LED strip lights provided. The strips will include a translucent lens and have lights located every 3".

Y\_\_N\_\_

### **DOOR AJAR INDICATOR LIGHT - CHASSIS FURNISHED**

There shall be a chassis furnished flashing red "do not move apparatus when light is on" indicator light in the cab to indicate that a cab door, entrance door, or compartment door is not in the closed position. Light will only illuminate when the parking brake is not fully engaged.

Y\_\_N\_\_

### **LIGHT IN PUMP COMPARTMENT**

One (1) surface mounted Truck-Lite #44042C, 4" diameter LED light shall be provided in the pump compartment. Light to be switched through the gauge panel light switch. The light shall be spaced so as to provide the best possible lighting within the compartment.

Y\_\_N\_\_

### **STEP LIGHTS, LED**

Step lights shall be TecNiq #E03-W000-1 LED surface mounted lights with #E03-0SH0-1 stainless steel horizontal case. The lights shall be wired through the marker light and parking brake circuit with the locations as follows:

Each side on the inside face of the beavertail to illuminate the rear hose bed access step area.

The front of the body, on the curb side and on the road side to illuminate the running boards and side pump panel areas.

Y\_\_N\_\_

### **POLISHED ALUMINUM LAMP BRACKETS**

Rear deck lights and warning lights shall be mounted on polished aluminum lamp brackets. Brackets shall be attached to the rear hose body uprights. For protection the wiring shall be routed inside the lamp bracket and hose body upright.

Y\_\_N\_\_

### **DECK LIGHTS**

There shall be two (2) Whelen PAR 36 Super LED deck lights mounted on the rear of the hose body uprights. Lights to be controlled at the light itself. One light shall be a spotlight, the other shall be a floodlight.

Y\_\_N\_\_

**TELESCOPING SCENE LIGHT, LED**

When specified there shall be two Fire Research Spectra LED, 12-volt, model #SPA530-Q20 flood light(s), mounted on a side mount push up telescopic pole in a location determined at the preconstruction meeting. The lights shall include an on/off switch at the operator's panel and also be automatically switched on by raising the light out of the retaining bracket. The bottom of the light pole will fit into a retaining bracket to prevent the pole from bending in the event it is used as an access rail.

The lamphead shall have eighty-four (84) ultra-bright white LEDs, 72 for flood lighting and 12 to provide a spot light beam pattern. It shall draw 18/9 amps, and generate 20,000 lumens of light. The lamphead shall have a unique lens that directs flood lighting onto the work area and focuses the spot light beam into the distance. The lampheads shall be powder coated white with scuffplates provided to protect both the lampheads and the body.

Y\_\_N\_\_

**RECESSED MOUNT SCENE LIGHT, LED**

There shall be four (4) Fire Research, Evolution FCA210-V12 LED, 12 volt recess mounted light(s) shall be installed as determined at the preconstruction meeting. The light(s) shall be activated by a switch in the cab.

The lamphead shall have six (6) ultra-bright white LEDs. It shall draw 11/5.5 amps, and generate 12,000 lumens of light. The lamphead shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamphead shall be powder coated white.

Y\_\_N\_\_

**GROUND LIGHTS, LED**

TecNiq model #T44-WD0B-1, 4" round LED ground lights with grommet will be installed under each stepping surface. Lights will be mounted under each pump panel running board and rear step. The lights shall be activated through the marker light and parking brake circuit.

Y\_\_N\_\_

**GROUND LIGHTS**

The lights under the chassis entrance doors that are provided by chassis dealer shall be activated when the doors are opened.

Y\_\_N\_\_

**ADDITIONAL LED GROUND LIGHTS**

Eight (8) additional TecNiq model #T44-WD0B-1, 4" round LED ground light(s) with grommet will be provided under the vehicle in the areas determined at the preconstruction meeting. The light(s) shall be switched together with the other ground lights.

Y\_\_N\_\_

**HANDLIGHTS**

Six (6) Koehler Responder orange handlights with 12 volt DC charger bases shall be furnished and installed in the bottoms of the rear cab wall compartments. The chargers shall be wired direct to the chassis batteries.

Y\_\_N\_\_

**TRAFFIC ADVISOR**

A Whelen model #TAL85 LED Traffic Advisor shall be provided in the area specified. The light will be 45" long and will include eight (8) individual LED amber lamps. The controls for the unit shall be installed in the chassis cab.

Y\_\_N\_\_

**RECESS FOR ARROWSTIK & TRAFFIC ADVISOR**

The specified light strip shall be recessed in the body in an enclosure manufactured from the same material as the body.

Y\_\_N\_\_

**SUPER LED, SERIES 900, RED**

Six (6) Whelen series 900 Super LED red lights with clear lenses and chrome flange will be provided and mounted in locations to be determined at the preconstruction conference.

Y\_\_N\_\_

**SUPER LED, SERIES 600, RED**

Four (4) Whelen series 600 Super LED red lights with clear lens and chrome flange will be provided and mounted in locations to be determined at the preconstruction conference.

Y\_\_N\_\_

**120 VOLT WIRING & BREAKER PANEL**

All 120 volt wiring shall be metallic or nonmetallic liquid tight flexible conduit rated at not less than 90 degree Centigrade or type SO cord with a WA suffix, rated at 600 volts at not less than 90 degree Centigrade. The cord will be number or function coded to assist in trouble shooting.

All electrical equipment shall be circuit breaker controlled from a circuit breaker control panel. A plastic engraved label will be installed near the breaker box to identify the function of each circuit breaker.

A power source specification label shall be permanently attached near the breaker box. The label shall provide the operator with the following information:

- Rated voltage and type
- Phase
- Rated frequency
- Rated Amperage
- Continuous rated watts

- Power source engine speed

Y\_\_N\_\_

**BREAKER, GFI 120 VOLT**

Eight (8) 120 volt breaker(s) will be of the ground fault interrupt (GFI) type and wired to the items specified.

Y\_\_N\_\_

**TRANSFER SWITCH**

An IOTA industries #ITS-50R automatic relay system shall be installed to switch the on-line device between the generator and shoreline inlet when it is connected for use. A time delay shall be provided to prevent the generator from starting under load.

The transfer switch shall power the items determined by the department that are to run when the generator is powered off and the 50 amp shoreline is plugged in (up to 50 amps).

Y\_\_N\_\_

**HOT SHIFT PTO**

The hydraulic pump shall be driven by the chassis engine VIA a "HOT SHIFT" power take off unit from the chassis transmission. The engagement control to be located in cab, and identified by name plate. A console switch will be provided with a light to indicate "Generator Engaged" and an additional green light will be provided to indicate "OK to Operate Generator".

Y\_\_N\_\_

**ONAN 20KW HYDRAULIC GENERATOR**

An ONAN 20KW hydraulic generator system shall be provided and installed on the apparatus. Within engine torque limitations this system shall be capable of producing 20KW, single phase 120/240 volts at 60 hertz regardless of engine RPM. The generator shall be able to remotely turn system's full KW off and on without regard to engine RPM or electrical loads by using 12 VDC switches.

If there is sufficient room, the hydraulic pump will be mounted directly to the PTO. There shall be a triangular brace on the tail of the pump for support and to meet the PTO specifications on weight restriction.

If there is not enough room to direct mount the pump to the PTO then the pump shall be mounted to the frame rails with a drive shaft between them. The drive shaft between the generator and the power take-off shall be a tubular type, minimum outside diameter of 2" with a minimum wall thickness of .083. It shall have Spicer #1280 U-joints and be dynamically balanced to insure vibration free performance. NOTE; Solid bar stock type drive shafting is unacceptable. The drive shaft shall have a slip yoke with a minimum of 1.5" travel so that it can be easily removed. Tube shall be D.O.M. (Drawn over Mandrel) made for drive shafts.

They shall be electrically MIG welded by a certified welder on a specially designed drive shaft fabrication machine. After welding, the drive shaft shall be checked for straightness and dynamically balanced by computerized machinery. All drive shafts shall be balanced. (No exceptions.)

The pump mounting bracket shall have vibration isolation between it and the frame rail. Interconnecting hoses shall be of size, pressure, and length recommended by Onan.

Wiring from the generator to the circuit breaker panel shall be routed in liquid tight conduit.

The Quad meter containing the volt, amp, frequency, and hour meter shall be located next to the breaker box. The generator activation switch shall be located in the chassis cab.

Y\_\_N\_\_

### **GENERATOR LOAD TEST**

The generator shall be load tested at the body builders facility by a third-party testing firm. The generator shall be tested at various loads, from no load to full load to ensure reliable power delivery at various loads. The department shall be given a certificate proving completion of this test. The test shall last for two (2) hour and shall be completed after the generator has been installed on the apparatus.

Y\_\_N\_\_

Generator Mounted in Hosebed

Y\_\_N\_\_

### **OUTLET, EXTERIOR**

One (1) 120 volt AC powerstrips with six (6) outlets shall be furnished and located as directed by the purchaser. The powerstrip(s) shall be surface mounted and labeled with a permanent nameplate listing the voltage, type of current, phase and amp rating.

Y\_\_N\_\_

### **120 VOLT OUTLETS**

Four (4) 120 volt AC outlet(s) shall be furnished, located as determined at the preconstruction meeting. The outlet(s) shall be mounted inside a cast aluminum outlet box, flush mounted to the body side. The receptacle shall be labeled with a permanent nameplate listing the voltage, type of current, phase and amp rating. A weatherproof snap cover shall be provided.

Outlet configuration will be a NEMA #L5-15R.

Y\_\_N\_\_

### **TRIPOD LIGHT, LED**

There shall be two (2) Fire Research Spectra #SPA600-K20 LED, 120 volt tripod light(s) shall be installed as determined at the preconstruction meeting. The light(s) shall be switched from the circuit breaker panel. The light pole will fit into quick release brackets so it can be easily removed from the vehicle and used for portable applications.

The lamphead shall have sixty (60) ultra-bright white LEDs, 48 for flood lighting and 12 to provide a spot light beam pattern. It shall draw 2 amps, and generate 20,000 lumens of light. The lamphead shall direct flood lighting onto the work area and focus the spot light beam into the distance. The lamphead shall be powder coated white and include scuffplates to protect both the lampheads and the body.

The light shall be furnished with a plug to match the outlet on the body. A 120 volt AC outlet shall be furnished and mounted inside a cast aluminum outlet box, flush mounted to the body side. The receptacle shall be labeled with a permanent nameplate listing the voltage, type of current, phase and amp rating. A weatherproof snap cover shall be provided.

Y\_\_N\_\_

### **ELECTRIC CORD REEL**

There shall be two (2) Hannay #ECR 1600 Series cord reel(s) mounted in the dunnage area, one on each side. The color of the reel shall be red.

The reel(s) shall be equipped with a 12 volt DC electric rewind motor. A guarded push button switch, no higher than 72" from the ground, shall be located next to the reel to activate the rewind motor. A label will be provided next to the rewind switch that states the reel type.

A label shall be provided in a readily visible location near reel. The label shall indicate:

- Current rating
- Current type
- Phase
- Voltage
- Total cable length

Y\_\_N\_\_

### **10/3 YELLOW SO CORD**

Five Hundred (500) feet of 10/3 yellow SO cord will be provided and installed with 250' on each reel.

Y\_\_N\_\_

### **ELECTRICAL DISTRIBUTION BOX**

There shall be a total of two (2) Circle D model PF-51G four (4) outlet connection box(es) provided with one attached to the end of the electric cord reel(s) specified. Box to include a signal light and four (4) outlets with weather-proof snap covers. A mounting bracket shall be furnished above the pumphouse where the cord reel is mounted to hold the connector box. Mount with the light facing up.

Outlet configuration will be a NEMA #L5-15R.

Y\_\_N\_\_

### **CORD REEL BALL STOP**

Two (2) ball stops shall be installed on the specified cord reels.

Y\_\_N\_\_

### **PUMP MODULE ROLLER GUIDES**

To aid in pulling off and rewinding the cord, there shall be a chrome roller guide mounted on the surface of the pump module next to the reel. The guide shall have bottom, top, and side rollers.

Y\_\_N\_\_

### **LADDER LOWERING DEVICE**

The curbside of the apparatus shall be provided with a powered ladder lowering device designed to support and secure one (1) extension ladder, one (1) roof ladder, and one (1) attic ladder.

Control to be placed on the pump panel (if applicable) or as specified. Positioning of control shall allow for downward motion of the ladder rack by moving the control lever down and upward motion by moving the control up.

The rack is to be mounted on an electro-hydraulic pivot arm to raise and lower the ladders. The arm will be located in the center of the rack between the compartments.

A painted door shall be provided to conceal the cylinder when the ladder rack is nested. The door shall be spring loaded to open when the rack leaves the nested position, and close when the rack returns to the stored position.

An audible warning device shall sound when the ladder rack is in motion and an interlock switch shall be provided to prevent the ladder rack from being lowered when the lower body compartment doors are open.

The outward side of the equipment rack that protrudes beyond the body of the apparatus shall be striped with reflective tape so as to indicate a hazard or obstruction.

The ladder rack will be wired into the "do not move apparatus when light is on" indicator light in cab. The light will be activated when the ladder rack is not fully nested.

Y\_\_N\_\_

### **ALCO-LITE 10' FOLDING LADDER**

One (1) 10' 6" FL-10 Alco-Lite aluminum folding ladder(s) shall be provided.

Y\_\_N\_\_

### **ALCO-LITE 14' ROOF LADDER**

One (1) 14' 9" TRL-14 aluminum roof ladder(s) with folding hooks shall be provided.

Y\_\_N\_\_

### **ALCO-LITE 24' TWO-SECTION EXTENSION LADDER**

One (1) 24 ft. TEL-24 Alco-Lite aluminum two-section extension ladder(s), with ladder locks and rope hoist shall be provided.

Y\_\_N\_\_

### **PIKE POLE BRACKETS**

Three (3) aluminum tube(s) shall be provided on the ladder lowering device for mounting of the pike poles.

Y\_\_N\_\_

**WHEEL CHOCKS**

Two (2) set (pair) of Zico Model #SAC-44 folding type wheel chocks shall be provided. Wheel chocks will be mounted under the body in Zico Model #SQCH-44-H brackets at locations determined at the preconstruction meeting.

Y\_\_N\_\_

**TIRE PRESSURE EQUALIZATION SYSTEM**

There shall be provided with the chassis a Crossfire dual tire equalization system on both sets of rear tires. The Crossfire pressure system shall equalize and monitor tire pressure through the valve which is mounted between the the dual tires. This shall bolt easily to the drive axle's end allowing air to flow freely from one tire to the other, maintaining equal tire pressure and load distribution. The Crossfire system shall maximize tire life, decrease rolling resistance, increase fuel mileage, and improve stability braking and overall safety.

Y\_\_N\_\_

**THERMAL IMAGER**

There shall be a Bullard T4 thermal imager system included with a truck mount charger in a location determined at the preconstruction meeting. Also included is an optional SceneCatcher digital video recorder which is also a 2-channel transmitter. It shall be furnished complete and operational. There shall be a retractable strap kit with strap and a D-ring extender.

Y\_\_N\_\_

**WATCHGUARD 4RE IN-CAR SYSTEM**

A Watchguard brand 4RE high definition panoramic in-car video system shall be furnished and installed in a suitable location determined at the preconstruction meeting, to record onto a 16GB USB removable flash drive. It shall be an overhead cab mounted system. Components shall include the DVR, integrated 200GB automotive grade hard drive, 16GB USB removable thumb drive, processing hardware, a 4.3" display screen, integrated speaker, and backlit user controls. There shall be two cameras, one Panoramic X2 (720P) forward facing camera and one infrared color camera for the cabin, and be capable of supporting up to three cameras. Also, a cabin microphone, hardware, and cabling, and an uninterrupted power supply as well as lifetime software updates shall be furnished. The recorder shall activate when the park brake is released. Additionally, a GPS (Global Positioning System) capability feature shall be included. This recorder must activate with the ignition switch and record at all times when the truck is switched on.

Y\_\_N\_\_

**BUMPER EXTENSION HOSE STRAPS**

Two (2) hose straps shall be furnished by the body OEM to secure the hose load in the extended front bumper hose well.

Y\_\_N\_\_

**MANUFACTURER NAMEPLATE & IDENTIFICATION**

Custom Manufacturer nameplates shall be provided in the following locations:

- One (1) Front grille of the chassis (if applicable).
- One (1) Each side in the body rear wheel well area.
- One (1) In the rear on the right hand (curb) side of the body above the tail lights.

Y\_\_N\_\_

**MISCELLANEOUS FASTENERS**

A bag of miscellaneous fasteners that was used on the construction of the apparatus will be provided with the completed unit.

Y\_\_N\_\_

**CORROSION PROTECTION**

A bottle of ECK corrosion prevention chemical shall be supplied loose with final delivery of the apparatus to ensure the customer will be able to place this on any screws inserted or removed from the body in the future.

Y\_\_N\_\_

**NFPA REQUIRED ITEMS**

It shall be the purchaser's responsibility to provide all equipment items required by NFPA 1901 that are not otherwise addressed in these specifications. These items shall be installed on the apparatus prior to it being put into active service.

Y\_\_N\_\_

**WEBSITE UPDATES**

Production photos of the apparatus being built will be provided by the body builder. The photos will be taken every two - three weeks as production allows and posted to a private website designed only for the Fire Department to view. These photos will allow the Department to view the manufacturing process of the truck and possibly detect things that they may want changed earlier in the production process.

Y\_\_N\_\_



(This form is due by January 8, 2019)

EXHIBIT A

**LETTER OF INTENT TO SUBMIT QUOTATION**

{Company Letterhead}

Chief Bill Culbertson  
Smyrna Fire Department  
145 South Lowry  
Smyrna, TN 37167

Dear Chief Culbertson,

It is the intent of this Company to deliver a quotation for the Pumper Truck to the Town of Smyrna to be publicly opened on January 29, 2019 at 10:00 a.m. Central time.

Sincerely,

{Company Officer}

**The contact person for our Company will be:**

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Email Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_ Date: \_\_\_\_\_

**You may email your "Letter of Intent to Submit Quotation" to:**

**[bill.culbertson@townofsmyrna.org](mailto:bill.culbertson@townofsmyrna.org)**