

**VILLAGE OF WILLIAMSVILLE
5565 Main St.
Williamsville, NY 14221**

BID REQUIREMENTS PACKET FOR:

**Two (2) New Rear Mount Fire Engines
To be used by the Williamsville Fire Dept.**

- 1) Bid Opening: Wednesday, June 7, 2017 – 2:00 pm
 Village Clerk's Office
 5565 Main Street
 Williamsville, NY 14221
- 2) Bid Specifications
- 3) Advertisement – Notice of Bid
- 4) Non-Collusive Certificate (attached) must accompany each bid and be executed by the bidder.
- 5) The Village Board reserves the right to reject any and all bids.

Lynda L. Juul
Village Administrator

LEGAL NOTICE
NOTICE TO BIDDERS

SEALED BIDS for two (2) new rear mount fire engines will be received by the Village of Williamsville at the Office of the Village Clerk until 2:00 pm local time on Wednesday, June 7, 2017, at which time and place all bids will be publicly opened and read aloud.

Specifications and requirements for said bid are on file and may be obtained on the Village of Williamsville website at www.walkablewilliamsville.com, or at the office of the Village Clerk, 5565 Main St., Williamsville, New York 14221. Bid envelopes shall be designated as “BID FOR FIRE APPARATUS”.

The Village reserves the right to waive any informality or to reject any or all bids.

Lynda L. Juul
Administrator/Clerk-Treasurer

May 17, 2017

NON-COLLUSIVE BIDDING CERTIFICATION

By submission of this bid, each bidder and each person signing on behalf of any bidder certified, and in the case of a joint bid each party thereto certified as to its own organization, under penalty of perjury, that to the best of his knowledge and belief:

- (1) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; and
- (2) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and
- (3) No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

Bidder

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

INSTRUCTIONS TO BIDDERS

The purpose of these instructions and specifications are to describe the requirements, construction, and delivery of a Fire Fighting Apparatus as outlined herein for the Village of Williamsville Fire Department, here after referred to as the "Purchaser".

Bid envelopes shall be plainly labeled "**BID FOR FIRE APPARATUS.**"

Bids will only be considered from companies which have an established reputation in the field of fire apparatus construction and have been in business for a minimum of twenty five (25) years.

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

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

The purchaser reserves the right to accept or reject any or all bids on such basis as the purchaser deems to be in it's best interest.

All bid prices shall remain effective for 45 calendar days from the bid opening date.

The apparatus is to be of current year of manufacture and is to be new.

The bid price shall not include any local, state, or federal taxes.

DELIVERY

Each bidder shall clearly state the delivery date of the vehicle in calendar days. This shall be after receipt of the signed contract.

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the purchaser a complete unit equipped as herein specified, with a view of obtaining the best results and the most acceptable apparatus for the purchaser.

These specifications are designed to provide an equal, balanced, and fair opportunity for all bidders while providing security to the Williamsville Fire Department should the apparatus manufacturer cease operation in the future.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICACTIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The following specifications are for a formed and welded stainless steel body. Proposals that employ bolt together construction, adhesives, proprietary construction methods, proprietary extrusions, or materials other than specified in the construction and mounting of the apparatus body and fire pump does not meet the intent of these specifications and will not be acceptable. **"NO EXCEPTIONS"**

These specifications cover only the general requirements as to the type of construction and test to which the apparatus must conform. Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features.

All equipment and components shall be in compliance with the National Fire Protection Association Pamphlet 1901 (2016 Edition), Standard for Automotive Fire Apparatus, for Pumper Fire Apparatus Equipped with a Fire Pump. In addition the apparatus shall also comply with all federal, state, ICC, and DOT regulations, standards, and laws relating to commercial vehicles as well as to the fire apparatus.

Loose equipment shall be provided only as stated in the following pages.

LIABILITY

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

COMMERCIAL GENERAL LIABILITY INSURANCE

Each bidder shall supply proof of product liability and facility insurance equal to or exceeding \$5,000,000. This shall be provided as part of the proposal.

GENERAL REQUIREMENTS

This Village of Williamsville Bid Specification package, along with any herein listed exceptions, shall be submitted as a part of the bidder's entire bid proposal. Do not detach or omit these sheets.

Proposal specifications must be on the manufacturer's own standard forms. In no case shall a bidder photocopy these specifications as his proposal specifications. **"NO EXCEPTIONS"**

Each bidder is required to provide in his bid to the purchaser a complete and accurate description of his own apparatus in the exact sequence of these specifications.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICACTIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The following Chassis, Pump and Body specifications shall be strictly adhered to. Exceptions shall be allowed if they are equal to or superior to that specified and provided they are listed and fully explained on a separate page entitled "Exceptions to Specifications". The exception list shall refer to specification page number and paragraph. Proposals taking total exception to specifications or total exception to certain parts of the specifications such as Electrical Systems, Body or Pump, will not be accepted. Apparatus shall be inspected upon apparatus completion for compliance with specifications.

In addition to the above, any bidder submitting "Exceptions to specification" must have the exception page signed by the President of the manufacturer and notarize by a notary public in the state where the manufacturing plant is located. If a bidder submits a proposal with "NO EXCEPTIONS" a statement of such must also be submitted with proposal and signed and notarized by the President in the state where the manufacturing plant is located. **NO EXCEPTIONS.**

Deviations will not be tolerated and will be cause for rejection of Apparatus unless they were originally listed in bidder's proposal and accepted in writing by the department. **Any section notated throughout these bid specifications with "NO EXCEPTION" shall be strictly adhered too. Deviations will NOT be permitted.**

If the bidder takes an exception, on the exception page, the bidder must state an option price to bring their specifications into full compliance with the Department specifications. Any offering in lieu of those specified, must be clearly described as being equal to, or better than required. Failure to provide this information shall be cause to reject the proposal as being non-responsive. **NO EXCEPTION**

EXCEPTIONS, VARIATIONS, OR CLARIFICATIONS

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

All bidders shall place a "Y" for yes or a "N": for no next to each and every paragraph in the column provided on the right hand edge of the paper, indicating compliance or noncompliance with that paragraph of the specifications.

A number shall be inserted next to the paragraph which relates to an explanation on page(s) entitled "Exceptions" that the bidder shall include with their proposal specifications.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

Any exception shall be clearly defined with details as to the proposed alternative, referencing manufacturer and model where appropriate. Descriptive literature shall be provided to help evaluate the exception. 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. Proposals taking total exception to the specifications shall not be considered by the purchaser. **"NO EXCEPTIONS"**

The purchaser shall determine which (if any) exceptions are acceptable and this determination shall be final.

The purchaser shall assume that failure to cite an exception indicates full compliance with the specifications. Should the equipment not comply with all requirements of this document, the equipment shall be rejected at the final inspection. All equipment shall be inspected for material, workmanship, and compliance with the specifications prior to acceptance. All equipment found to be in noncompliance shall be identified and the purchaser reserves the right to accept or reject the specific items. The noncompliant rejected equipment shall be replaced or reworked to meet the requirements of this document at no additional cost to the purchaser.

The bidder shall have thirty (30) days after delivery to fulfill that part(s) of the specifications which does not comply to the original outlined specifications. Bidder shall incur all expenses of pickup and redelivery of the apparatus.

CONSTRUCTION

The materials specified are considered absolute minimum. Exceptions will not be accepted or permitted since all raw materials of the specified type are available to all manufacturers. Since all manufacturers have the ability to shear, break, and weld as these specifications require, all basic design requirements shall be complied with.

The apparatus shall be constructed with due consideration to the nature and distribution of the load to be sustained and to the general character of service to which the apparatus is to be subjected when placed in service. All parts of the apparatus shall be of adequate strength to withstand the general service under full load. The apparatus shall be so designed that the various parts are readily accessible for lubrication, inspection, adjustment, and service.

BID BOND

A bid bond will be submitted with the bidder's proposal. The bond will be for an amount equal to 10% of the proposed bid price. Failure to provide an acceptable, valid bid bond with the proposal will result in the immediate rejection of the bidder's proposal.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

PERFORMANCE BOND

A 100% Performance Bond shall be provided within 10 days after written notification of award of the contract. The performance bond shall be furnished by the bidder of the apparatus proposed. All bonds must be provided by the apparatus manufacturer; bonds provided by a sales representative, dealer, distributor, or agent of the apparatus manufacture will not be acceptable.

With respect to the qualifications of proposed bond or sureties, the bidder's bonding company must meet the following requirements:

1. An acceptable surety as outlined by the department of treasury on their most recent register at a limit of at least \$10,000,000;
2. A.M Best rating of "A" or better with a financial rating of as least "VIII"; and
3. Licensed as a surety in the state where the sale is to be made.

DATA REQUIRED OF THE CONTRACTOR - NFPA 4.20

NFPA 4.20.1 Fire Apparatus Documentation

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

- (1) The manufacturer's record of apparatus construction details, including the following information:
 - a. Owners name and address
 - b. Apparatus manufacturer, model and serial number
 - c. Chassis make, model and serial number
 - d. GAWR of front and rear axles and GVWR
 - e. Front tire size and total rated capacity in pounds
 - f. Rear tire size and total rated capacity in pounds
 - g. Chassis weight distribution in pounds with water and manufacturer mounted equipment front and rear
 - h. Engine make, model, serial number, rated horsepower and related speed and governed speed; and engine transmission PTOs make, model, and gear ratio
 - i. Type of fuel and fuel tank capacity
 - j. Electrical system voltage and alternator output in amps
 - k. Battery make, model, and capacity in cold crank amps (CCA)
 - l. Transmission make, model, and serial number.
 - m. Ratios of all driving axles.
 - n. Maximum governed road speed
 - o. Pump make, model, rated capacity in gallons per minute and serial number

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

- p. Pump transmission make, model, serial number and gear ratio
- q. Water tank certified capacity in gallons
- r. Paint manufacturer and paint number(s)
- s. Company name and signature of responsible company representative
- t. Weight documents from a certified scale showing actual loading on the front axle, rear axles(s), and over all fire apparatus (with the water tank full but without personnel, equipment, and hose)
- (2) If the apparatus is a mobile foam fire apparatus, the certification of foam tank capacity
- (3) Certification of compliance of the optical warning system
- (4) Siren manufacturer's certification of the siren
- (5) Written load analysis and results of the electrical system performance tests
- (6) Certification of slip resistance of all stepping, standing and walking surfaces
- (7) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability
- (8) The pump manufacturer's certification of suction capacity under the special conditions
- (9) A copy of the apparatus manufacturer's approval for stationary pumping applications
- (10) The engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed
- (11) The pump manufacturer's certification of the hydrostatic test
- (12) Certification of inspection and test for fire pump.
- (13) The certification of water tank capacity
- (14) The foam proportioning system manufacturer's certification of accuracy and the final installer's certification the foam proportioning system meets this standard
- (15) The certification of the test for the power source
- (16) Any other required manufacturer test data or reports

OPERATION AND SERVICE DOCUMENTS - NFPA 4.20.2

NFPA 4.20.2.1 - The contractor shall deliver with the fire apparatus complete operation and service documentation covering the completed apparatus as delivered and accepted

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

The contractor shall also delivery with the fire apparatus the following documentation for the entire apparatus and each major operating system or major component of the apparatus:

- (1) Manufacturer's name and address
- (2) Country of manufacture
- (3) Source for service and technical information

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

- (4) Parts replacement information
- (5) Descriptions, specifications, and ratings of the chassis, pump (if applicable) and the aerial device (if applicable)
- (6) Wiring diagrams for low voltage and line voltage systems to include the following information:
 - (a) Pictorial representations of circuit logic for all electrical components and wiring
 - (b) Circuit identification
 - (c) Connector pin identification
 - (d) Zone location of electrical components
 - (e) Safety interlocks
 - (f) Alternator-battery power distribution circuits
 - (g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
- (7) Lubrication charts
- (8) Operating instructions for chassis, any major components such as pump or aerial device, and any auxiliary systems
- (9) Precautions related to multiple configurations of aerial devices, if applicable
- (10) Instructions regarding the frequency and procedure for recommended maintenance
- (11) Overall apparatus operating instructions
- (12) Safety considerations
- (13) Limitations of use
- (14) Inspection procedures
- (15) Recommend service procedures
- (16) Troubleshooting guide
- (17) Apparatus body, chassis and other component manufacturer's warranties
- (18) Special data required by this standard
- (19) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus
- (20) One (1) copy of the latest addition of FAMA's Fire Apparatus Safety Guide

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

HIGHWAY PERFORMANCE NFPA 4.15

NFPA 4.15.1 - The apparatus, when loaded to its estimated in-service weight, shall be capable of the following performance while on dry, paved roads that are in good condition:

- 1: Accelerating from 0 to 35 mph (55 km/hr) within 25 seconds on a 0 percent grade;
- 2: Attaining a speed of 50 mph (80 km/hr) on a 0 percent grade;

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

3: Maintaining a speed of at least 20 mph (32 km/hr) on any grade up to and including 6 percent.

NFPA 4.15.2 - The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 mph (109 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower

NFPA 4.15.3 - If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gallons, or the GVWR of the vehicle is over 50,000 lb, the maximum top speed of the apparatus shall not exceed either 60 mph or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

NFPA TAG REQUIREMENTS

A label that states the number of personnel the vehicle is designed to carry shall be located in an area visible to the driver.

A sign that reads "**OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION**" shall be provided and located in the chassis cab in an area that is visible from each seating position.

An accident prevention sign that states "**OVERALL HEIGHT OF APPARATUS _____ INCHES**"

One "Final Stage Label" shall be attached to the drivers side door jam. The label shall certify that the complete vehicle conforms to the federal motor vehicle safety standards, which have been previously fully certified by the incomplete vehicle manufacture or by the intermediate vehicle manufacture and have not been affected by the final stage manufacture.

An accident prevention signs that states "**DANGER: DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION DEATH OR SERIOUS INJURY MAY RESULT**" shall be provided and installed at the rear of the apparatus.

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

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

ENGINEERING DRAWINGS

All bidders shall submit blueprints which have been produced on computer-aided-design equipment. **No Exceptions.**

The blueprints submitted shall match exactly to the purchasers specifications and are on "D" size paper, 24" x 36".

The blueprints are provided as follows:

- A - Left side
- B - Right side
- C - Rear view
- D - Front view
- E - Top view

The final production blueprints shall be provided and approved by the customer prior to any metal being sheared.

The design of the equipment is in accordance with the best engineering practices. The equipment design and accessories installed shall permit accessibility for use, maintenance and service. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks or other elements which might cause injury to personnel or equipment.

All oil, hydraulic, and air tubing lines and electrical wiring shall be located in protective positions properly attached to the frame or body structure and shall have protective loom or grommets at each point where they pass through structural members in compliance with NFPA 1901 section 2-7.

Parts and components will be located or positioned for rapid and simple inspection and recognition of excessive wear or potential failure. Whenever functional layout of operation components determines that physical or visual interference between items cannot be avoided, the item predicted to require the most maintenance shall be located for best accessibility.

OVERALL APPARATUS DIMENSIONS AND REQUIREMENTS

Due to the makeup of the fire response area, the maximum dimensions shall be as follows:

- WHEELBASE – 185"
- OVERALL HEIGHT – 128"
- OVERALL LENGTH - 391" (excluding mirrors)
- OVERALL WIDTH – 101" (excluding mirrors)

There shall be NO EXCEPTIONS to the above dimensions.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

As a minimum, the following dimensions shall be listed on the engineering drawings submitted with the bid. **NO EXCEPTIONS**

1. Wheelbase of chassis:
2. Cab to axle dimension of chassis:
3. Overall length of apparatus:
4. Overall width of apparatus body:
5. Overall height of apparatus:
6. Overall length of body including rear step:
7. Front over hang from center of front axle:
8. Rear over hang from center of rear axle:

WARRANTY

Each bidder shall include a copy of their warranty with the bid proposal. The following minimum warranties shall be provided. **NO EXCEPTIONS**

The finest materials and utmost care go into the fabrication of each new apparatus. By using normal care without abuse, this equipment will give you lasting service.

Each new motorized Fire and Rescue Apparatus is to be free from defects in material and workmanship, under normal use and service, for a period of (2) two years.

All warranty work related to the apparatus is to be performed at the manufacturers factory or at an authorized service center.

BODY WARRANTY

The manufacturer shall warrant the entire stainless steel body against rust and/or full corrosion perforation and metal fatigue for a period of thirty (30) years from the date of delivery to the original purchaser, provided the apparatus is used in a normal and reasonable manner.

The term "body" shall be inclusive of the following:

- A - Hose bed side walls

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

B - Compartments and compartment supports

C - Compartment doors "except roll up doors when specified"

D - Complete sub frame including pump house framing

WATER TANK WARRANTY

The contracted tank manufacturer shall warrant that the tank provided shall be of first class workmanship and that under normal conditions shall show no defects due to faulty design, workmanship, or material for the Lifetime of the vehicle to the original owner.

PUMP WARRANTY

The contracted pump manufacturer shall warrant that the pump provided shall be of first class workmanship and that under normal conditions shall show no defects due to faulty design, workmanship, or materials for a period of five (5) years.

PUMP PLUMBING WARRANTY

The stainless steel plumbing components as specified and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of ten (10) years or 100,000 miles. This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended for a period of ten years from the date of delivery.

12 VOLT ELECTRICAL WARRANTY

The 12 volt electrical system and ancillary components used in the construction of the apparatus shall be warranted for a period of five (5) years. This covers failures caused by defective design or workmanship, provided the apparatus is used in a normal and reasonable manner. This warranty is extended for a period of five (5) years from the date of delivery.

Items specifically covered are:

- * Electrical harnesses and harness installation
- * Switches, circuit breakers and relays
- * LED Lighting: FMVSS required and warning lights
- * Electrical connectors and connections against corrosion or deterioration

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

PAINT WARRANTY

The paint on the unit will be provided with a ten (10) year paint finish guarantee which will cover the finish for the following items:

Peeling or delamination of the top coat and/or other layers of paint.

Cracking or checking.

Loss of gloss caused by defective finishes which are covered by this guarantee.

CHASSIS WARRANTY

Chassis shall be warranted by the chassis manufacturer as per the chassis manufacturer's issued warranty.

100% WARRANTY ON ALL OTHER ITEMS FOR (2) TWO YEARS.

THIS WILL NOT APPLY

1. To normal maintenance services or adjustments.
2. To damage caused by negligence of normal maintenance.
3. Any modifications not approved by the chassis manufacturer.

DELIVERY AND DEMONSTRATION

Apparatus will be delivered under its own power to insure proper break in of all components while still under warranty.

A qualified delivery engineer representing the body manufacturer will deliver the apparatus and remain with the fire department for one day to demonstrate the apparatus and provide initial instruction to representatives of the fire department regarding the operation, care, and maintenance of the apparatus and equipment supplied.

The completed apparatus will be delivered to the Williamsville Fire Department, 5565 Main Street, Williamsville, New York, 14221. **NO EXCEPTION.**

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

AFTER DELIVERY SERVICE AND SUPPORT

1. Within 30 days after the new apparatus has been delivered, an appointment will be set between the Williamsville Fire Department and the manufacturer's representative, for the dealers service technicians to come to the Williamsville Fire Department Fire Station to perform Post Delivery service of the vehicle and to handle any and all warranty and service related issues outstanding on the apparatus.

2. The Manufacturer/dealer must include in the documented policy the method by which the Williamsville Fire Department shall contact the service department to request warranty or service work.

3. The acceptable time frame for dealing with warranty and service issues is crucial and must be adhered to as follows;

- Within 24 hours of being notified by the Williamsville Fire Department of a warranty problem the manufacturer/dealer will return a call to schedule a time to come to the Williamsville Fire Department Fire Station to make repairs.
- If the warranty problem is an urgent issue that would require the apparatus to be taken out of service, the manufacturer / dealer must respond with in 48 hours to address the issue or have set a time and date with the appropriate Williamsville Fire Department personnel when the issue will b e addressed.
- If within the 48 hours the manufacturer/dealer has not responded to or addressed the warranty problem the Williamsville Fire Department may elect to have an outside agency handle the repair and the manufacturer/dealer will be responsible for charges.

4. It is imperative that the Manufacturer /Dealer supply a full written description of service performed and repairs made for Williamsville Fire Department records.

SINGLE SOURCE WARRANTY COORDINATION

In order to protect the Purchaser from divided warranty responsibility between chassis and body manufacturers, proposals will only be accepted from apparatus builders who develop products and coordinate the warranty for the specified vehicle from bumper to bumper. While all fire apparatus have individual component warranties, the prime contractor will act as the sole source warranty coordinator on the entire vehicle. This shall include the cab shell, chassis assembly, and complete body structure.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

INSPECTION TRIPS

Inspection trips shall be provided by the successful bidder as follows:

Three (3) trips shall be provided. Each trip will cover cost for transportation, meals, and lodging for five (5) people each trip. Lodging shall include an individual room for each person. **NO EXCEPTIONS**

The trips will take place at the following time periods:

- * (1) Pre-construction Conference at the bidders factory.
- * (1) Pre-paint Inspection at the bidders factory.
- * (1) Final inspection upon completion of apparatus at the bidders factory

Bidders shall provide an optional credit if the fire department notifies the manufacturer at least two weeks prior to the scheduled inspection trip if fewer than five representatives will be in attendance. Credit shall be per person.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

CHASSIS SPECIFICATIONS

MODEL

The chassis shall be a Metro Star 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.

MODEL YEAR

The chassis shall have a vehicle identification number that reflects a 2018 model year.

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.

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.

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 750 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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

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.

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.

GROSS AXLE WEIGHT RATINGS REAR

The rear gross axle weight rating (GAWR) of the chassis shall be 27,000 pounds.

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

PUMP PROVISION

The chassis shall include provisions for mounting a drive line pump towards the rear of the apparatus.

WATER & FOAM TANK CAPACITY

The chassis shall include a carrying capacity of up to 750 gallons (2839 liters). The water and/or foam tank(s) shall be supplied and installed by the apparatus manufacturer.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

CAB STYLE

The cab shall be a custom, fully enclosed, LFD model with a 20.00 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 up to ten (10) 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 94.00 inches wide with a minimum interior width of 88.00 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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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 75.00 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 65.38 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 71.00 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.

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 and officer knee airbag.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

- 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.

CAB FRONT FASCIA

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate which shall be an integral part of the cab.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the "Classic" design.

The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. A chrome plated molded plastic bezel shall be provided on each side around each set of four lamps.

FRONT GRILLE

The front fascia shall include a box style, 304 stainless steel front grille 44.45 inches wide X 33.50 inches high X 1.50 inches deep. The grille shall include a minimum free air intake of 732.00 square inches. The upper portion of the grille shall be hinged to provide service access behind the grille. The grille shall be adorned with a waving American flag graphic.

CAB UNDERCOAT

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

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.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

CAB PAINT MANUFACTURER

The cab shall be painted with PPG Industries paint.

CAB PAINT PRIMARY/LOWER COLOR

The primary/lower paint color shall be PPG FBCH 926756 red.

CAB PAINT SECONDARY/UPPER COLOR

The secondary/upper paint color shall be PPG FBCH 911028 black.

CAB PAINT EXTERIOR BREAKLINE

The upper and lower paint shall meet at a breakline on the cab which shall be located approximately 1.00 inch below the door windows on each side of the cab. The breakline shall curve down at the front cab corners to approximately 5.00 inches below the windshields on the front of the cab.

CAB PAINT PINSTRIPE

Where the upper and lower paint colors meet a temporary 0.50 inch wide black pinstripe shall be applied over this break line to offer a more finished look prior to the final pinstripe being installed by the OEM.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

CAB PAINT WARRANTY

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

CAB PAINT INTERIOR

The visible interior cab structure surfaces shall feature a black Spar-Liner spray on bedliner coating which shall mold to each surface of the cab interior. The Spar-Liner shall be environmentally friendly and chemically resistant.

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.

CAB ENTRY DOOR TYPE

All cab entry doors shall be barrier clear design resulting in exposed lower cab steps. The doors shall provide approximately 32.00 inches of clearance from the ground to the bottom of the door so cab doors may be opened un-hindered by most obstacles encountered, such as guard rails along interstate highways.

Entry doors shall include Pollak mechanical plunger style switches for electrical component activation.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

LH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the left hand exterior compartment shall have a DA sanded finish.

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.

RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

RH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the right hand exterior compartment shall have a DA sanded finish.

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.

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.

ELECTRICAL SYSTEM

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

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

LOAD MANAGEMENT SYSTEM

The apparatus shall be equipped with a Class 1 Total System Manager (TSM) for performing electrical load management. The TSM shall have sixteen (16) programmable outputs to supply warning and load switching requirements. The TSM shall have a digital display to indicate system voltage in normal operation mode and also indicate the output configuration during programming mode. The TSM shall be protected against reverse polarity and shorted outputs and be enclosed in a metal enclosure to enhance EMI/RFI protection.

DATA RECORDING SYSTEM

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

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

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

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

EXTERIOR ELECTRICAL TERMINAL COATING

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

ENGINE

The chassis engine shall be a Cummins L9 engine. The L9 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 450 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250 foot pounds of torque at 1400 RPM with 543 cubic inches (8.9 liters) of displacement.

The L9 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 SAE 15W40 CJ4 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.

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. The tunnel shall be a maximum of 41.50 inches wide X 25.50 inches high.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

ENGINE PROGRAMMING HIGH IDLE SPEED

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

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with an automatic high-idle speed control which shall be pre-set to operate when the engine is at a specified 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 automatically re-engage when the brake is released, or when the transmission is placed in neutral.

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

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

AUXILIARY ENGINE BRAKE

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

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

AUXILIARY ENGINE BRAKE CONTROL

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all 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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The compression brake shall be controlled through an on/off switch and a low/medium/high selector switch.

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.

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.

ENGINE DRAIN PLUG

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

ENGINE WARRANTY

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

REMOTE THROTTLE CONTROL

A Fire Research In Control 400 pressure sensor governor shall be provided for the electronic engine. It shall include a remote mountable control head.

The In Control shall regulate the pump pressure and monitor all essential engine parameters.

LED readouts shall display RPM, PSI, pump discharge and intake pressure, engine oil pressure, engine temperature, transmission temperature and battery voltage. An audible alarm out put shall also be part of the system.

The rpm increase and decrease will be controlled by control knob on the face of the In Control 400.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

ENGINE PROGRAMMING REMOTE THROTTLE

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

ENGINE PROGRAMMING IDLE SPEED

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

ENGINE FAN DRIVE

The engine cooling system fan shall incorporate a thermostatically controlled, Horton clutched type fan drive. The clutch fan shall automatically engage in pump mode.

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.

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 utilize 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, an air to air 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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The cooling system shall include a one piece injection molded polymer eleven (11) blade fan with a 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 rearward oriented 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.

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 color.

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.

ELECTRONIC COOLANT LEVEL INDICATOR

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

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.

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.

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.

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

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

system from light impacts, stones, and road debris. The skid plate shall be painted to match the frame color.

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.

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.

ENGINE EXHAUST ACCESSORIES

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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

ENGINE EXHAUST WRAP

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

TRANSMISSION

The drive train shall include an Allison model EVS 3000 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 and Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The transmission gear ratios shall be:

- 1st 3.49:1
- 2nd 1.86:1
- 3rd 1.41:1
- 4th 1.00:1
- 5th 0.75:1
- 6th 0.65:1 (if applicable)
- Rev 5.03:1

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.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICACTIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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>
<u>Inputs</u>		
C	PTO Request	142
J	Fire Truck Pump Mode (4th Lockup)	122 / 123
<u>Outputs</u>		
C	Range Indicator	145 (4th)
G	PTO Enable Output	130
	Signal Return	103

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

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

TRANSMISSION 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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

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

TRANSMISSION COOLING SYSTEM

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

TRANSMISSION DRAIN PLUG

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

TRANSMISSION WARRANTY

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

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 4:00 o'clock position.

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with Spicer 1710 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[®].

MIDSHIP PUMP / GEARBOX

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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

MIDSHIP PUMP / GEARBOX MODEL

The midship pump/gearbox provisions shall be for a Hale RGA gearbox.

MIDSHIP PUMP GEARBOX DROP

The Hale pump gearbox shall have an "R" drop length.

MIDSHIP PUMP RATIO

The ratio for the midship pump shall be 2.28:1 (23).

MIDSHIP PUMP LOCATION C/L SUCTION TO C/L REAR AXLE

The midship pump shall be located so the dimension from the centerline of the suction to the centerline of the rear axle is 83.00 inches.

REAR MOUNT PUMP

The rear mount pump shall be installed by the body builder.

REAR MOUNT PUMP MODEL

The rear mount pump model shall be specified by the body builder.

PUMP SHIFT CONTROLS

One (1) pump shift control panel cutout for Innovative Controls shifter model 3001681 or 3001683 shall be provided on the driver's dash panel for customer installation of the pump shift controls.

FUEL FILTER/WATER SEPARATOR

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The fuel system shall have a Fleetguard FS1098 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

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

FUEL LINES

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

ELECTRIC FUEL PRIMER

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

FUEL TANK

The fuel tank shall have a capacity of fifty (50) gallons and shall measure 35.00 inches in width X 15.00 inches in height X 24.00 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.

FUEL TANK MATERIAL AND FINISH

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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 color.

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-curved 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.

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 color if applicable.

FUEL TANK FILL PORT

The fuel tank fill ports shall be offset with the left fill port located in the rearward position and the right fill port located in the middle position on the fuel tank.

FUEL TANK DRAIN PLUG

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

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.

FRONT AXLE WARRANTY

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

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

FRONT WHEEL BEARING LUBRICATION

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

FRONT 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.

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.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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

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.

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.

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.

POWER STEERING GEAR

The power steering gear shall be a TRW model TAS 65 with an assist cylinder.

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.

REAR AXLE

The rear axle shall be a Meritor model RS-25-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 27,000 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

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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

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

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR AXLE WARRANTY

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

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

VEHICLE TOP SPEED

The top speed of the vehicle shall be approximately 65 MPH +/-2 MPH at governed engine RPM.

REAR SUSPENSION

The single rear axle shall feature a Reyco 79KB 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.

The rear suspension capacity shall be rated from 21,000 to 31,500 pounds.

FRONT TIRE

The front tires shall be Goodyear 425/65R-22.5 20PR "L" tubeless radial G296 MSA mixed service tread.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The front tire stamped load capacity shall be 22,800 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum load capacity shall be 24,400 pounds per axle with a speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum speed capacity shall be 22,800 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating limits the operation of the emergency vehicle to no more than fifty (50) miles of continuous operation under maximum recommended payload, or without stopping for at least twenty (20) minutes. The emergency vehicle must reduce its speed to no more than 50 MPH after the first fifty (50) miles of travel.

REAR TIRE

The rear tires shall be Goodyear 315/80R-22.5 18PR "J" tubeless radial Regional RHD II HCT regional tread.

The rear tire stamped load capacity shall be 29,560 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 125 pounds per square inch.

The Goodyear Intermittent Service Rating load capacity shall be 32,000 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 125 pounds per square inch.

The Goodyear Intermittent Service Rating limits the operation of the emergency vehicle to no more than fifty (50) miles of continuous operation under maximum recommended payload, or without stopping for at least twenty (20) minutes. The emergency vehicle must reduce its speed to no more than 50 MPH after the first fifty (50) miles of travel.

REAR AXLE RATIO

The rear axle ratio shall be 5.38:1.

TIRE PRESSURE INDICATOR

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

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.

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.

BALANCE WHEELS AND TIRES

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

WHEEL TRIM

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

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

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

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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 momentary rocker 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 and the light on the rocker switch 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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

FRONT BRAKES

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00 inch vented rotors.

REAR BRAKES

The rear brakes shall be Meritor 16.50 inch X 7.00 inch S-cam drum type. The brakes shall feature a cast iron shoe.

PARK BRAKE

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

PARK BRAKE CONTROL

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

The parking brake actuation valve shall be mounted on the center of the tunnel within easy access of both the driver and officer positions.

REAR BRAKE SLACK ADJUSTERS

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

AIR DRYER

The brake system shall include 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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

FRONT BRAKE CHAMBERS

The front brakes shall be provided with MGM type 24 long stroke brake chambers.

REAR BRAKE CHAMBERS

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

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.

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.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

MOISTURE EJECTORS

A heated, automatic moisture ejector with a manual cable actuated drain provision shall be installed on the wet tank of the air supply system. Manual cable actuated drain valves shall be installed on all remaining reservoirs of the air supply system. The actuation pull cables shall be coiled and tied at each drain valve. The supplied cables when extended shall be sufficient in length to allow each drain to be activated from the side of the apparatus.

AIR SUPPLY LINES

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

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

AIR HORN SHUTOFF VALVE

A shut-off valve shall be installed in the air horn supply line under the left front seat.

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.

WHEELBASE

The chassis wheelbase shall be 184.50 inches.

REAR OVERHANG

The chassis rear overhang shall be 37.00 inches.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

FRAME

The frame shall consist of single rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, 10.25 inch web X 3.50 inches deep upper and lower flanges X 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each single rail shall be rated by a Resistance Bending Moment (RBM) minimum of 1,830,400 inch pounds and have a minimum section modulus of 16.64 cubic inches calculated by the radius method. The outside dimension frame shall measure 34.25 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.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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-cured 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.

FRONT BUMPER

The chassis shall be equipped with a severe duty front bumper constructed from structural steel channel. The bumper material shall be 0.38 thick ASTM A36 steel which shall measure 12.00 inches high with a 3.05 inch flange and shall be 99.00 inches wide with angled front corners.

The bumper shall be primed and painted as specified.

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 21.00 inches ahead of the cab.

FRONT BUMPER PAINT

The front bumper shall be painted the same as the lower cab color.

FRONT BUMPER TRIM

A stainless steel trim angle, painted to the customer's specifications, shall be installed on the top corner of the bumper across the front and on the top corner of the bumper tails. The trim angle shall measure 1.10 inches wide on the horizontal flange and 1.60 inches tall on the vertical flange. The trim shall be affixed to the bumper without holes and fasteners.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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 terminate vertically approximately 3.50 inches below 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.

FRONT BUMPER APRON

The 21.00 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.

MECHANICAL SIREN

The front bumper shall include an electro mechanical Federal Q2B™ siren, which shall be streamlined, chrome-plated and shall produce 123 decibels of sound at 10.00 feet. The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances. A unique clutch design provides a longer coast down sound while reducing the amp draw to 100 amps. The siren shall measure 10.50 inches wide X 10.00 inches high X 14.00 inches deep. The siren shall include mounting hardware designed to recess or flush mount.

MECHANICAL SIREN LOCATION

The siren shall be recess mounted on the left side of the front fascia of the bumper approximately in the center of the flat surface between the bumper radius and the frame rail. The siren shall be mounted completely behind the face of the bumper to protect the siren from damage.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

AIR HORN

The front bumper shall include two (2) Hadley brand E-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 on the exterior and a painted finish deep inside the trumpet.

AIR HORN LOCATION

The air horns shall be recess mounted in the front bumper fascia between the frame rails in the right and left outboard positions.

AIR HORN RESERVOIR

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

FRONT BUMPER TOW HOOKS

Two (2) heavy duty tow hooks, painted to match the chassis frame, 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.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

CAB TILT LIMIT SWITCH

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

CAB TILT CONTROL RECEPTACLE

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap.

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

CAB WINDSHIELD

The cab windshield shall have a surface area of 2825.00 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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

Each front door window shall include heated glass technology to reduce fogging with a switch on the dash.

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.

GLASS REAR DOOR RH

The rear right hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

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.

GLASS REAR DOOR LH

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The rear left hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

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.

GLASS SIDE MID RH

The cab shall include a window on the right side behind the front and ahead of the crew door which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

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.

GLASS SIDE MID LH

The cab shall include a window on the left side behind the front door and ahead of the crew door and above the wheel well which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

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.

GLASS UPPER SIDE MID

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The middle section of the raised roof on the left and right sides of the cab shall include a window which shall measure 16.00 inches wide X 14.00 inches high. These windows shall be fixed within this space. These windows shall be mounted using black self-locking window rubber.

GLASS TINT UPPER SIDE MID

The windows located in the upper section on each side in the middle of the cab shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

GLASS UPPER SIDE REAR DOOR

Windows shall be provided in the upper portion of each rear door of the raised roof cab. Each window shall measure 27.00 inches wide X 14.00 inches high and be installed above the lower door window. The windows shall be rectangular in shape and fixed within this space. The windows shall be mounted using black self-locking window rubber.

GLASS TINT UPPER SIDE REAR DOOR

The window located in the upper section of the rear crew doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

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 sever 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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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 Aero-quip GH134 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.

CLIMATE CONTROL DRAIN

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

CLIMATE CONTROL ACTIVATION

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

HVAC OVERHEAD COVER PAINT

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

HEATER HOSE INSULATION

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The heater hoses leading from the engine to the cab shall include a foam insulation wrap which runs the length of the hose improving heating in extreme cold climates. The heater hoses which shall be routed inside the cab shall not be insulated.

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.

A/C COMPRESSOR

The air-conditioning compressor shall be a belt driven, engine mounted compressor. The compressor shall be compatible with R134-a refrigerant.

CAB CIRCULATION FANS FRONT

The cab shall include two (2) all metal 6.00 inch air circulation fans installed in the outer front cab corners. Both fans shall be controlled by a single rocker switch on the dash. The fans can be used to help defog the windshield or to increase air circulation for passenger comfort.

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/ft² 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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

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.

REAR WALL INTERIOR TRIM

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

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.

TRIM CENTER DASH

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

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

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.

POWER POINT DASH MOUNT

The cab shall include two (2) 12 volt cigarette lighter type receptacles in the cab dash to provide a power source for 12 volt electrical equipment. The cab shall also include two (2) universal serial bus (USB) charging receptacles in the cab dash to provide a power source for USB chargeable electrical equipment. Each USB port shall be capable of a 12 watt, 2.4 amp fast charge output. The receptacles shall be wired battery direct.

STEP TRIM

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of polished 5032 H32 aluminum Grip Strut® grating with angled outer corners. The step shall feature a splash guard to reduce water and debris from splashing in to the step. The splash guard shall have an opening on the outer edge to allow debris and water to flow through rather than becoming trapped within the stepping surface. 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 with a Flex-Tred® adhesive grit surface material.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

INTERIOR DOOR TRIM

The interior trim on the doors of the cab shall consist of a vacuum formed ABS panel with robust styling grooves which provide structural integrity to the panel. The door panel shall include a partial aluminum reinforcement structure behind the panel for added strength. The door panels shall include multiple recesses for optional features.

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.

DOOR TRIM SCUFF PLATE

The trim along the door shall include a stainless steel scuff plate along the door jamb to prevent the chipping of paint should the seat belt buckle come in contact with the door jamb.

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 their Department.

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.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

INTERIOR GRAB HANDLE FRONT DOOR

Each front door shall include one (1) horizontal 13.00 inch cast aluminum grab handle, mounted on the interior ABS door panels. Each handle shall feature a textured black powder coat finish to assist personnel entering and exiting the cab.

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.

INTERIOR SOFT TRIM COLOR

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

INTERIOR TRIM SUN VISOR

The header shall include two (2) sun visors, one (1) on each side forward of the driver and officer seating positions above the windshield. The sun visors shall be constructed of impact resistant, transparent acrylic polycarbonate sun visors with a smoke gray tint.

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

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

INTERIOR ABS TRIM COLOR

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

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be gray in color.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

HEADER TRIM INTERIOR PAINT

The metal surfaces in the header area shall feature a black Spar-Liner spray on bedliner coating.

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.

SWITCHES CENTER PANEL

The center dash panel shall include twelve (12) rocker switch positions in a six (6) over six (6) switch configuration in the left portion of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified 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.

SWITCHES LEFT PANEL

The left dash panel shall include eight (8) switches. There shall be six (6) switches across the top of the panel and two (2) staggered on the left hand portion of the panel. Five (5) of the top row of switches shall be rocker type and the left one (1) shall be the headlight switch. The remaining switches shall consist of one (1) windshield wiper/washer control switch and one (1) instrument lamp dimmer 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.

SWITCHES RIGHT PANEL

The right dash panel shall include three (3) rocker switch positions in the upper right hand portion of the panel.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified 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.

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 activate an indicator light in the instrument panel, a digital seat position indicator with a seat position legend in the switch panel, and an audible alarm.

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

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.

SEAT COLOR

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

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

SEAT DRIVER

The driver's seat shall be an H.O. Bostrom 400 Series Firefighter Sierra model seat. The seat shall feature eight-way electric positioning. The eight positions shall include up and down, fore and aft with 8.00 inches of travel, back angle adjustment and seat rake adjustment. The seat shall 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, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel.

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

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

SEAT BACK DRIVER

The driver's seat shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest.

SEAT MOUNTING DRIVER

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

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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 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.

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

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

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.

SEAT MOUNTING OFFICER

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

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

POWER SEAT WIRING

The power seat or seats installed in the cab shall be wired directly to battery power.

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.

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.

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

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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

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.

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.

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.

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 and cushion shall be hinged and compact in design for additional room and shall remain in the stored position until occupied.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

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.

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 42.38 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 with the same color as the remaining interior.

SEAT FRAME FORWARD FACING STORAGE ACCESS

There shall be two (2) access points to the seat frame storage area, one (1) on each side of the seat frame. Each access point shall be covered by a hinged door which measures 15.00 inches in width X 10.63 inches in height.

SEAT MOUNTING FORWARD FACING CENTER

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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

CAB FRONT UNDERSEAT STORAGE ACCESS

The left and right under seat storage areas shall have a solid aluminum hinged door with non-locking latch.

SEAT COMPARTMENT DOOR FINISH

All underseat storage compartment access doors shall feature a black Spar-Liner spray on bedliner coating.

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.

ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

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

CAB DOOR HARDWARE

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

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

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

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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

DOOR LOCKS

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.

DOOR LOCK LH REAR CAB COMPARTMENT

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

DOOR LOCK RH REAR CAB COMPARTMENT

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

GRAB HANDLES

The cab shall include one (1) 18.00 inch three-piece knurled aluminum anti-slip exterior grab handle behind each cab door. The Hansen Lit Anti-Slip Rails shall be mounted in bright anodized aluminum 4000 Series II stanchions, complete with weep holes to prevent the buildup of moisture.

The grab rails shall include a 12 volt, 17.00 inch long clear LED light to provide an increased margin of safety for night time cab entry and egress. The lights shall only be activated when the parking brake is set and the ignition is on.

REARVIEW MIRRORS

Retrac Aerodynamic West Coast style dual vision mirror heads model 613310 shall be provided and installed each of the front cab doors.

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

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an integral convex mirror in the mirror head below the flat glass to provide wider field of vision. The flat and convex mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

driver. The flat and convex mirrors shall be heated for defrosting in severe cold weather conditions.

The mirror backs shall be constructed of vacuum formed black ABS plastic housings that are corrosion resistant and shall include an amber marker light. The mirrors shall be manufactured with the finest quality non-glare glass.

REARVIEW MIRROR HEAT SWITCH

The heat for the rearview mirrors shall be controlled through a rocker switch on the dash in the switch panel.

AUXILIARY EXTERIOR MIRRORS

The cab exterior shall include one (1) Retractable 10.00 inch diameter convex look down mirror with a black plastic back. The mirror shall be located above the right side front windshield using a Retractable model 612665 stainless steel arm assembly to provide a stable three-point mount to reduce mirror vibration. The mirror shall provide additional visibility to the right front corner of the vehicle.

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.

CAB EXTERIOR FRONT & SIDE EMBLEMS

The cab shall include three (3) Spartan emblems. There shall be one (1) installed on the front air intake grille and one (1) emblem on each of the cab sides. The cab shall also include one (1) Advanced Protection System shield emblem on each front door.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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

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

BATTERY

The single start electrical system shall include six (6) Harris BCI 31 925 CCA batteries with a 210 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.

BATTERY BOX COVER

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

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.

The battery terminals shall not be utilized for auxiliary connections. The only acceptable auxiliary connections shall be for the cross over link from the left bank to the right bank, power for jumper studs and starter cables. All other auxiliary connections will use remote studs mounted in the battery box area. There shall be four (4) remote studs labeled as Common Power, Common Ground, Clean Power, and Clean Ground.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

ALTERNATOR

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

BATTERY CONDITIONER

A Kussmaul 1200 battery conditioner shall be supplied. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position.

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted on the right hand side of the dash, viewable through the windshield.

AUXILIARY AIR COMPRESSOR

A Kussmaul Auto Pump 120V air compressor shall be supplied. The air compressor shall be installed behind the officer's seat horizontally oriented. The air compressor shall be plumbed to the air brake system to maintain air pressure. The air compressor shall include an auto drain as an extra precaution to prevent moisture from entering the air system. The automatic moisture drain shall be plumbed into the system between the auxiliary air compressor pump and the air tanks.

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.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

Amp Draw Reference List:

Kussmaul 1000 Charger - 3.5 Amps

Kussmaul 1200 Charger - 10 Amps

Kussmaul 35/10 Charger - 10 Amps

1000W Engine Heater - 8.33 Amps

1500W Engine Heater - 12.5 Amps

120V Air Compressor - 4.2 Amps

ELECTRICAL INLET LOCATION

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

ELECTRICAL INLET CONNECTION

The electrical inlet shall be connected to the battery conditioner and the air pump.

ELECTRICAL INLET COLOR

The electrical inlet connection shall include a yellow cover.

HEADLIGHTS

The cab front shall include four (4) rectangular halogen headlamps with separate high and low beams mounted in bright chrome bezels.

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch programmable amber LED turn signals which shall be installed in a polished aluminum housing above and outboard of the front warning and head lamps.

HEADLIGHT LOCATION

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

SIDE TURN/MARKER LIGHTS

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

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.

HEADLIGHT AND MARKER LIGHT ACTIVATION

The headlights and marker lights shall be controlled through a rocker switch within easy reach of the driver. There shall be a dimmer switch within easy reach of the driver to adjust the brightness of the dash lights. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the battery master switch is in the "On" position and the parking brake is released.

CORNERING LIGHTS

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

GROUND LIGHTS

Each door shall include an LED NFPA compliant ground light mounted to the under side 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 respective door as well as being activated when the parking brake is set.

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.

INTERMEDIATE STEP LIGHTS

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

UNDER BUMPER LIGHTS

There shall be two (2) 4.00 inch round LED 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.

ENGINE COMPARTMENT LIGHT

There shall be an 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.

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.

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 four (4) 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.

LIGHTBAR SWITCH

The light bar shall be controlled by a rocker switch located on the switch panel. This switch shall be clearly labeled for identification.

FRONT SCENE LIGHTS

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The front of the cab shall include one (1) Fire Research Spectra MAX-S model, contour roof mount scene light installed on the brow of the cab.

The lamp head shall have seventy-two (72) ultra-bright white LEDs, seventy-two (72) for flood lighting or thirty-six (36) to provide a spot light beam pattern. The lamp head shall draw 20.8 amps and generate 28,000 lumens. The lamp head shall have a unique lens that directs flood lighting onto the work area and focuses the spot light beam into the distance. The lamp head shall incorporate heat-dissipating fins and be no more than 6.00 inches high by 14.00 inches wide. The lamp head shall be powder coated black.

FRONT SCENE LIGHTS ACTIVATION

The front scene lighting shall be activated by a rocker switch.

FRONT SCENE LIGHT LOCATION

There shall be one (1) scene light mounted center on the front brow of the cab.

SIDE SCENE LIGHTS

The cab shall include two (2) Akron Brass model Revel ELRE-SLDC LED surface mount lights installed one (1) on each side of the cab.

Each lamp head shall have sixteen (16) LED lights dedicated to lighting objects at a distance and six (6) High powered LED lights to distribute light across the entire scene. Each lamp head shall draw 9.1 amps and generate 14,000 lumens total. Each lamp head shall measure 5.25 inches in height X 7.50 inches in width. The lamp heads shall be powder coated black.

SIDE SCENE LIGHT LOCATION

The scene lighting located on the left and right sides of the cab shall be mounted in the upper forward portion of the 20.00 inch raised roof of the cab between the front and rear crew doors.

SIDE SCENE ACTIVATION

The scene lights shall be activated by two (2) rocker switches located in the switch panel, one (1) for each light, and by opening the respective side cab doors.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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 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.

DO NOT MOVE APPARATUS LIGHT

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

The flashing red light shall be located centered left to right for greatest visibility.

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

MASTER WARNING SWITCH

A master switch shall be included in the main rocker switch panel. The switch shall be a rocker type, red in color and labeled "Master" for identification. The switch shall feature control over all devices wired through it. Any warning device switch left in the "ON" position shall automatically power up when the master switch is activated.

HEADLIGHT FLASHER

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

Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per NFPA, these clear flashing lights will also be disabled "On Scene" when the park brake is applied.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

HEADLIGHT FLASHER SWITCH

The flashing headlights shall be activated through a rocker switch on the switch panel. The rocker switch shall be clearly labeled for identification.

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.

INBOARD FRONT WARNING LIGHTS COLOR

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

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.

OUTBOARD FRONT WARNING LIGHTS COLOR

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

FRONT WARNING SWITCH

The front warning lights shall be controlled through the lower level warning switch.

INTERSECTION WARNING LIGHTS

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red.

INTERSECTION WARNING LIGHTS LOCATION

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

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.

SIDE WARNING LIGHTS COLOR

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

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.

SIDE AND INTERSECTION WARNING SWITCH

The side warning lights shall be controlled through the lower level warning switch.

INTERIOR DOOR OPEN WARNING LIGHTS

The interior of each door shall include one (1) 15.87 inch long X 0.73 inch tall amber Weldon LED warning light. The light shall be located on the upper portion of the door frame to be visible when a person is standing in front of the door while entering or exiting the cab. Each light shall activate with a scrolling directional flash pattern

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

which moves from inside to outside when the door is in the open position. This shall serve as a warning to oncoming traffic.

SIREN CONTROL HEAD

A Whelen 295SLSA1 electronic siren control head with hard wired microphone shall be mounted in the cab dash center panel in a location specified by the customer. The siren shall offer a selectable 100 or 200-watt output, radio broadcast, public address, and seventeen (17) Scan-Lock siren tones and hands free operation which shall allow the operator to turn the siren on and off from the steering wheel horn ring if a horn/siren selector switch option is also selected. The siren circuitry shall be placed behind the rocker switch panels under the electrical cover with a 30.00 inch loop for the OEM to route as desired.

AIR HORN ACTIVATION

The air horn activation shall be accomplished by a left hand side Linemaster model SP491-S81 foot switch for the driver and a single right hand side lanyard cable accessible to the officer. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

MECHANICAL SIREN ACTIVATION

The mechanical siren shall be actuated by two (2) Linemaster model SP491-S81 foot switches mounted in the front section of the cab for use by the driver and officer. A red momentary siren brake rocker switch shall be provided in the switch panel on the dash.

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

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.

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

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring.

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

The instrument panel shall contain the following gauges:

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

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

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

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICACTIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

- 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

BACKLIGHTING COLOR

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

HOUR METER

Within the instrument panel, a Honeywell brand hour meter shall be installed which shall measure the amount of hours the engine has been operated.

AIR PRESSURE GAUGE AUXILIARY AIR TANK

The instrument panel shall include an additional air pressure gauge for the auxiliary air tank.

RADIO

A Panasonic radio with weather band, AM/FM stereo receiver, compact disc player, and four (4) speakers shall be installed in the cab. The radio shall be installed above the driver position. The speakers shall be installed inside the cab with two (2) speakers recessed within the headliner of the front of the cab just behind the windshield and two (2) speakers on the upper rear wall of the cab.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

AM/FM ANTENNA

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

COMMUNICATION ANTENNA

An antenna base, for use with an NMO type antenna, shall be mounted on the right hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be an Antenex model MABVT8 made for either a 0.38 inch or 0.75 inch receiving hole in the antenna and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base design provides the most corrosion resistance and best power transfer available from a high temper all brass construction and gold plated contact design. The antenna base shall be provided by Spartan.

COMMUNICATION ANTENNA CABLE ROUTING

The antenna cable shall be routed from the antenna base mounted on the roof to the area behind and underneath the right hand front seat.

CAB EXTERIOR PROTECTION

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

FIRE EXTINGUISHER

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

DOOR KEYS

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

DIAGNOSTIC SOFTWARE OCCUPANT PROTECTION

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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.

WARRANTY

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

CHASSIS OPERATION MANUAL

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

ENGINE AND TRANSMISSION OPERATION MANUALS

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

- (1) Hard copy of the Engine Operation and Maintenance manual with CD
- (1) Digital copy of the Transmission Operator's manual
- (1) Digital copy of the Engine Owner's manual

CAB/CHASSIS AS BUILT WIRING DIAGRAMS

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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

PAIN T CONFIRMATION

There shall be a paint confirmation letter sent to the body manufacturer with paint spray outs to confirm the cab primary paint color or primary and secondary paint color as specified by the paint options.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

CHASSIS MODIFICATIONS

EXHAUST

The chassis horizontal exhaust pipe shall be equipped with a stainless steel heat shield to protect the body compartments.

The exhaust pipe shall discharge engine exhaust to the right side of the apparatus.

MUDFLAPS

Heavy duty black rubber mud flaps shall be provided behind the front tires.

Anti-sail mudflaps shall be installed behind the rear wheels.

REAR TOW BAR

A two inch diameter solid steel bar shall be suspended approximately 28" below the top of the rear chassis frame rail.

The tow bar shall be attached to the frame rail at each side using properly reinforced channel supports.

Tow bars that are attached to both the frame rails and the apparatus body will not be acceptable due to undue stresses on the body caused when the chassis frame flexes.

CENTER SUMP BOX

The front extended bumper shall have an aluminum sump box recessed in the center of the gravelshield.

The sump box shall poly matting and shall include drain holes.

The sump box shall be divided into two sections to store 150 feet of 1 3/4" DJ fire hose with nozzle in one section and 50 feet of 5" rubber jacket hose in the other section.

A removable divider shall separate the 5" hose from the 1 3/4" hose.

The hose shall be secured by heavy duty webbing with quick release connectors to prevent unintentional deployment of the hose per NFPA 15.10.7.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

ALUMINUM DIAMOND PLATE COATING - BLACK BEDLINER

The aluminum diamond plate gravel shield, the stainless trim edge along with the sump boxes on the cab bumper shall be covered with a black bed liner type scratch resistant coating.

HELMET STORAGE

The helmets will be stored in a compartment as specified by the purchaser at pre paint inspection.

FUEL FILL

The fuel fill of the custom chassis shall be located in the drivers side rear fender area and have a painted stainless steel door and be labeled: "DIESEL FUEL ONLY"

AIR TANK DRAIN CABLES

There shall be manual pull air tank drain cables provided with the apparatus. The cables shall be extended to the outer edge of the apparatus to facilitate draining moisture from the chassis air tanks. A label shall be affixed indicating "Air Tank Drain".

AIR INLET

An air inlet shall be provided which shall allow air from a portable air compressor to be supplied to the apparatus brake system through a shoreline hose. The inlet will be equipped with a male coupling and will be located on the driver's side of the cab.

A check valve will be provided to prevent reverse flow of air. The inlet will discharge into the "wet" tank of the brake system. A mating female coupling will be provided with the loose equipment.

The exact location shall be determined at the pre paint inspection.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

MOUNTING PLATE - DOGHOUSE

An aluminum plate shall be provided above the engine doghouse for mounting of equipment, radios and the like. The plate shall be spaced away from the doghouse with nylon bushings. The plate shall be the width and length of the available space on the doghouse. The exact design and location shall be determined at the pre paint inspection. The mounting plate shall be covered with a black bed liner type scratch resistant coating.

MOUNTING PLATE - MDT

An aluminum plate shall be provided above the dash for the MDT for mounting of MDT equipment. The plate shall be spaced away with nylon bushings. The plate shall be the width and length of the available space. The exact design and location shall be determined at the pre paint inspection. The mounting plate shall be covered with a black bed liner type scratch resistant coating.

EMS COMPARTMENT

An EMS compartment, approximately 39" High x 38.00" wide x 22.00" deep shall be installed between the two rear facing seats.

A slide out or flip down desk shall be provided.

One adjustable shelf shall be provided.

A removable cargo net shall be provided for retaining stored equipment.

The compartment shall be constructed of aluminum and will have a DA sanded finish.

Storage compartment shall be compliant per NFPA standard for automotive fire apparatus.

Compartment shall have an LED light installed on the side wall of the compartment. The light shall be controlled by a switch.

Exact size and design will be resolved at the pre-paint inspection.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

FIRE PUMP AND RELATED ITEMS

PUMP

Hale RSD Pump

A Hale model RSD single stage centrifugal pump shall be provided to be rear mounted on the chassis frame rails and shall be driven by a split shaft Hale gear box.

The pump shall be of a size and design to mount on commercial and custom truck chassis, and have the capacity of 1500 gallons per minute (U.S. GPM), NFPA 1901 rated performance.

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

The pump shall be driven by a split drive line power take-off (PTO). The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance within the torque rating of the PTO, truck transmission gears and drive line components.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 500 PSI. The pump shall be full tested at the pump manufacturer's factory to the performance spots as outlined by the latest NFPA Standard 1901. Pump shall be free from objectionable pulsation and vibration.

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

Pump body shall be vertically split, on a single plane, for easy removal of impeller assembly, including clearance rings.

Inlet connections shall be configurable for victaulic, flanged, or NST connections for the most reliable connection as required by the apparatus builder.

Pump shaft to be rigidly supported by two bearings for minimum deflection. The bearings shall be heavy-duty deep groove ball and angular contact in the gearbox for effective handling of thrust and radial forces. Bearings shall be splash lubricated.

The pump shaft shall have only one mechanical seal. The mechanical seal shall be spring loaded, maintenance free and self-adjusting. Mechanical seal shall be resistant to thermal shock damage. **(No exceptions.)**

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

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

Impeller clearance rings shall be bronze, easily renewable without replacing impellers or pump volute body.

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

GEARBOX

The gearbox shall be manufactured and tested at the pump manufacturer's factory.

Pump gearbox shall be of sufficient size to withstand the required torque of the pump in operating conditions. The gearbox shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

The gearbox drive shaft shall be heat-treated chromium steel. It shall withstand the required torque of the engine in pump operating conditions.

All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size of teeth integrated, crown-shaved and hardened, to give an extremely accurate gear for long life, smooth, quiet running and higher load carrying capability. An accurately cut helical design shall be provided for the lowest noise levels. **(No Exceptions.)**

The pump ratio shall be selected by the apparatus manufacturer to give the maximum performance with the engine, transmission and power take-off selected.

PUMP CONTROL

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

A "Pump Engaged" indicator shall be provided in the driving compartment and on the operator's panel to indicate that the pump shift process has been successfully completed. An "OK to Pump" indicator shall be provided in the driving compartment to indicate that the pump is engaged, the chassis transmission is in pump gear, and the parking brake is engaged.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The fire pump-shift system shall be equipped with a means to prevent unintentional movement of the control device from its set position. The system shall include a nameplate indicating the chassis transmission shift selector position to be used for pumping and located so that it can be easily read from the driver's position.

The system shall include the applicable NFPA standard interlocks, pump shift and OK TO PUMP indicator lights in the cab and pump panel. The fire pump system shall be equipped with an interlock system to ensure that the pump drive system components are properly engaged in the pumping mode of operation so that the pumping system can be safely operated from the pump operator's position.

If applicable, the secondary braking device shall be automatically disengaged for pumping operations.

ANODE SYSTEM

Two (2) anodes shall be installed in the pump to prevent damage caused by galvanic corrosion within the pump.

One (1) installed in the suction side of the pump and one (1) installed in the discharge side of the pump.

The anodes should be inspected every 12 months and replaced when over 75% of the zinc has been consumed. Performance of the anode life will vary with water quality and PH.

PRESSURE GOVERNOR - SUPPLIED WITH CHASSIS

The pressure governor shall be supplied with the chassis.

TRIDENT AUTOMATIC PRIMING PUMP

The priming pump shall be a Trident Emergency Products compressed air powered, high efficiency, multi-stage, venturi based AirPrime™ System. All wetted metallic parts of the priming system are to be of brass and stainless steel construction. Auto Prime Switch Position: Primer is automatically activated when the green "OK TO PUMP" light is "ON", pump pressure is less than 20 PSI, and primer control LED green light is "ON"

Prime Switch Position: "Manually Push" switch to activate primer or use for periodic testing of priming system (even with fire pump is not in gear) The priming system shall have a five year warranty.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

PIPING

All piping shall be heavy duty 304 grade schedule 10 stainless steel or Class 1 high pressure flexible hose. All stainless steel fittings shall be threaded or welded. **NO EXCEPTIONS**

Class 1 flexible hose shall be Black SBR synthetic rubber hose with 300# working and 1200# burst pressure with stainless steel fittings.

Whenever possible, sweep type elbows shall be utilized in order to reduce friction loss, thread-in 45's and 90's will be used elsewhere.

Victaulic or rubber couplings shall be used where necessary to allow flexing of plumbing which will prevent damage or loosening of the piping if connected rigidly.

All threaded joints shall have non-hardening type sealant for easy removal for repairs.

All piping, including intake and discharge lines shall be hydrostatically tested. A vacuum test shall be applied to the pump, plumbing, and valves to test for leaks. The system shall be tested and shall show minimum loss of no more than 10 inches of vacuum over a 5 minute period as required by NFPA section 16.13.6.4.

Small lines within the pump enclosure shall be constructed of Synflex hose. Uses include, but are not limited to such lines as priming control, gauge lines, drain lines, air control valves, pump shift, supplemental cooling, foam flush and air bleeder valves.

AKRON VALVES

All pump intake and discharge valves shall be AKRON 8000 Heavy Duty swing-out series. The valves shall have an all brass body with flow optimizing stainless steel ball, and dual polymer seats. The valves shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. All stainless steel parts must be 316 grade for increased resistance to corrosion. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valves shall carry a ten (10) year manufacturers warranty. The valve shall be manufactured and assembled in the United States.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

INTAKE RELIEF VALVE

There shall be an Elkhart Brass intake relief valve installed on the suction side of the pump. The valve shall be the preset type at 125 PSI and is adjustable from 75 to 250 PSI, and shall be designed to prevent vibration from altering the setting. The relief outlet shall be directed below the pump with the discharge terminating in a 2-1/2" male NST connection. The discharge shall be away from the pump operator and labeled "Do NotCap".

THERMAL RELIEF VALVE

A Hale Model TRVL120 thermal relief valve shall be provided on the pump.

When the pump water temperature exceeds 120 degrees F, the water shall be released to the atmosphere through a 3/8" discharge line.

A pump panel mounted indicator light shall be provided.

U. L. PUMP CERTIFICATION TEST

One (1) certification test shall be performed at the manufacturers on site testing facility by Underwriters Laboratories.

The certification shall include at minimum:

- A) Pumping Test - NFPA 16.13.2
- B) Pumping Engine Overload Test – NFPA 16.13.3
- C) Pressure Control System Test - NFPA 16.13.4
- D) Priming System Tests - NFPA 16.13.5
- E) Vacuum Test - NFPA 16.13.6
- F) Water Tank-To-Pump Flow Test - NFPA 16.13.7
- G) If Fire Pump is Driven by the Chassis Engine: Engine Speed Advancement Interlock Test – NFPA 16.13.8
- H) Gauge and Flowmeter Test – NFPA 16.13.9

A test plate shall be provided at the pump operator's position that gives the rated discharges and pressures together with the speed of the engine as determined by the certification test. The plate shall be completely engraved with all information at the factory and attached to the vehicle prior to delivery. The original U. L. Certificate shall be provided upon acceptance and payment of the apparatus in full.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

VENTED LUG CAPS AND PLUGS

All intake and discharge plugs and caps shall be vented lug type designed to relieve trapped pressure and help reduce possible operator injuries.

SUCTIONS, TANK TO PUMP AND TANK FILL

6" REAR SUCTION

A 6" suction inlet shall be located at the rear of the unit behind the roll up door.

Heavy duty 6" stainless steel pipe shall be run from the rear of the unit to the pump inlet.

Includes air bleeder valve.

Suction shall exit the center rear of the unit with a 6" NST adapter and long handle chrome plated cap.

REAR INTAKE VALVE

The rear steamer inlet shall be equipped with a full flow butterfly type valve designed to mount on the fire pump suction tube behind the pump panel.

The valve shall be controlled by a 6" Air activated butterfly valve that will be controlled from the pump operators panel.

An air bleeder will be provided with control on the pump panel.

When the valve is installed in the fire pump suction, the fire pump shall be capable of achieving an NFPA / UL test rating of 1500 GPM through a single 6 inch NST suction hose.

A pressure relief valve shall be provided that is factory pre-set to 125 PSI and field adjustable from 75 to 250 PSI.

ADAPTER

One (1) 6" female NST x 4" Storz 30 degree hose adapter, with cap and chain, shall be provided on the rear inlet.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

FRONT SUCTION

There shall be front suction piping provided that will terminate vertically through the top of front extended bumper.

This line shall have victaulic type couplings front and rear with drains located where necessary at the lowest points of the piping.

The suction shall utilize 5" heavy stainless steel pipe (installed by the chassis manufacturer) and shall extend from the right front bumper to the back of the cab.

The body manufacturer shall continue the stainless steel plumbing to the suction side of the pump.

The suction shall be controlled by a 6" Air activated butterfly valve that will be controlled from the pump operators panel.

An air bleeder will be provided with control on the pump panel.

The suction shall terminate with a Trident 5" Female NPT x 6" Male NH chrome locking swivel elbow with removable screen and long handled chrome plated cap. The elbow shall be located in such a manor that when the pre-connected hose is attached, the chassis headlight is not obstructed.

AUTOMATIC BLEEDER DRAIN

A 3/4" air operated bleeder drain shall be installed in the lowest portion of the front suction piping. Control will be mounted on the operators panel.

SUCTION-REAR MOUNTED PUMP

One (1) 2-1/2" suction valve shall be installed on the pump and shall exit the rear of the apparatus. The valves shall be located behind the roll up door.

The suction valve shall be equipped with a chrome plug, chain, removable strainer and a 2-1/2" NST chrome inlet swivel. This valve shall be controlled at the valve.

TANK TO PUMP

There shall be one 3" gated tank to pump line, piped to the tank sump.

Piping from the sump to the valve shall be 4" diameter.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The line will be plumbed directly into the back of the pump for maximum efficiency.

A 3" full-flow, in line ball valve, with check valve, shall be provided to prevent accidental pressurization of the water tank through the pump connection.

The valve shall air actuated with control located on the operator's panel with function plate.

TANK FILL - 2-1/2"

There shall be a 2-1/2" tank refill line installed with a 2-1/2" inline valve.

Valve shall be controlled at the pump operators panel with a push pull control. and will be clearly marked "TANK REFILL/PUMP COOLER".

DISCHARGES

DUNNAGE COMPARTMENT

The area above compartment L1/R1 where the generator is located shall be enclosed with 12 gauge stainless steel to form an open top compartment to prevent the hose in the hose bed from coming into contact with the generator.

PRE-CONNECTED SPEEDLAYS

Two (2) speedlay compartments fabricated of 12 gauge stainless steel shall be provided and located in the forward compartment directly behind the cab, directly above the frame rails.

The speedlays shall sit side by side as close to frame rail as possible. The speedlays shall be as far rearward as much as possible to maximise storage within the compartment.

SPEEDLAY - 1.75" WITH 2.00" PIPING/VALVE

Two (2) each capable of holding 250 ft. of 1.75" hose. Piping and valve to be 2.00" with 1.50" swivel.

The hose swivel will terminate above each tray and will be located toward the ends of the trays to allow the hose to be easily preconnected.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

Each speedlay will have welded poly removable bin/tray provided with hand hold cutouts on each side to aid in the removal to allow for easy repacking. Trays shall be perforated to allow hose drainage and air flow.

There shall be vertical and horizontal stainless steel rollers, on each side of the speedlays.

Hand wheel controls shall be provided on the pump operator's panel.

TRASHLINE - 1-3/4" W/2" PLUMBING

One (1) trashline discharge shall be piped to the front bumper with 2" piping and 2" valve.

Discharge shall terminate above the left front bumper with a Trident 2" Female NPT x 1.5" Male NH chrome swivel elbow.

A hand wheel control shall be provided on the pump operator's panel.

2-1/2" LEFT REAR DISCHARGE

A 2-1/2" discharge shall be piped to the left rear of the hosebed and be controlled from the operator's panel.

Discharge shall terminate with a 2-1/2" NST 30 degree turn down, with chrome cap and retainer chain.

2-1/2" RIGHT REAR DISCHARGE

A 2-1/2" discharge shall be piped to the right rear of the hosebed and be controlled from the operator's panel.

Discharge shall terminate with a 2-1/2" NST 30 degree turn down, with chrome cap and retainer chain.

2-1/2" DISCHARGES-REAR MOUNT PUMP

Two (2) 2-1/2" discharges shall be located on the rear of the unit behind the roll up door.

Valves shall be controlled with hand wheel controls located on the pump operator's panel.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

Each discharge shall terminate with a 2-1/2" NST 30 degree turn down, with chrome cap and retainer chain.

REDUCERS

Two (2) Akron style 337 chrome reducers, 2.5" NST female to 1.5" NST male adapters, with 1.5" caps and chains, shall be provided. These shall be located on the rear discharges located behind the roll up door.

4" DISCHARGE - REAR MOUNT PUMP

A 4" discharge shall be located on the rear of the unit behind the roll up door.

Valves shall be controlled at the pump panel with a hand wheel control.

Discharge shall terminate with a 4" NST x 4" 30 degree Storz adapter with blind cap and retainer chain.

AKRON SLO-CLOZ

An Akron Slo-Cloz device shall be provided on each 3" discharge valve to limit the opening of the valve to no faster than 3 seconds per N.F.P.A. specifications.

The hydraulic device shall be operable from -40 deg. F to 140 deg. F.

The device shall be made of corrosion-resistant materials and shall not add more than 1-1/2" to the valve height.

PUMP ACCESSORIES

PUMP MASTER DRAIN

A master drain that will have the capacity to drain all lines and main pump at the same time. The master drain will be mounted on the left side panel and will be readily accessible.

DRAIN VALVES

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The drain valves shall be Innovative Controls 3/4" ball brass drain valves with chrome-plated lift lever handles and ergonomic grips. Each lift handle grip shall feature built-in color-coding labels and a verbiage tag identifying each valve, also supplied by Innovative Controls. The colors labels shall also include valve open and close verbiage. The drain valves shall located in the lower portion of the pump panels.

ENGINE COOLER

The supplementary heat exchanger cooling system supplied on the chassis shall be completed to the panel to permit water from the discharge side of the pump to be circulated through the engine cooling system.

Coolant inlet and outlet shall be continuous, preventing intermixing of engine coolant and pump water.

The heat exchanger shall be of brass construction, with control valve located on operator's panel.

FOAM SYSTEM

FOAM SYSTEM - HYPRO FOAM PRO 2002

A Hypro Foam Pro 2002 shall be installed on the pump allowing foam to be injected into the discharge side of the pump, preventing contamination of the fire pump and water tank.

The following discharges shall be foam capable.

- Forward 1.75" speedlay
- Front bumper discharge trash line
- One of the rear hose bed 2.50" discharges

Foam proportioning is fully automatic and water flow compensating. The system can proportion both class A and most class B foam agents and standard nozzles, aspirating nozzles and Compressed Air Foam Systems are fully compatible.

System Capacities are:

% FOAM CONCENTRATION WATER FLOW(GPM)

0.1%	5000
0.2%	2500
0.5%	1000
1.0%	500
3.0%	166

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

at 250 PSI operating pressure.

System includes:

- (1) Digital display control unit
- (1) Foam 5.0 GPM Pump - 3/4 HP motor base unit
- (1) Injector fitting
- (1) Nameplate
- (1) Molded cables
- (1) Calibrate/inject valve
- (1) Inlet line strainer
- (1) 3" FoamPro flowmeter
- (1) 115 flange type check valve
- (1) Foam injection check valve
- (1) Mini manifold

PUMP PANEL AND RELATED ITEMS

REAR OPERATOR'S PANEL

The pump house shall be a properly supported structure mounted between the side body compartments located at the rear of the unit under the hose bed. It shall be integral with the apparatus body.

The pump shall be mounted directly to the chassis frame rails. The pump and all of the pump mounted valves shall be completely enclosed by the pump house design.

The pump house shall consist of a hinged pump gauge panel formed of 12 gauge satin finished stainless steel. This panel shall be located in Compartment L4.

The panel and controls shall be located as low as possible while allowing smooth operation of the controls.

The area under the panel shall be full depth of the compartment for storage.

A separate panel shall contain the auxiliary and main inlet and their respective drains. This panel shall be located in the rear compartment. The panel shall be fastened to the pump house with stainless steel bolts and shall be completely removable.

PANEL LIGHTING

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The pump panel shall be illuminated by a four (4) TecNiq (model E10-W000-1) 6.00" LED lights with clear lens. The lights shall be mounted across the top of the gauge panel and shall be protected by a full width polished stainless steel shield. Lights are controlled by a panel mounted light switch.

IDENTIFICATION LABELS FOR PUMP PANEL

Innovative Controls verbiage label bezels shall be installed. The bezel assemblies will be used to identify apparatus components. These labels shall be designed and manufactured to withstand the specified apparatus service environment.

The verbiage label bezel assemblies shall include a chrome plated panel mount bezel with durable easy to read UV resistant polycarbonate inserts featuring the specified verbiage and color coding. The UV resistant polycarbonate verbiage and color inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the insert labels and bezel shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

NOTE: Labels will be marked DRIVER SIDE OR PASSENGER SIDE as necessary.

VALVE CONTROL HANDLES - HAND WHEEL

For valve actuation, all discharge valves on the apparatus pump panel shall be equipped with hand wheel type actuators for smooth, precise operation of valves.

Position Indicators shall be included to show the valve position to meet NFPA 1901.

The handles shall be chrome plated zinc with labels for color coding and verbiage.

The valve controls shall be located in Compartment L4, below the gauge panel.

REAR MOUNTED OPERATOR'S PANEL

The pump operators panel shall be located in Compartment L4.

The following items shall be located on the rear mount pump panel:

*Individual 0-400# compound discharge gauges for all 1.5" or larger discharges

*One (1) -30 to 400 psi master pressure gauge

*One (1) -30 to 400 psi master vacuum gauge

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

- *One auxiliary engine cooler control (heat exchanger)
- *Two UL test connections
- *One master pump house lighting switch
- *One engine governor control
- *One primer control
- *All main discharge controls
- *One tank fill/pump bypass control
- *One tank to pump valve control
- *One pump ENGAGED indicator light
- *One pump certification plate
- *One liquid level meter with sensor in the water tank

PUMP PANELS - BLACK THERMOPLASTIC COVERED STAINLESS STEEL

The pump and gauge panels shall be constructed of black thermoplastic covered stainless steel to allow easy identification of the gauges and controls and to eliminate glare.

4.5" NOSHOK MASTER GAUGES

The master intake and master discharge gauges shall be 4" diameter No-Shok pressure gauges. Each gauge shall have a one-piece die-cast brass case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. Clear scratch resistant molded crystals with captive O-ring seals shall be used to ensure distortion free viewing and to seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from -40°F to +160°F. Each gauge shall meet ANSI B40.1 Grade 1A requirements with an accuracy of +/- 1% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

A polished chrome-plated brass bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauges shall be installed into decorative chrome-plated mounting bezels that incorporate valve-identifying verbiage.

The master gauges shall be installed on the pump panel no more than 6 inches apart. The gauge on the left shall be the master pump intake gauge and display a range from -30 to 400 psi with Black graphics on a White background. The gauge on the right shall be the master pump discharge gauge and display a range from -30 to 400 psi with Black graphics on a White background.

2-1/2" NOSHOK GAUGES

The valve discharge gauges shall be 2 ½ " diameter No-Shok pressure gauges. Each gauge shall have a one-piece die-cast brass case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. Clear scratch resistant molded crystals with captive O-ring seals shall be used to ensure distortion free viewing and to seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from -40°F to +160°F.

Each gauge shall exceed ANSI B40.1 Grade B requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy. A polished chrome-plated brass bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauges shall be installed into decorative chrome-plated mounting bezels that incorporate valve-identifying verbiage and color labels. The gauges shall display a range from 0 to 400 psi with Black graphics on a White background.

ICI WATER LEVEL MONITOR

An Innovative Controls SL-10 Series Tank Level Monitor System shall be installed. The system shall include an electronic display module, a pressure transducer-based sender unit, and a 10' connection cable. The display module shall show the volume of water in the tank using 10 superbright easy-to-see LEDs. Tank level indication is enhanced by the use of green LEDs at the full and near-full levels, amber LEDs between ¾ and ¼ tank levels, and red LEDs at the near-empty and empty levels. A wide-angle diffusion lens in front of the LEDs creates a 180° viewing angle. The electronic display module shall be waterproof and shock resistant being encapsulated in a urethane-based potting compound. The potted display module shall be mounted to a chrome plated panel-mount bezel with a durable easy-to-read polycarbonate insert featuring blue graphics and a water icon.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

All programming functions shall be accessed and performed from the front of the display module. The programming includes self-diagnostics, manual or self-calibration, and networking capabilities to connect remote slave displays. Low tank level warnings shall include flashing red LEDs starting below the ¼ level, down-chasing LEDs when the tank is almost empty, and an output for an audible alarm.

The display module shall receive an input signal from a pressure transducer. This stainless steel sender unit shall be installed on the outside of the water tank near the bottom. All wiring, cables and connectors shall be waterproof without the need for sealing grease.

Location of water tank level monitor shall be on the pump operators panel.

WHELEN TANK LEVEL LIGHTS

There shall be three (3) Whelen PS TANK water level light strips flush mounted vertically, one on each side of the body and one located on the rear of the unit. The light strips shall include four colors of LED lights, green, blue, amber, and red.

MICROPHONE COMPARTMENT

A Cast Products microphone compartment with interior dimensions of 6 1/4" wide x 7 3/4" high x 5" deep shall be installed in the pump operator's panel area.

AIR HORN BUTTON ON PANEL

An air horn button shall be installed on the pump operators panel.

This button will allow pump operator to activate air horns at any point in time. Button will be waterproof and marked properly.

STAINLESS STEEL BODY

STAINLESS STEEL BODY AND COMPARTMENT CONSTRUCTION

The complete apparatus body and sub frame shall be fabricated of 12 gauge type 304 grade stainless steel sheeting with a tensile strength of 87,000 psi and a yield strength of 39,000 psi.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

All body and compartment components shall be break form design. Compartments are constructed of 12 gauge type 304 stainless steel. This shall include compartment floors, side walls and ceiling. No Exception. Compartments shall be formed from a single sheet of metal when possible. The exterior of the compartments shall be solid seam welded. The corner seams shall be caulked with Gray silicone caulking. All burrs shall be removed to eliminate sharp edges.

Interior of compartments are to be left natural stainless steel with a swirl finish applied to give a lasting and pleasing appearance.

COMPARTMENT SUPPORTS

Compartment floor supports shall be provided fabricated of 12 gauge stainless steel 2.00" x 4.00" support members and shall be installed under the compartment floors. The supports shall be formed "U" sections that will extend the full width beneath the compartment floors. The upper body walkway floor will be supported in a similar fashion.

STAINLESS STEEL SUBFRAME

A 1.50" x 3.00" stainless steel tubular sub frame shall be fabricated to support the body and tank. Structural stainless steel rails shall run the full length of the body across the top of the chassis frame rails. Appropriate 3.00" stainless steel cross members shall be utilized to ensure rigidity with cross members being space no more than 24" apart.

The sub frame and cross members shall be Mig welded. All compartments and all stainless steel sheeting is TIG welded with 308 stainless steel filler wire.

The complete body structure shall be secured to the chassis frame rails with high grade 5/8" diameter U-bolts.

One inch x three inch heavy duty rubber sill will be installed between the body sub frame and chassis frame rails to prevent stress on the body and tank components. The rubber sill shall be retained by a full length stainless steel channel.

STEPPING, STANDING, & WALKING SURFACES

All stepping, standing, and walking surfaces on the body shall meet NFPA #1901 anti-slip standards.

WHEEL WELLS

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICACTIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

12 gauge stainless steel wheel wells shall be an integral part of the body construction.

Wheel wells and cabinetry are to be designed so road debris will not be trapped on top of the cabinets.

Full one piece circular, 24" deep stainless steel wheel well liners shall be installed. The fender flares shall be bright polished stainless steel and are attached to the wheel well using stainless steel bolts.

WIRING ACCESS PANELS

Wiring access panels shall be provided in the body interior corner compartments. The panels shall be bolted in place to allow easy removal for service.

REMOVAL OF BODY

The completed body with all related parts will be able to be removed in its entirety and accompany the water tank when removed.

FASTENERS

All fasteners used in securing components to the body shall be type 304 stainless steel.

COMPARTMENT VENTS

Compartments shall have a minimum of two (2) 4" louvered stainless steel vents per compartment. They shall be installed in the rear wall of each compartment in a fashion to prevent foreign matter and water from entering.

COMPARTMENT DRAINS

Duckbill type rubber floor drains will be installed in the corners of the lower compartment floors.

WATER TANK

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

UPF POLY-TANK IIE

SPECIFICATIONS

The tank shall have a capacity of 600 U.S. Gallons.

CONSTRUCTION

The UPF POLY-TANK IIE shall be constructed of 1/2" thick PT2E polypropylene sheet stock. This material shall be a non-corrosive stress relieved thermo-plastic, natural in color, and U.V. stabilized for maximum protection.

The booster tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments. All joints and seams shall be nitrogen welded and tested for maximum strength and integrity. The top of the booster tank is fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removability. The transverse swash partitions shall be manufactured of 3/8" PT2E polypropylene (natural in color) and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" PT2E polypropylene (natural in color) and extend from the floor of the tank through the cover to allow for positive welding and maximum integrity. 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 welded to each other as well as to the walls of the tank.

FILL TOWER AND COVER

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT2E polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The tower shall be located in the left front corner of the tank unless otherwise specified by the purchaser in Special Provisions. The tower shall have a 1/4" thick removable polypropylene screen and a PT2E polypropylene hinged-type cover. Inside the fill tower, approximately 4" down from the top, shall be fastened 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 behind the rear wheels where specified to provide maximum traction for wheels.

The tank cover shall be constructed of 1/2" thick polypropylene, natural in color, and UV stabilized, to incorporate a multi three-piece design which allows for individual removal and inspection if necessary. The tank cover shall be recessed 3/8" from the top of the tank and shall be welded to both sides and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" polypropylene dowels spaced 30" apart. These dowels shall extend through the covers and become welded to the transverse partitions. This will assist in keeping

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

the cover rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

SUMP

There shall be one (1) sump constructed of 1/2" PT2E polypropylene and be located in the left front quarter of the tank. On all tanks that require a front suction a 3" schedule no 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front to the tank to the sump location. The sump shall have a minimum 3" NPT threaded outlet on the bottom for a drain plug. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 2" above the sump.

OUTLETS

There will be two (2) standard tank outlets: one for tank-to -pump suction line which shall be a minimum of 3" NPT coupling; and, one for a tank fill line which shall be a minimum of 1" NPT coupling. All tank couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

MOUNTING

The UPF POLY-TANK IIE shall rest on the body crossmembers with an unsupported area not to exceed 760 sq. in. on tanks up to 40" in height. On tanks over 40" in height, an unsupported area of not more than 530 square inches must be maintained. All tanks shall be insulated from the crossmembers with a minimum of 1/4" hard rubber strips on tanks under 2,000 gallons and 1/2" hard rubber strips on 2,000 gallon tanks and over, 2" to 3" wide with a minimum of 60D hardness. The tank shall sit cradle mounted either using four (4) corner angles of 4" x 4" x 4" x 0.250" welded directly to the body cross members or the use of 2" x 2" x 0.250" angle iron which will extend around the entire perimeter of the tank and welded to the body cross members.

In each case, the entire perimeter of the bottom of the tank wall be supported. Support under the upper side walls is not required. The support frame or angles will keep the tank from shifting front to rear or side to side. Although the tank is designed on the free floating suspension principle, it shall be required that the tank have restraints halfway between the front and the rear of the tank. These restraints shall be made of 3" x 3" 1/4" angle approximately 6" long. the restraint does not directly contact the top of the tank.

30 GALLON FOAM TANK, POLY IIE

A 30 gallon Non-corrosive, durable, separate Poly IIE tank will be provided and installed in the rear portion of the upper left body compartment. Tank is designed to

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

be unaffected by foam, or wetting agents. Tank includes an expansion chamber, vent, built-in funnel, access hole for cleaning, (2)-3/4" outlet with a flexible connection, and is low temperature tested. Outlet will be plumbed to exit the right side pump house with a threaded drain cap.

COMPARTMENTS

COMPARTMENTS

The apparatus body shall be designed with full height rescue style compartments with roll up doors.

The drivers side compartments shall be full depth.

The passengers side shall be full depth in the lower portion and partial depth in the upper portion to allow storage for the ground ladders.

LEFT SIDE COMPARTMENTS

L1: 79.00" High x 26.00" Deep x 40.00" Wide
Door Opening: 71.00" High x 34.00" Wide

L2: 79.00" High x 26.00" Deep x 42.00" Wide
Door Opening: 71.00" High x 36.00" Wide

L3: 48.00" High x 26.00" Deep x 64.00" Wide
Door Opening: 39.00" High x 56.50" Wide

L4: 79.00" High x 13.00"/26.00" Deep x 60.00" Wide
Door Opening: 71.00" High x 54.00" Wide
**Pump operator's panel located in this compartment

RIGHT SIDE COMPARTMENTS

R1: 79.00" High x 13.00/26.00" Deep x 40.00" Wide
Door Opening: 71.00" High x 34.00" Wide

R2: 79.00" High x 13.00/26.00" Deep x 42.00" Wide
Door Opening: 71.00" High x 36.00" Wide

R3: 48.00" High x 13.00"/26.00" Deep x 64.00" Wide
Door Opening: 39.00" High x 56.50" Wide

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

R4: 79.00" High x 13.00/26.00" Deep x 60.00" Wide
Door Opening: 71.00" High x 54.00" Wide

REAR COMPARTMENT

The rear compartment shall be designed to store all of the pump mounted rear facing discharges and intakes behind a roll up door.

The compartment shall be 59.00" high x 13.00" deep x 46.00" wide.

Door Opening: 50.00" high x 41.50" wide

The area above the compartment shall be 46.00" wide x 18" deep to form a platform in front of the hose bed.

COMPARTMENT LAYOUTS

The compartments shall have the following layouts from top to bottom.

Compartment L1

- Stokes Basket
- Long Handle Tools
- Speedlays
- Adjustable Hose Dividers – Floor Mounted

Compartment L2

- Full Height Poly Board
- Two (2) Full Depth Adjustable Shelves
- Adjustable Floor
- Pull Out Step
- 12 Volt and 120 Volt Outlets – Location to be determined at the pre-paint meeting.

Compartment L3

- One (1) Full Depth Adjustable Shelf
- SCBA Air Cylinder Storage Module.

Compartment L4

- Pump Operators Panel
- Pegboard on Compartment Floor and Compartment Sides
- 12 Volt and 120 Volt Outlets – Location to be determined at the pre-paint meeting.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

Compartment R1

Stokes Basket
Long Handle Tools
Speedlays
Adjustable Floor
Pull Out Step

Compartment R2

Poly Board Upper Portion of Compartment
One (1) Partial Depth Adjustable Shelf in Upper portion of the Compartment
12 Volt and 120 Volt Outlets – Location to be determined at the pre-paint meeting.

Compartment R3

Poly Board on Rear Wall of Compartment
Swing Out Tool Board
12 Volt and 120 Volt Outlets – Location to be determined at the pre-paint meeting.

Compartment R4

Poly Board Upper Portion of Compartment
Two (2) Partial Depth Adjustable Shelves in Upper portion of the Compartment
One (1) Full Depth Adjustable Shelf in Lower portion of the Compartment
One (1) Roll Out Rescue Tool Tray

Rear Compartment

Pump Inlets and Discharges

SQUARE BACK BODY DESIGN

The rear side body compartments and the body side walls shall extend all the way to the rear of the apparatus and shall be squared off design.

PHOENIX NOTCH

All compartment floors shall have a "phoenix notch" to provide a true sweep out compartment. The leading edge of the compartment floor shall have a 1" recess below the compartment floor to allow the rollup door to close below the compartment floor level. **No Exceptions**

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

COMPARTMENTS - UPPER BODY DRIVER'S SIDE

A stainless steel compartment shall be provided over the lower compartments on the driver's side. The exterior panels shall be smooth painted stainless steel.

The compartment shall be approximate 21" high x 26" wide x 206" long.

Compartments are transverse front to rear with a center brace.

The compartment shall be open top.

LED lights are provided in each compartment and shall illuminate with the hose bed lights.

Drains shall be included in each compartment floor and will be extended below the chassis frame rails.

COMPARTMENTS - UPPER BODY PASSENGER'S SIDE

A stainless steel compartment shall be provided over the lower compartments of the passenger's side. The exterior panels shall be smooth painted stainless steel.

The compartment shall be approximate 21" high x 26" wide x 206" long.

Compartments are transverse front to rear.

The compartment will have two (2) raised aluminum diamond plate doors. Doors include full length stainless piano hinged to the outside of the body. The outer panel shall be bright aluminum diamond plate with stainless steel latches and power lift cylinders.

Each Door Opening: 94.00" long x 15.00" wide

LED lights are provided in each compartment and shall illuminate with the door in the open position.

Drains shall be included in each compartment floor and will be extended below the chassis frame rails.

UPPER BODY VERTICAL DOOR - PASSENGER'S SIDE REAR

The upper body compartment on the passenger's side shall be provided with a rear lift up access door. The door shall be stainless steel with SouthCo C2 push button lever latches and shall include a pneumatic stay arm.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

REAR BUMPER TAILBOARD

REAR BUMPER TAILBOARD

The rear bumper tailboard shall be fabricated of 1.50" x 1.50" and 1.50" x 3.00" structural stainless steel tubing. The bumper shall be fully welded design and shall be welded to the rear side body compartments.

The rear bumper shall be 16" deep and run full width of the vehicle.

The rear six inches of the corners shall be cropped at 45 degrees.

BUMPER STEP SURFACE

The bumper step shall constructed of NFPA compliant Diamondback extruded aluminum deck plate grating. Grated area will allow debris to fall to the ground and not collect on top of the step.

The outer vertical edges will be trimmed with painted stainless steel.

The bumper stepping surface will comply with the latest version of NFPA 1901.

TRIM - RESCUE PUMPER

TRIM - REAR

The rear of the apparatus shall be painted job color.

TRIM - FRONT COMPARTMENT

Front exterior wall of the front compartments shall be covered with Aluminum diamond plate.

RUB RAILS

Onscene Solutions Extruded Aluminum C channel rub rails shall be provided each side below the lower side compartments and along the sides and rear of the

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

tailboard. The rub rails shall be bolted in place with nylon spacers between the body and rub rail.

The rub rails shall allow for warning lights to be recess mounted in the rub rail.

Reflective striping shall be provided in the rub rail. The striping shall be red and black in color.

REFLECTORS

Reflectors shall be incorporated into the rub rails and shall include four (4) red rectangular shaped.

HOSE BED AND RELATED ITEMS

HOSE BED

A stainless steel hose bed with swirl finish shall be located above the water tank and shall run the full length of the body. The hose bed front and side walls shall be free of all sharp objects to prevent hose damage. There shall be two removable floor sections constructed of fiberglass grating, model T-3500, 1" "T" bars with 35% open area. This will allow for proper ventilation and drainage of hose.

HOSE BED DIVIDERS

Three (3) adjustable hose bed dividers shall be located in the hose bed area and shall be fully adjustable by means of stainless steel uni-strut tracking located at the front and rear of the hose bed.

The dividers shall be of "one piece" 1/4" extruded aluminum construction with integral extruded bottom "T" bar which runs full length of the hose bed. A top 1/2" diameter smooth edge is provided to prevent damage to hose.

The dividers shall be bolted in place with stainless steel fasteners and be easily adjusted from side to side with simple hand tools.

The dividers shall be approximately 152" long allowing an approximately 18" wide area that forms a platform above the rear compartment.

The center area of the dividers shall be reduced in height to allow easier loading of hose.

The exact design will be determined at the pre paint meeting.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

HOSE BED CAPACITY

From left to right, the hose bed shall be capable of holding the following hose:

- 500 Feet of 2.50" DJ hose
- Aisle way (approximately 15" wide)
- 1,000 Feet of 4.00" LDH hose
- 300 Feet of 2.50" DJ hose preconnected

HOSEBED TARP

A Black vinyl horizontal hose bed cover shall be provided with Velcro and twist lock fasteners on the front, shock cords fasteners on the sides with stainless steel hooks.

The rear vertical flap shall be a separate piece. Quick connect fasteners shall be provided to secure the rear flap during transit.

A removable bar shall be installed to hold the rear of the hose bed tarp up to prevent the tarp from resting on the dividers.

The exact design will be determined at the pre paint meeting.

HAND RAILS

HAND RAILS - HANSEN LED

Hansen brand hand rails shall be three-piece knurled aluminum anti-slip with LED lights. The Hansen Lit Anti-Slip Rails shall be mounted in bright anodized aluminum 4000 Series II stanchions, complete with weep holes to prevent the buildup of moisture.

Each grab rails shall include a 12 volt clear LED light to provide an increased margin of safety for night time cab entry and egress. The lights shall only be activated when the parking brake is set and the ignition is on.

Brackets shall be chrome plated and attached with stainless steel bolts. Anchoring of posts and framing members for handrails of all types shall capable of withstanding a load of at least 225 pounds applied in any direction at any point along the rail.

Hand rails and handholds shall be constructed so that three points of contact (two hands and one foot, or one hand and two feet) can be maintained at all times while ascending and descending.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

NOTE: ALL HAND RAIL LOCATIONS SHALL BE DETERMINED AT THE PRE PAINT INSPECTION. **NO EXCEPTIONS**

VERTICAL HAND RAILS

Two (2) 48" long hand rails shall be mounted vertically at the rear of the apparatus, one on each side of the rear compartment.

HORIZONTAL HAND RAILS

One (1) 72" long hand rail shall be mounted horizontally just below the hosebed.

STEPS FOLDING

FOLDING ACCESS STEPS

There shall be a minimum of six (6) Austin Hardware model FS-200 CHR 42 square inch large folding steps, made of high strength die cast aluminum, with textured chrome plate finish shall be provided. Each step shall be mounted with an Austin Hardware MBH-1132-A01-CHR lighted LED backplate. Steps shall conform to NFPA-1901 requirements and shall be mounted with a maximum of 18" height between each step.

Location: Rear of unit to allow easy access to the hose bed.

INTERMEDIATE REAR ACCESS STEP

There shall be a fixed step provided on the rear body panel above the rear compartment.

The step shall be approximately 10" deep x 48" wide and covered with NFPA treadplate.

The final layout and location shall be determined at the pre paint inspection.

STEPS - PULL OUT

An aluminum grating pull out step will be fabricated and floor mounted in locations as directed by the purchaser.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The steps will lock automatically in the open and closed positions utilizing pneumatic struts.

Step size will be approximately 16" deep x approximately 2" narrower than the compartment opening.

Each pull out step shall be capable of holding approximately 350 lbs.

LOCATION: L2, R1

ADJUSTABLE FLOOR

A total of two (2) adjustable shelves shall be provided and installed in the full height side body compartments to act as a floor above the pull out steps.

Shelf construction where specified shall be rigid with 2" reinforcement on the front and rear, and fabricated of 3/16" aluminum.

The shelving shall be adjustable by means of a threaded tightener that slide in a track to allow precise adjusting height to access the pull out steps for maintenance.

LOCATION: L2, R1

LADDER, SUCTION HOSE AND PIKE POLE STORAGE

SUCTION HOSE COMPARTMENT

A suction hose compartment will be located in the right side of the body above the ladders. The compartment shall be capable of holding two (2) 6" x 10' suction hoses.

The compartment will be designed with a slight incline to allow moisture to drain while allowing the equipment to slide out easier.

The compartment will have a rear access stainless steel painted door with a twist latch.

LADDER COMPARTMENT

A compartment will be located on right side of the booster tank under the hose bed.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

Compartment shall be fabricated of 1/2" polypropylene and shall be designed to allow easy removal and storage of all specified equipment. All equipment shall be separated by dividers.

The compartment will be designed with a slight incline to allow moisture to drain while allowing the equipment to slide out easier.

The compartment will be designed to hold a 14' roof ladder and 24' extension ladder, 10' attic ladder and two (2) pike poles.

LADDER & SUCTION HOSE COMPARTMENT DOOR

The ladder and suction hose compartment will have a single vertically hinged painted finish stainless steel door with a stainless steel D'Ring latching handle.

WHEEL WELL COMPARTMENTS

AIR BOTTLE STORAGE COMPARTMENT (TRIPPLE - D.S. FRONT)

One (1) spare air bottle compartment shall be provided and located, in the front portion of the driver's side rear wheel well area. The compartment will be capable of holding three (3) spare air bottles. The compartment shall be fabricated of stainless steel and lined to prevent vibration. The compartment shall have a drain hole in the floor.

AIR BOTTLE STORAGE COMPARTMENT (DOUBLE D.S. REAR)

One (1) spare air bottle compartment shall be provided and located, in the rear portion of the driver's side rear wheel well area. The compartment will be capable of holding two (2) spare air bottles. The compartment shall be fabricated of stainless steel and lined to prevent vibration. The compartment shall have a drain hole in the floor.

AIR BOTTLE STORAGE COMPARTMENT (TRIPPLE - O.S. FRONT)

One (1) spare air bottle compartment shall be provided and located, in the front portion of the officer's side rear wheel well area. The compartment will be capable of holding three (3) spare air bottles. The compartment shall be fabricated of stainless steel and lined to prevent vibration. The compartment shall have a drain hole in the floor.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

PULL OUT SPEEDY DRY HOPPER

A custom built pull out speedy dry hopper will be installed in the officer's side rear wheel well area. The hopper will be made as large as possible. The speedy dry will empty out through a bottom slide gate into a 5 gallon pail.

COMPARTMENT DOOR(S)

The wheel well compartment(s) where specified will have a vertically hinged painted stainless steel door(s) with a SouthCo C2 push button lever latch. The door(s) shall be labeled: "SPARE SCBA CYLINDER". Door(s) shall be wired to the door ajar circuit.

ACCESS LADDERS

REAR ACCESS LADDER

There shall be a Zico brand access ladder installed at the left rear corner of the body. The lower rung of the Zico ladder shall not be more than 12" from the ground when in the fold down position.

The ladder shall be wired to the Hazard light/door ajar circuit in the cab.

SHELVING, TRAYS AND TOOLS BOARDS

HOSE RACK

A total of one (1) compartment shall be furnished with stainless steel tracking installed on the floor to allow for installation of adjustable dividers. Tracking shall be installed to allow the dividers to be adjustable to allow for different width hoses.

A total of four (4) adjustable vertical dividers shall be installed along the tracking.

LOCATION: L1

SHELVES, TRAYS AND TOOLBOARD REFLECTIVE TRIM

All roll out shelves, trays and tool boards shall include red and black reflective trim along the outer vertical surfaces.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

SCBA STORAGE MODULE

There shall be a custom designed spare SCBA storage module fabricated of aluminum sheeting. The frame structure shall be constructed of 1/4" aluminum and the individual storage modules shall be fabricated of 1/8" aluminum, each 7-1/2" wide x 7-1/2" high x 23" deep. The all welded structure shall be bolted into the compartment. The individual storage modules shall be lined with polyurethane wearguard tape to protect the SCBA. The storage modules shall slope downward toward the rear of the compartment to prevent SCBA movement.

The module shall be designed to hold a minimum of ten (10) spare 4500 psi 45 minute SCBA air cylinders.

Location shall be: L3

STORAGE MODULE - STOKES/LONG HANDLE TOOLS

There shall be a custom designed storage module fabricated of aluminum sheeting.

The top section of the module shall be designed to hold one (1) **Junkin JSA-200** Stokes rescue basket.

The bottom section of the module shall be designed to store long handled tools.

The module shall be installed horizontally above the speedlays in the transverse compartment located directly behind the cab.

Quick release mechanisms shall be provided to secure the stokes basket and hand tools.

SHELF TRACKING, ADJUSTABLE

A total of four (4) compartments shall be furnished with stainless steel tracking installed to allow for installation of adjustable shelves. The tracking shall be installed vertically on the sides of the compartment walls.

LOCATION: L2, L3, R2, R4

SHELVING - ADJUSTABLE

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

A total of one (1) adjustable shelf shall be provided and installed in customer specified location.

Shelf construction where specified shall be rigid with 2" reinforcement on the front and rear, and fabricated of 3/16" aluminum pegboard.

The shelving shall be adjustable by means of a threaded tightener that slide in a track to allow precise adjusting height.

LOCATION: L2

SHELVING - ADJUSTABLE

A total of six (6) adjustable shelves shall be provided and installed in customer specified locations.

Shelf construction where specified shall be rigid with 2" reinforcement on the front and rear, and fabricated of 3/16" aluminum.

The shelving shall be adjustable by means of a threaded tightener that slide in a track to allow precise adjusting height.

LOCATION (FULL DEPTH SHELF): One (1) L2, one (1) L3, one (1) R4

LOCATION (PARTIAL DEPTH SHELF): One (1) R2, two (2) R4

POLY BOARD MOUNTING BOARD

1/2" Black poly board will installed on the back wall of the specified compartments to allow for equipment mounting. The board will be spaced 1/2" from the back wall of the compartment.

A total of four (4) shall be provided.

LOCATIONS: L2, R2, R3, R4

ALUMINUM PEGBOARD MOUNTING BOARD

A total of (1) one compartment shall be furnished with aluminum pegboard.

The pegboard shall be mounted in such a way that the treaded fasteners will remain in an upright position.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The boards will be spaced 1/2" from the compartment with nylon bushings.

The securing nuts shall be located on the top of the pegboard.

Peg board shall be mounted to the floor and to the right and left sides, full height.

LOCATION: L4

RESCUE TOOL TRAY - PULL OUT

One (1) Accuride slide out tray shall be provided and installed in customer specified location. This tray will be designed to hold customer's rescue tools.

Custom designed brackets shall be provided for holding Jaws, cutters, rams, etc.

Sliding tray where specified shall be mounted in a manner that provides for maximum clearance overhead. The tray shall have a capacity of 300 pounds in the fully extended position.

The side mounted slides are to be equipped with ball bearings for ease of operation.

Trays will lock automatically in the open and closed positions. Manual type locks will not be acceptable.

LOCATION: R4

VERTICAL SWING-OUT TOOL BOARD

One (1) vertically mounted swing-out tool board shall be provided and installed in the compartment over the rear wheels.

The tool board shall be fabricated of 3/16" pegboard aluminum sheeting with full length stainless steel hinge. The board shall be mounted midway in the compartment and shall swing open to allow for mounting of equipment to either side of the board to allow for maximum use of the compartment space.

The tool board will have manual twist lock latch.

LOCATION: R3

PERFORMANCE ADVANTAGE COMPANY - PAC-TRAC - CAB

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

Two (2) Pac-trac tool mounting system shall be installed in the cab as directed by the purchaser. The Pac-trac boards shall be designed to fit between the forward facing seats and the cab side from floor to ceiling.

The exact size and location will be determined at the pre paint inspection trip.

COMPARTMENT FEATURES

SHELF, TRAY AND FLOOR MATTING

All compartment floors, shelves, and trays shall be lined with Black Mateflex 13" X 13" x 9/16" interlocking tiles. Compartment floors shall have tapered edging at front compartment opening.

SABRE-VENT COMPARTMENT VENT SYSTEM

A Sabre-Vent powered ventilation system for storage and equipment compartments will be installed on the unit. This system shall be designed to circulate fresh air into every storage compartment of the vehicle while it is stored in the station.

The system shall consist of a 400 CFM blower unit which forces air through a loop of 1-1/2" perforated PVC piping providing a stream of fresh air is blown into every compartment. This shall be in addition to the static louvered vents.

Piping shall be located at the upper rear most portion of the compartment to use as minimal amount of compartment area as possible.

System runs off a 110v outlet connected to the shoreline and is set to cycle 2 hours on and 4 hours off.

Piping shall be painted silver to help conceal the piping.

COMPARTMENT DOORS

ROLLUP DOOR - SIDE

All side body compartments shall have ROM Robinson Roll-o-matic compartment doors with "painted" finish.

Doors feature top, side and bottom seals to keep dirt and moisture out of the compartment.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

Interlocking end shoes allow the door to operate as one unit, eliminating left-to right movement.

Side track finishing flange eliminates gap between the shutter body, keep moisture out.

Interlocking slats prevent knife penetration, offering both maximum security and a high-image appearance for custom striping and painting.

Innerseal between each slat prevents moisture from entering compartment and allows quieter performance by preventing metal-to-metal contact.

Continuous, one-piece lift bar.

One-piece aluminum side track enables the shutter to slide up and down without obstruction and provides quick installation.

Heavy duty finger pull provides easy, one-hand operation.

Anodized aluminum sill plate protects the edge of the compartment.

Includes ROM magnetic door ajar and compartment light switch unit. The magnetic door ajar switch is completely contained within the door as part of the shutter design.

A ROM seven (7) year standard warranty is included which covers manufacturing defects, used under conditions of normal use with periodic maintenance.

DOOR TRIM

The trim around the roll up door shall be painted to match the color of the door.

ROLL UP DOOR MODIFICATION - PULL STRAP

One (1) nylon webbing pull strap shall be provided on the interior of each roll up door. The strap shall aid in the closing of taller compartment doors.

ROLLUP DOOR - REAR

The rear compartment shall have a ROM Robinson Roll-o-matic compartment door with "satin" finish.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

Door features top, side and bottom seals to keep dirt and moisture out of the compartment.

Interlocking end shoes allow the door to operate as one unit, eliminating left-to right movement.

Side track finishing flange eliminates gap between the shutter body, keep moisture out.

Interlocking slats prevent knife penetration, offering both maximum security and a high-image appearance for custom striping and painting.

Innerseal between each slat prevents moisture from entering compartment and allows quieter performance by preventing metal-to-metal contact.

Continuous, one-piece lift bar.

One-piece aluminum side track enables the shutter to slide up and down without obstruction and provides quick installation.

Heavy duty finger pull provides easy, one-hand operation.

Anodized aluminum sill plate protects the edge of the compartment.

Includes ROM magnetic door ajar and compartment light switch unit. The magnetic door ajar switch is completely contained within the door as part of the shutter design.

A ROM seven (7) year standard warranty is included which covers manufacturing defects, used under conditions of normal use with periodic maintenance.

ELECTRICAL - 12 VOLT

12 VOLT ELECTRICAL SYSTEM

All wiring and electrical equipment shall meet N.F.P.A. 1901 (2016 edition) and SAE standards.

A master optical warning device switch that energizes all of the optical warning devices shall be provided.

The optical warning system shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right of way. The

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

other mode shall signal that the apparatus is stopped and is blocking the right of way. Switching of modes shall be controlled by the parking brake.

All wiring to be GXL ultra high temperature cross link type.

Wiring installed by the builder to be run in protective split loom where exposed to the outside.

Where wires pass through body compartments or panels grommets, snap bushings, or compression fittings shall be utilized.

All wiring harnesses and associated wiring shall be secured with nylon "ultra violet resistant" cable ties or bolted to the body with cable clamps.

Polyolefin "heat shrink" tubing with adhesive or Deutsch water tight connectors shall be used on all exterior wiring connections.

Flexible non-conductive polyurethane film shall be sprayed on all terminal studs, relays, starter, batteries, etc. To prevent corrosion.

All wiring shall be protected by automatic reset circuit breakers which conform to SAE standards. Any required exterior fuses shall be protected by an environmentally sealed fuse holder.

The breakers shall be selected to prevent wire damage when subjected to extreme current overload. Wiring to be color, function, and/or number coded.

A Class I power distribution relay board shall be utilized.

Distribution board contains independently switching relays with selectable input polarity. Relays can be connected in either their normally open or normally closed positions.

Relay board features heavy duty components, visual diagnostics, and load management inputs. System is user friendly for trouble shooting.

A wiring diagram for the body electrical system shall be included with the apparatus.

JUNCTION BOX

The electrical junction box for all 12 volt wiring shall be located in a convenient location. It will be recessed into the compartment wall not to protrude into the storage area. It shall have a removable access panel.

The compartment shall be sealed and weather proof. All components in compartment shall have identification tags.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

CLEARANCE LIGHTS

All required Clearance lights shall be provided at the rear and on each side of the unit to meet Federal regulations. All lights will be (LED) Light Emitting Diode type with a five (5) year warranty.

Rear and body clearance lights shall be Whelen OS, Red LED. A total of seven (7) shall be provided as follows.

Two (2), one each side in the rub rail as far rearward as practical facing to the side.

Two (2), one each side at the top of the apparatus body facing to the rear. (These are in addition to required lights)

Three (3) center mounted in the rub rail facing to the rear.

A Trucklite model 60072Y Amber LED turn signal light with stainless steel flange shall be mounted one (1) each side in rear wheel well as required by NFPA 1901.

LED STEP AREA LIGHTING

Four (4) step area lights shall be provided. One mounted each side on the front compartment face to illuminate the panel running board steps and two mounted at the rear of the unit to illuminate the rear tailboard step. These lights shall be activated when the parking brake is applied.

Whelen 3SCOCD CR series 3.00" round LED lights shall be utilized. Depending on body application the lights will either be mounted in a rubber grommet or surface mounted with a chrome flange.

HAZARD LIGHT

A red flashing light shall be located in the driving compartment, and shall be illuminated automatically whenever the apparatus parking brake is not fully engaged and any passenger or equipment compartment door is open, or any other device is opened, extended, or deployed that creates a hazard or is likely to cause damage to the apparatus if the apparatus is moved. The light shall be marked "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

LICENSE PLATE LIGHT

One (1) Trucklite model 15055 LED license plate light and bracket shall be provided on the rear of the unit.

12 VOLT OUTLETS

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

There shall be 12 volt cigarette lighter type receptacles to provide a power source for 12 volt electrical equipment. The receptacles shall be wired to be live with the battery master switch. Each receptacle shall be wired using a terminal block. Splicing shall not be permitted.

The 12 Volt outlets shall be located in the following locations.

A total of five (5) will be provided.

LOCATIONS: L2, L4, R2, R3, inside the EMS compartment

The exact locations will be determined at the pre paint inspection.

POWER POINTS CONSOLE MOUNT

The cab shall include two (2) 12 volt cigarette lighter type receptacles on the EMS console in the crew area to provide a power source for 12 volt electrical equipment. The cab shall also include two (2) universal serial bus (USB) charging receptacles on the EMS console to provide a power source for USB chargeable electrical equipment. Each USB port shall be capable of a 5 Volt-500 milliamperere output. The receptacles shall be wired to be live with the battery master switch.

THE EXACT LOACTION WILL BE DETERMINED AT THE PRE CONSTRUCTION CONFERENCE. **NO EXCEPTION.**

EMERGENCY WARNING LIGHT SWITCH CONTROLS

All warning light switches shall be mounted in the cab in a readily accessible location.

The master switch and individual switches furnished with custom chassis shall be utilized to allow preselection of lights. The light switches are to be "rocker" type with an internal indicator light to show when the switch is energized. All switches to be properly identified and mounted in a removable panel for ease in servicing. Identification of the switches shall be done by either printing or etching on the switch panel.

WHELEN LED QUAD CLUSTER REAR DOT LIGHTING

BACKUP LIGHTS

Two (2) Whelen model 60C00VCR 600 series LED backup lights

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

STOP/TAIL LIGHTS

Two (2) Whelen model 60R00XRR 600 series MAX LED Brake/Tail lights

DIRECTIONAL LIGHTS

Two (2) Whelen model 60A00TAR 600 series LED arrow directional turn signal lights

The backup lights, stop/tail lights, and directional lights along with rear lower level warning lights shall be installed on the lower rear face of the unit and shall be recessed in Cast polished aluminum housings.

R.O.M COMPARTMENT LIGHTING - 30" COMPARTMENTS

R.O.M. LED compartment lighting shall be provided to provide full illumination of the wheel well compartments. The lighting shall be mounted behind the door track on both sides of the compartment.

Compartment lighting shall activate automatically by the opening and closing of the door.

All main apparatus body compartments shall have door ajar switches.

R.O.M COMPARTMENT LIGHTING - 60" COMPARTMENTS

R.O.M. LED V3 compartment lighting shall be provided to provide full illumination of the full height compartments. The lighting shall be mounted behind the door track on both sides of the compartment.

Compartment lighting shall activate automatically by the opening and closing of the door.

All main apparatus body compartments shall have door ajar switches.

LED GROUND LIGHTING

The apparatus shall be equipped with lighting capable of providing illumination at a minimum level of two (2) footcandle on ground areas within 30.00" of the edge of the apparatus in areas designed for personnel to climb onto the apparatus or descend from the apparatus to the ground level. Lighting designed to provide illumination on areas under the driver and crew riding area exits, which shall be activated automatically when the parking brake is set. Lights shall be installed in a manner that illuminates all walkways and steps for safe operation of the apparatus.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

A total of eight (8) TecNiq E10-WSOO-1 6.00" LED lights mounted in a stainless steel bracket shall be utilized.

- Two (2) lights mounted under L1/R1 compartment
- Two (2) lights mounted under L2/R2 compartment
- Two (2) lights mounted under L4/R4 compartment
- Two (2) lights mounted under the rear step.

PUMP COMPARTMENT LIGHT

One (1) SoundOff model ECVCSLLED10-10" LED pump compartment light shall be provided within the pump enclosure. The control switch shall be located on the pump operators panel.

HOSE BED LIGHTS

There shall be four (4) Whelen 3SCOCD CR series 3.00" round LED lights mounted at the front of the hose bed. The lights will be activated when the parking brake is applied.

In addition to the activation above, a switch shall be located in the cab to activate the hose bed lights manually.

COMPARTMENT LIGHTS

SoundOff Signal model ECVCLLED43, 43" LED lighting shall be provided inside the upper body compartments on the passenger's side and mounted on the compartment doors.

The lighting shall be mounted to provide additional illumination for the hose bed.

The lighting shall be automatic by the opening and closing of the door.

A total of two (2) lights shall be provided.

The exact placement shall be determined at the pre-paint inspection.

NOTE - These are in addition to the standard compartment lighting.

SEON INVIEW 360 VIDEO SYSTEM KIT

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

An FRC, powered by SEON, model SNA100-A00 InView 360 Video system kit shall include (4) four cameras, an Electronic Control Unit (ECU), required harnesses and a manual camera switch. The system kit shall provide split video feed with bird's-eye view and individual camera views. It shall be capable of integrating with an existing vehicle system for an automatic camera view, which seamlessly switches from front/left/right/rear views based on turn signal and reverse activation. It shall also feature a switch module that allows the operator to override the default camera view. The system shall feature NTSC video inputs for (4) four cameras, and also have NTSC, CVBS (SD) 2-channel view output. It shall have a 150 degree horizontal camera view angle, and have a resolution of 720 x 480 at 30 FPS (frames per second).

The system shall operate from 9 to 36 VDC, and shall consume no more than 15 watts of power. It shall operate from -22° F to 158° F. It shall weigh less than 8 lbs. The ECU (Electronic Control Unit) shall have dimensions of 4.54" L x 6.24" H X 1.34" D. The camera shall have dimensions of 2.4" L X 2.0" H X 1.7" D.

SEON INVIEW 360 ARMF, 360 to DVR ADAPTER

An FRC, powered by SEON, model SNA009-B10 InView 360 ARMF 360 to DVR Adapter shall connect inView 360 video output feed into the Trooper TL-HD5 DVR Recorder for recording in 360 view.

SEON INVIEW 360 SAV-MON, AVM 7.4" In Cab Video Monitors

Dual FRC, powered by SEON, model SNA010-B10 InView 360 SAV-MON, AVM 7.4" In Cab Video Monitors shall include a 7" diagonal color LCD TV display monitor with viewing dimensions of 6.06" W x 3.42" H. The monitor shall be a TFT Active Matrix System display with an 800 x 480 resolution and a display format of 16:9 (aspect ratio).

The monitors shall operate from 12 VDC, and the connection terminals shall include a composite video in and power in. The monitors shall weigh 0.9 lbs., and it shall have dimensions of 5.5" H x 2.75" W x 11" H. **NOTE: THE MONITORS MOUNTING LOCATIONS SHALL BE DETERMINED AT THE PRE PAINT INSPECTION. NO EXCEPTION.**

SEON INVIEW 360 Trooper TL-HD5 5-CHANNEL DVR

An FRC, powered by SEON, model SNA050-A00 InView 360 Trooper TL-HD5 5-CHANNEL DVR shall record up to (4) four video channels plus (1) one high-definition channel at 30 FPS (frames per second) on all channels simultaneously. The video resolution shall be 720 x 480 D1 on (4) four channels and 1280 x 720 HD progressive scan on the high definition channel. The DVR shall feature dual streaming technology that records (2) two information streams: (1) one for hi-resolution playback and (1) one for low resolution. It shall also feature a low frame

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

streaming rate for real-time viewing over cellular networks, if equipped with optional hardware, and VMax Stream software service support. It shall support frame advance, FFD (fast-forward) and REV (Reverse) playback up to 32X. It shall support geo-fencing capability, which delivers alerts when a vehicle deviates from geographic boundary. The DVR shall include GPS receiver for recording of vehicle speed and location.

The DVR shall feature 500GB of main storage (HDD), and 32 GB of back up storage on SD card. It shall offer 3 Ethernet ports. The DVR shall have Smart-Temp technology providing automatic monitoring of DVR operational temperature and DVR control. It shall have Smart-Start technology to ensure the DVR is safeguarded against electrical spikes with vehicle start-up voltage protection. The DVR shall include a built-in 3-axis G-sensor. It shall operate from 8 to 32 VDC, shall have transient protection for 600 W for power input, and shall have 400W per signal input. The DVR shall measure 2.5”H x 7”W x 9.5” D. It shall weigh 5.3 lbs. The DVR shall operate from -22° F to 122° F, and shall meet FCC emissions requirements. It shall be tested in accordance with SAE-1455 and MIL-STD 810 for vibration.

Location of the various components shall be determined at the pre paint meeting. NO EXCEPTION.

WARNING LIGHTS

NFPA APPROVED UPPER LEVEL LIGHT PACKAGE

ZONE A - FRONT UPPER

A cab roof light bar will be furnished with the custom chassis.

ZONE B & D - SIDE UPPER

Two (2) Whelen 900 Series Super LED lights with chrome bezels will be mounted one each side on the upper front side corners of the body.

Two (2) Whelen 900 Series Super LED lights with chrome bezels will be mounted one each side on the upper rear side corners of the body.

ZONE C - REAR UPPER

Two (2) Whelen 900 Series Super LED lights with chrome bezels will be mounted on the upper rear of the body.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICACTIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

UPPER LEVEL LIGHT LENS COLOR

REAR - The upper level driver's side light shall have amber LEDs and an amber lens. The upper level passenger's side shall have blue LEDs and a blue lens.

SIDES - The side lights shall have red LEDs and red lenses.

WHELEN LOWER LEVEL LIGHTING

ZONE A - LOWER

Four (4) LED lights provided by chassis manufacture.

ZONE B & D- SIDE LOWER

Two (2) LED lights provided by the chassis manufacture one (1) each side on the bumper extension.

Two (2) LED lights provided by the chassis manufacture one (1) each side over the front wheels.

Two (2) model 600 series Super LED with chrome bezel mounted one (1) each side in the rear body fender area.

ZONE C - LOWER

Two (2) model 600 series Super LED mounted on the lower rear of the apparatus in CAST4V casting.

LOWER LEVEL LIGHT LENS COLOR

REAR - The lower level driver's side light shall have blue LEDs and a blue lens. The lower level passenger's side shall have red LEDs and a red lens.

SIDES - The side lights shall have red LEDs and red lenses.

ARROW STICK - REAR

One (1) Whelen TAZ86 LED Traffic Advisor lights shall be provided. Each light shall measure 1.74" high x 2.17" deep x 30.26" long. Each unit shall include eight (8) Linz6 LED lamps with amber lens.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

Unit shall be mounted center rear of unit.

A TADCTL1 control head shall be provided and shall be mounted in the chassis cab.

Final location to be determined at the pre paint conference.

ARROW STICK - FRONT

One (1) Whelen TAZ86 LED Traffic Advisor lights shall be provided. Each light shall measure 1.74" high x 2.17" deep x 30.26" long. Each unit shall include eight (8) Linz6 LED lamps with amber lens.

Unit shall be mounted below the forward facing light bar, centered.

A TADCTL1 control head shall be provided and shall be mounted in the chassis cab.

Final location to be determined at the pre paint conference.

SIRENS

ELECTRONIC SIREN

The electronic siren will be furnished with the custom chassis.

SPEAKERS - FEDERAL

There shall be two (2) siren speakers provided. Each speaker shall be a Federal, Model ES100, 100 watt with a Federal Signal ESFMT-EF stainless steel grille. Each speaker shall be connected to the siren amplifier.

The speaker(s) shall be recessed in the front bumper on the 45 degree corners.

SCENE LIGHTS - 12 VOLT LED

SCENE LIGHTS

Akron Brass model Revel ELRE-SLDC LED surface mount lights shall be provided and installed on the apparatus body as listed below.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

Each lamp head shall have sixteen (16) LED lights dedicated to lighting objects at a distance and six (6) High powered LED lights to distribute light across the entire scene. Each lamp head shall draw 9.1 amps and generate 14,000 lumens total. Each lamp head shall measure 5.25 inches in height X 7.50 inches in width. The lamp heads shall be powder coated black.

A total of six (6) lights will be provided on the body.

Location: Two (2) mounted each side of the body, one (1) at the front and one (1) at the rear, and two (2) on the rear face of the unit.

Lights will be controlled by three individual switches located in the cab.

Rear lights will also be activated when unit is put into reverse.

SCENE LIGHTS - CAB

A total of two(2) lights will be provided on the chassis cab as supplied by the chassis manufacturer.

BROW LIGHT

The brow light(s) will be furnished with the custom chassis.

GENERATOR

HARRISON HYDRAULIC DRIVEN AC ELECTRIC SYSTEM

The generator shall be one (1) Harrison MAS Hydraulic Driven Generator rated at 8,000 watts, 66/33 amps, 120/240 VAC, 60Hz, 1-phase

The generator shall be designed and assembled by a company with no less than 20 years experience in the manufacture of hydraulic driven generators.

The generator shall use a structural steel frame which affords protection to the components and provides a unitized mounting module.

The generator shall use a cover consisting of NFPA approved diamond tread plate.

The generator shall use a Self-Sealing Air Intake to prevent recirculation of exhaust air.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The generator shall use a Twin Draft Air Duct for the alternator and heat exchanger; located on the same side of the generator.

The generator shall be designed to utilize Dual-Fan Technology for cooling.

The generator shall use a single heat exchanger to cool the hydraulic oil.

The generator shall use an industrial type alternator with heavy-duty bearings and brushless design.

The generator shall use an axial piston hydraulic motor.

The generator shall use an axial piston variable displacement hydraulic pump.

The generator shall use a meter to monitor the frequency, voltage and amperage of each leg.

The generator shall have top access to the oil filter, oil fill tube and electrical interface box.

The generator shall not utilize electronic controls or a multiplex system to control the frequency.

The generator shall be capable of producing the full nameplate power when driven from the vehicle PTO from idle to maximum engine speed.

The generator shall be capable of being used while vehicle is either stationary or in motion.

The generator shall be capable of normal operation using a commonly available premium hydraulic oil; Mobile DTE series or equivalent. All fluid service points shall be in close proximity to the reservoir for ease of scheduled maintenance.

120/240 ELECTRICAL SYSTEM

GENERAL

Any fixed line voltage power source producing alternating current (ac) line voltage shall produce electric power at 60 cycles plus or minus 5 cycles.

Except where superseded by the requirements of NFPA 1901, all components, equipment, and insulation procedures shall conform to NFPA 70, National Electrical Code (herein referred to as the NEC).

Line voltage electrical system equipment and materials included on the apparatus shall be listed and installed in accordance with the manufacturer's instructions. All products shall be used only in the manner for which they have been listed.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

GROUNDING

Grounding shall be in accordance with Section 250-6 "Portable and Vehicle Mounted Generators" of the NEC.

Ungrounded systems shall not be used. Only stranded or braided copper conductors shall be used for grounding and bonding.

An equipment grounding means shall be provided in accordance with Section 250-91 (Grounding Conductor Material) of the NEC.

The grounded current carrying conductor (neutral) shall be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor shall be colored white or gray in accordance with Section 200-6 (Means of Identifying Grounding Conductors) of the NEC.

In addition to the bonding required for the low voltage return current, each body and driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor.

This conductor shall have a minimum amperage rating of 115 percent of the name plate current rating of the power source specification label as defined in Section 310-15 (Ampacities) of the NEC. A single conductor, properly sized to meet the low voltage and line voltage requirements shall be permitted to be used.

All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source.

OPERATION

Instructions that provide the operator with the essential power source operating instructions, including the power-up and power-down sequence shall be permanently attached to the apparatus at any point where such operations can take place.

Provisions shall be made for quickly and easily placing the power source into operation.

The control shall be marked to indicate when it is correctly positioned for power source operation.

Portable Generator Installations shall comply with Article 445 (Generators) of the NEC.

OVERCURRENT PROTECTION

The conductors used in the power supply assembly between the output terminals of power source and the main overcurrent protection device shall not exceed 144 in.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

(3658mm) in length.

For fixed power supplied, all conductors in the power supply assembly shall be Type THHW, THW, or use stranded conductors enclosed in nonmetallic liquid tight flexible conduit rated for a minimum of 194 degrees F (90 degrees C).

WIRING METHODS

Fixed wiring systems shall be limited to the following: Metallic or nonmetallic liquid tight flexible conduit rated at not less than 194 degrees F (90 degrees C), or Type SO or Type SEO cord with a WA suffix, rated at 600 volts at not less than 194 degrees F (90 degrees C).

Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, brake lines, hydraulic lines, exhaust system components, or low voltage wiring and shall be:

Separated by a minimum of 12 in. (305mm) from exhaust piping or properly shielded, and separated from fuel lines by a minimum of 6 in. (152 mm) distance.

Electrical cord or conduit shall be supported within 6" (152 mm) of any junction box and at a minimum of every 24 in. (610 mm) of run.

Supports shall be made of nonmetallic materials or corrosion protected metal. All supports shall be of a design that does not cut or abrade the conduit or cable and shall be mechanically fastened to the vehicle.

WIRING IDENTIFICATION

All line voltage conductors located in the main panel board shall be individually and permanently identified. The identification shall reference the wiring schematic or indicate the final termination point. When prewiring for future power sources or devices, the unterminated ends shall be labeled showing function and wire size.

WET LOCATIONS

All wet location receptacle outlets and inlet devices including those on hardwired remote power distribution boxes shall be of the grounding type, provided with a wet location cover, and installed in accordance with Section 210-7 "Receptacles and Cord Connections" of NEC.

All receptacles located in a wet location shall be not less than 24 in. (610 mm) from ground. The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees of vertical. No receptacle shall be installed in a face up position.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

DRY LOCATIONS

All receptacles located in a dry location shall be of the grounding type.

All receptacles shall be marked with the type of line voltage. (120 volts or 240 volts)

LISTING

All receptacles and electrical inlet devices shall be listed to UL 498, Standard for Safety

Attachment Plugs and Receptacles, or other appropriate performance standards.

ELECTRICAL SYSTEM TESTING

The wiring and associated equipment shall be tested by the apparatus manufacturer or the installer of the line voltage system.

The wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for 1 minute. The test shall be conducted between live parts and the neutral conductor, and between live parts and the vehicle frame with any switch in the circuit(s) closed. This test shall be conducted after all body work has been completed. Electrical polarity verification shall be made of all permanently wired equipment and receptacles to determine the connections have been properly made.

OPERATIONAL TEST PER NFPA 1901 CHAPTER 19-14.4

The apparatus manufacturer shall perform the following operation test and shall certify that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order.

The prime mover shall be started from a cold start condition and the line voltage electrical system loaded to 100 percent of the nameplate rating.

The power source shall be operated at 100 percent of its nameplate voltage for a minimum of 2 hours unless the system meets Category Certification as defined in NFPA 1901 chapter 19-14.5.

LOAD CENTER

A, Square D, breaker box shall be provided with separate breakers for each light and/or outlet. Breakers will be rated to load demand. The load center shall be installed in customer specified location which shall be determined at the pre paint inspection.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

CIRCUIT BREAKERS

Individual breakers shall be provided for all online equipment to isolate a tripped breaker from affecting any other online item.

120 AND 240 VOLT RECEPTACLES

OUTLETS

Five (5) 120 volt outlets shall be provided. The outlets shall be either 20 amp twist-lock outlets (NEMA L5-20) with weatherproof covers or 15 amp duplex straight blade outlets (NEMA 5-15). Wiring shall be in flexible conduit.

LOCATIONS: L2, L4, R2, R3, inside the EMS compartment

The exact locations, outlet styles and power source (generator or shoreline power) will be determined at the pre paint inspection.

POWER STRIP

There shall be one (1) 120 volt, 15 amp power strip with a minimum of six (6) straight blade receptacle positions shall be provided with wiring in flexible conduit to the shoreline.

Mounting shall be on top of the EMS compartment. The exact locations will be determined at the pre paint inspection.

HYDRAULIC ELECTRIC AND AIR REELS

ELECTRIC CABLE REEL

One (1) Hannay #ECR-1616-17-18 series electric cable reel with electric rewind, shall be provided on the apparatus. The reel shall have four (4) conductor wiring and four (4) fully enclosed collector rings. The reel shall be rated for continuous duty and installed to be easily accessible for removal, cord access, maintenance, and servicing.

The power rewind cable reel spool areas shall be visible to the operator during the rewind operation, or the reel spools shall be encapsulated to prevent cable from spooling off the reel. The power rewind type reel shall have the control in a position

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

where the operator can safely observe the rewinding operations. The rewind control or crank shall not be over 72 inches above the operator's standing position.

The 12-volt electrical rewind supply cable shall be adequate size for reel capacity and protected with a circuit breaker sized for the cable and located at the power source. The rewind control shall be a Hannay #900-30 push sealed button with operational label next to button.

REEL CAPACITY

The reel shall be designed to hold 110 percent of the capacity needed for the intended cable length. The wire size shall be in accordance with NEC Table 400-5(A).

LABELING

A label shall be provided in a readily visible location adjacent to the permanently connected reel. It shall indicate the following: Current rating, Current type, Phase, Voltage, Total cable length.

ELECTRICAL SUPPLY WIRING TO REEL

The wiring shall terminate in a sealed conduit box at the reel with mechanical type connectors for quick removal of reel. The reel shall be wired to the breaker box and circuit breaker sized to wire size.

ELECTRICAL CORD

The reel shall be provided with one hundred fifty feet (150') of 10/4 yellow electrical cable, type SEO W-A, 30 amp, 240 volt wire. The cord shall terminate with a NEMA 4 wire twist lock connector.

REEL MOUNTING LOCATION

The reel to be mounted in the upper body compartment on the passenger side facing rearward. There shall be a lift up door with a pneumatic stay arm for accessing the reel and deploying the cord.

CABLE ROLLER ASSEMBLY FOR REEL

A Hannay model #EH-678 captive type roller assembly shall be installed at the reel assembly. The rollers shall be mounted to permit the cable to feed directly off the reel.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The exact design and location will be determined at the pre paint inspection.

JUNCTION BOX

A lighted four way junction box will be provided. The junction box will be provided with a NEMA 4 wire twist lock plug.

A bracket will be provided hold the junction box and will be mounted in a location near the reel.

Wiring to the junction box will be two (2) 110 circuits. A total of four outlets will be provided on the junction box. The exact layout of outlet types will be determined at the pre paint inspection.

PAINT, LETTERING, AND STRIPING

PAINT AND PREPARATION

The body and cab shall be painted with a base coat/clear coat paint coating which shall be applied in accordance with the paint manufacturers' requirements. The paint finish shall be covered with a 10-year non prorated warranty. **NO EXCEPTION.**

At a minimum, all metal surfaces will be properly sanded, prepared and finished prior to any painting. A primer shall be applied to fill any minor surface defects and provide an adhesion layer between the surface to be painted and the Base Coat/Clear Coat.

The primer will be sanded to a smooth finish prior to applying the Base Coat/Clear Coat.

Color Match and Texture, all to meet or exceed industry standards for automotive finish.

Body assemblies that cannot be finish painted upon assembly shall be painted prior to finish assembly. All doors are removed and painted separate from the body.

Prior to reassembly and reinstallation of lights, handrails, door hardware, and any miscellaneous items; a gasket material or silicone sealant shall be applied to prevent damage to the finish painted surfaces and to protect against electrolysis between dissimilar metals.

Touch up paint shall be provided for each color paint used.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

The cab shall be ordered painted two toned from the chassis supplier. The body will be painted two toned to match the cab.

The Body Paint Break Line to be determined at Pre-Paint Inspection.

The paint spray outs provided by Spartan Chassis will be used to match the body paint colors.

LETTERING ALLOWANCE

Each proposal shall include a \$5,500.00 allowance for custom lettering prior to the delivery of the unit. The lettering shall be applied by VSP Marketing Graphic Group after delivery of the apparatus. The lettering layout shall be finalized between the Williamsville Fire Department and VSP Marketing Graphic Group. Any excess of the allowance not used shall be credited to the Williamsville Fire Department. Any amount in excess of the allowance shall be paid for by the Williamsville Fire Department.

REFLECTIVE CHEVRON - NFPA 15.9.3.2

50 percent of the rear-facing vertical surfaces, visible from the rear of the apparatus shall be equipped with retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees. Each stripe shall be 6" in width.

Stripe Colors will be diamond grade Red & Fluorescent Yellow.

FRONT BUMPER REFLECTIVE CHEVRON

The front bumper will be covered with Red & Black Chevron striping.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

EQUIPMENT AND EQUIPMENT MOUNTING

EQUIPMENT

The following equipment shall be provided along with any necessary mounting brackets. All other NFPA required equipment shall be furnished and mounted by the purchaser.

SUCTION HOSE

Two (2) Firequip Maxi-Flex 6" x 10' light weight PVC Suction hose with male and 6" long handled female couplers.

SUCTION HOSE STRAINER

One (1) South Park #BS4522AC, 6.00" barrel strainer will be provided and mounted in customer specified location.

10' FOLDING LADDER

One (1) Alco-Lite model #FL-10, 10' folding ladder shall be provided. Ladder shall consist of 1-section aluminum ladder with rubber feet and shall meet or exceed the latest NFPA standards.

14' ROOF LADDER

One (1) Alco-Lite model #DRL-14, 14' roof ladder shall be provided. Ladder shall consist of a single section aluminum ladder with folding steel hooks on BOTH ends and steel spikes on BOTH ends. Ladder shall meet or exceed the latest NFPA standards.

24' EXTENSION LADDER

One (1) Alco-Lite #PEL-24, 24' extension ladder. Ladder shall consist of 2 aluminum sections. Ladder shall meet or exceed the latest NFPA standards.

FLAT HEAD AXE

One (1) Council Tool (C60F) 6 lb steel flat head axe with a fiberglass handle shall be supplied and mounted in customer specified location.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

PICK HEAD AXE

One (1) Council Tool (C60P) 6 lb steel pick head axe with a fiberglass handle shall be supplied and mounted in customer specified location.

8' FIBERGLASS PIKE POLE

One (1) Duo-Safety Type FP, 8' fiberglass handle pike pole shall be provided consisting of a 8' hollow fiberglass pole 1-3/4" OD with a painted steel pike riveted to the pole.

PIKE POLE

One (1) Duo-Safety Type FP, 10' fiberglass handle pike pole shall be provided consisting of a 10' hollow fiberglass pole 1-3/4" OD with a painted steel pike riveted to the pole.

10LB ABC EXTINGUISHER

One (1) Amerex model FE-419-10 w/#812 Bracket, 10LB ABC Stored Pressure Dry Chemical Extinguisher shall be provided and mounted in customer specified location.

CO2 EXTINGUISHER

One (1) Amerex model FE-331 w/#811 bracket, 15lb CO2 Fire Extinguisher shall be provided and mounted in customer specified location.

2-1/2 GALLON PRESSURE WATER EXTINGUISHER

One (1) Amerex model FE-240 w/810 bracket, 2-1/2 gallon pressure water extinguisher shall be provided and mounted in customer specified location.

WHEEL CHOCKS

Two (2) Worden model HWG wheel chocks will be provided and mounted under the left front compartment.

VILLAGE OF WILLIAMSVILLE, NEW YORK

Village of Williamsville Fire Department

May 03, 2017

BID SPECIFICATIONS FOR Two (2) REAR MOUNT ENGINES

**Bidder
Complies**

Yes

No

AIR PACK BRACKETS

Two (2) air pack brackets shall be supplied and mounted on the rear wall of the cab, to the outside of the forward facing seats.

Each bracket shall match the SCBA brackets used in the SCBA seats.

SPANNER WRENCH SET W/HYDRANT WRENCH

Two (2) sets of Red Head style 148-3 spanner wrenches shall be provided and mounted in customer specified locations. Each set includes (1) 105 Hydrant wrench and (2) 101 spanner wrenches with mounting bracket.

Location: Location to be determined at the pre paint inspection.

SPANNER WRENCH SET

One (1) set of Red Head style 146-2 spanner wrenches shall be provided and mounted in customer specified location. Includes (2) 101 spanner wrenches with mounting bracket.

Location:

SAFETY FIRE VEST

The NFPA required Safety Vest will be supplied and installed by the purchaser before the truck is placed into service.

TRAFFIC CONES

The NFPA required traffic cones will be supplied and installed by the purchaser before the truck is placed into service.

AUTOMATIC EXTERNAL DEFIBRILLATOR (AED)

The NFPA required AED will be supplied and installed by the purchaser before the truck is placed into service.