# Township of Guelph/Eramosa

**Request for Quotes**
**Proposal FD2021-07**

**Quote to supply and deliver**
**Guelph/Eramosa Fire Department**
**Single Axle Rear Mount Aerial Platform**

**Sealed Proposals** marked clearly as to the contents in a sealed company envelope, will be received by the undersigned until:

**12:00 Noon, Friday June 4, 2021**

For the manufacture and supply of a Single Axle Rear Mount Aerial Apparatus for the Guelph/Eramosa Fire Department. The fire service proven device must be manufactured by a company actively engaged in designing and building this type of equipment. The vehicle shall conform to current NFPA Standard 1901 / U.L.C., as amended, and Ministry of Transportation (Ontario) regulations.

Three (3) printed copies of your proposal shall be submitted for distribution to the Selection Committee.

All questions are to be directed to **Jim Petrik, Fire Chief**. jpetrik@get.on.ca; 519-546-7546

Tenders, Quotations and Proposals are to be dropped off at Guelph/Eramosa Township, 8348 Wellington Rd 124, Rockwood, ON. N0B 2K0,
**Attention: Clerk/Director of Legislative Services**
Submissions received in Procurement after the closing time will not be accepted. The onus is on the bidder to ensure that the bid is received in the proper location and before the closing time.

**Bid results will be posted, when applicable, on the website after opening.**
**https://www.get.on.ca/doing-business-here/bids-and-tenders**

**Lowest or Any Proposal Not Necessarily Accepted**

***Please note that Canada Post does not physically deliver to this location. All other courier services do***

**1:00 Invitation to Bid**

Interested suppliers are invited to submit bids for the supply and delivery of a Single Axle Rear Mount Aerial Apparatus herein at the specified location and time listed below.

**2:00 Submission of Bids**

Three copies of your sealed submission must be returned **no later than 12:00 noon, Friday June 4** to:

**The Township of Guelph/Eramosa**
**Attention: Clerk/Director of Legislative Services**
**8348 Wellington County Rd 124**
**Rockwood, ON**
**N0B 2K0**

Submissions received after the scheduled closing date and time **will not be** accepted and will be returned unopened to the sender.

Bids that are incomplete, conditional, obscure or qualified, may be rejected.

Should you wish to elaborate on your submission, you may do so in the space provided or separately on company letterhead.

**Your signed Bid document shall be taken as your statement that you understand the requirements and agree to comply with it and any supplementary terms and conditions stated in the bid documents. It is also your agreement that you have checked and confirmed your pricing and by signing the Form of Proposal, you agree that you have not omitted any items from your bid and you will be bound by law to supply the items as specified at the prices stated**.

**3:00 Completion of Bids**

Bidders are to complete their submission on the Township's forms as provided, in ink or typewritten. The document **must** be properly signed and witnessed, or signed and sealed if the bidder is a Corporation.

**Note**: Vendor's Initials are required on the bottom of all pages where noted.

**4:00 Withdrawal of Bid**

Bidders may only withdraw their unopened submission (prior to the closing time of bids) provided the request to do so is received in writing by the Designated Official of the Township of Guelph/Eramosa, signed by an authorized agent of the Company, prior to the closing time specified for the receipt of bids.

If more than one bid has been received under the same name for the same project and no withdrawal notice has been received, the submission contained in the envelope bearing the latest date and time stamp shall be considered the intended bid. All others shall be considered withdrawn and returned to the bidder in the usual manner.

**5:00 Designated Official**

For the purpose of this proposal the Fire Chief, telephone (519) 546-7546, is the “Designated Official” and shall perform the following functions - releasing, recording and receiving all bid documents; opening, recording and checking of bids; answering queries of prospective bidders, considering extensions of time, reviewing bids received, ruling on the acceptance of those not completely meeting the requirements of this bid document and report to Council, if required.

**6:00 Delivery**

Prices proposed are to be F.O.B. 8348 Wellington Rd 124, Rockwood, ON N0B 2K0 and are to include all freight, delivery charges, dealer preparation, licensing (if required) and training.

Bid prices are to be declared and paid in Canadian Dollar (CDN) Funds.

Unless otherwise stipulated in writing, payment terms will be net 30 days from acceptance of vehicle, completion of training and receipt of invoice.

The Corporation requires delivery of the completed vehicle from the successful respondent at the earliest opportunity within the 2022 calendar year. Respondent shall indicate delivery lead-time details as provided for on the Form of Proposal.

The estimated date of award and issuing of Purchase Order is no later than **Friday, June 21, 2021**.

Full scoring points shall be awarded for a delivery “firm” date within 365 days of Purchase Order issuance; a loss of one point per 10 days after shall be calculated.

All Vehicle Delivery Dates shall be calculated from the Date that the Township of Guelph/Eramosa issues the Purchase Order to the selling Dealer. **No Exceptions.**

**7:00 Force Majeure**

If the successful respondent is delayed in completion of the work by labour disputes, strikes, lock-outs, fire, or by any cause of any kind whatsoever beyond the successful Respondent's control, then the time of delivery shall be extended for a period of time equal to the time lost due to such delays, at no cost penalty to the Corporation. However, no such delivery time extension shall be considered or made for delays unless written notice of same is given to the specified contacts, for this proposal within seven (7) calendar days of its (delay) commencement, other than in the case of a continuing cause of delay only one claim shall be necessary.

**8:00 Sales Tax**

Sales Tax status is to be shown separately, if applicable, on the Form of Proposal as follows:

a) Harmonized Sales Tax, 13%
b) Excise or any other applicable taxes
c) Vehicle Licensing is to be included in the price of the vehicle

If the Corporation is exempt from a tax, it should be noted “Exempt”. The bidder shall be responsible to contact the Federal or Provincial Sales Tax Branches directly to verify any questions on applicable taxes and, if applicable, shall be shown on the bid forms. **Any extra charges not specified will not be paid.**

**9:00 Approvals / Acceptance / Award**

The selection of the vendor is subject to the final approval of the Council of the Township of Guelph/Eramosa.

The Corporation will not be responsible for any errors or omissions by the vendor in bidding on this invitation and the price(s) shall remain firm as outlined above. By signing the Form of Proposal you agree that you have not omitted any items from your bid and you will be bound by law to supply the items as specified at the prices tendered.

The successful bidder will not, without written consent of the Designated Official, make any assignment or any sub-contract for the execution of any service or product hereby quoted on.

**10:00 General Specifications**

Complete detailed specifications and details on the product, which is being supplied, must be included with your bid. Where available, descriptive literature and/or detailed specification sheets should be included with your submission.

The equipment must be supplied complete to our specifications with all standard equipment essential to operation whether or not specifically referred to herein.

Vehicle equipment proposed must be new and meet the provisions of the Canada Motor Vehicle Safety Act and the Regulations that are in effect at the date of manufacture. The equipment to be supplied shall be of the latest manufacturer's make and model.

Where minimums are called for, they are to serve only as a guideline for dealers who choose to bid on equivalent equipment.

In cases of dispute as to whether or not a product or service proposed or delivered meets the conditions in the accepted bid submission, the decision of the Designated Official of the Corporation shall be final and binding on all parties.

**11:00 Qualified Products**

Any items proposed to be bid other than those brands or products specified in the documents issued by the Township of Guelph/Eramosa, require approval of the Designated Official. The items offered must be equivalent as to function, basic design, type and quality of material, method of construction and any required dimensions.

**12:00 Warranty**

The manufacturer's warranties are to be clearly stated in the space provided in the specifications. Any dealership warranty may also be specified. Warranties may also be attached on a separate sheet outlining warranty information and extended warranties where offered.

All official warranty documents are to be supplied prior to final acceptance of the unit/equipment. Extended warranty information should be recorded on the bid forms under comments together with costs, if applicable.

**13:00 Terms and Conditions**

Failure to comply with the instructions, terms, conditions and specifications of these Bid invitations may disqualify the submissions.

**14:00 Addendums**

Addenda may be issued in writing and posted on the Township's website during the proposal period up to 48 working hours prior to opening by the Designated Official. All addenda become part of the proposal documents and must be submitted with the vendor's bid. All questions from bidders must be in writing to the Designated Official. No addenda will be issued after 4:30 pm local time on Tuesday, June 1st and no questions will be taken after 4:30 pm on Wednesday, June 2nd.

The Owner has no responsibility to provide addenda. All Addenda will be posted on the website; **https://www.get.on.ca/doing-business-here/bids-and-tenders**

Bidders are to check the website for addenda prior to submitting their proposal.

**15.00 Evaluation Criteria**

The successful vendor will be selected based on an evaluation of the criteria outlined in the attached "Scoring Points Chart".

| | |
|---|---|
| Compliance to Minimum Specifications | 25 |
| Base Price, not including options:<br>Where A = bid and B = lowest bid<br>Base Bid: (Bx20)/A | 20 |
| "Firm" Delivery Date, maximum 365 days from issue of Purchase Order, loss of one point for every 10 days past 390 days. | 15 |
| Aerial Device Capability | 10 |
| Vehicle Length and Wheel Base | 5 |
| Cubic Meters of Compartment Storage | 5 |
| Fire Pump Layout and Ergonomics | 5 |
| Water Tank Capacity, loss of one point for every 94 liters less than 1892 liters. | 5 |
| Warranty Included<br>- Cab/Chassis<br>- Drive Train<br>- Pump<br>- Paint | 5 |
| Training Provided<br>- To Mechanics<br>- To Firefighters | 5 |
| **TOTAL** | **100** |

**16:00 Legal Claims**

No Proposal will be accepted from any company or supplier which has a claim or instituted a legal proceeding against the Corporation or against whom the Corporation has a claim or instituted a legal proceeding with respect to any previous contract, without prior approval by Council**.**

No proposal will be accepted from any company or supplier which has a claim of patent or infringement law against them for any physical design or intellectual property.

**17:00 Lobbying Restrictions**

a) Consultant/Suppliers/Manufacturers, their staff members, or anyone involved in preparing Bids shall not engage in any form of political or other lobbying whatsoever or seek to influence the outcome of the procurement process or subsequent Award. This restriction extends to all of the Corporation's staff and members of Council.

b) The Corporation may reject any Bid by a Consultant/Supplier/Manufacturer that engages in such lobbying, without further consideration, and may terminate that Consultant/Supplier/Manufacturer's right to continue in the procurement process.

c) After the closing of the Bid Solicitation process, all communications shall be made through Procurement Division. No Consultant/Supplier/Manufacturer or person acting on behalf of a Consultant/Supplier/Manufacturer or group of Consultants/ Suppliers/Manufacturer, shall contact any elected official, company or any employee of the Corporation to attempt to seek information or to influence the Award.

d) Elected officials shall refer any inquiries about a Bid Solicitation process to the "Designated Official".

**18:00 Municipal Freedom of Information and Protection of Privacy Act, R.S.O., 1990, Chapter M. 56, As Amended and The Municipal Act, 2001, S.O. 2001, Chapter 25, As Amended**

The Township is a public institution, and as such, is required to adhere to legislation, including but not limited to the Municipal Act, 2001, S.O. 2001, Chapter 25, as amended, and the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA) R.S.O. 1990, Chapter M.56, as amended. All Quotation, Tender and Proposal responses submitted become the property of the

Township. Proponents should be aware that any and all documents submitted to the Township, including but not limited to Quotations, Tenders, Proposals, correspondence, e-mails and memoranda, will be subject to the protection and disclosure provisions of MFIPPA. Proponents are advised that the Township may be required to disclose these documents in part or in their entirety pursuant to the provisions of MFIPPA, unless the disclosure would be harmful to the Proponent's business interests or would be an unreasonable invasion of personal privacy as defined in MFIPPA. Proponents are reminded to identify in their Quotation, Tender or Proposal material, and in any other documents submitted to the Township, any specific financial, scientific, technical, commercial proprietary, or similar confidential information, the disclosure of which could reasonably expect to cause them harm. Complete Quotations, Tenders or Proposals are not to be identified as confidential. **Proponents Must Highlight Clearly In Yellow Within Their Quotation, Tender Or Proposal Or Any Other Document Information They Consider To Be Confidential**. Quotations, Tenders and Proposals submitted to the Township become subject to the laws that govern the operations of a public institution and the Township cannot assure Proponents that any portion of a Quotation, Tender, Proposal or other document, can be kept confidential under MFIPPA if the Township is required to disclose any such document as a result of direction by the Information and Privacy Commissioner/Ontario or as may be required by the Municipal Act. The information contained in this document may be utilized by the Proponent's solely for the purpose of preparing a submission to the Township. The Proponent will be advised in the event that the Township intends to release any third-party information it has received through the Quotation, Tender or Proposal process. Any other use of the information for any other purpose is not authorized by the Township.

**19:00 Payment**

The Township of Guelph Eramosa's method of payment will be via cheque. The winning bidder will provide the final invoice two weeks in advance of delivery of vehicle so that the Corporation has time to prepare the cheque. The cheque will be made available within 48 hours of vehicle acceptance.

**The Lowest or Any Submission Will Not Necessarily Be Accepted**

**The Township of Guelph/Eramosa**
**Proposal FD2021-07**
**One (1) Single Axle Rear Mount Aerial Platform**

## General Requirements

It is the supplier's responsibility to deliver a fully equipped vehicle as specified, with compatible components to provide dependable efficient service. It must be NFPA and ULC compliant. This unit shall meet or surpass the minimum requirements of the Fire Chief of the Township of Guelph/Eramosa.

### Proposal Process

This document is written to encourage all manufacturers to submit a bid. The specifications listed are the minimum acceptable requirement and are in no way written for any specific vendor/manufacturer. If you do not supply the exact item(s) as listed, you are entitled to substitute an equivalent or superior product, providing it will not adversely affect the performance of the equipment. Please list alternatives in the space provided or separately on company letterhead.

Three (3) copies of your submission are required for distribution to the Selection Committee.

All questions regarding the submission of your bid shall be directed to:

Jim Petrik, Fire Chief
Guelph/Eramosa Fire Department
(519) 546-7546
E-Mail: jpetrik@get.on.ca

Sealed bids will be received by the Township of Guelph/Eramosa's Clerk for the furnishing of all necessary labor, equipment and material for the Fire Apparatus and other equipment as outlined in the following specifications.

### Intent of Specifications

It shall be the intent of these specifications to cover the furnishing and delivery of a complete fire apparatus. These detailed specifications cover the requirements as to the type of construction, finish, equipment and tests to which the fire apparatus shall conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor.

**Instructions to Bidders**

Bids shall be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of 20 years. Furthermore, in order to insure fair, ethical, and legal competition, neither the original equipment manufacturer (O.E.M.) nor parent company of the O.E.M. shall have ever been fined or convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market (no exception).

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified.

Any apparatus manufacturer or their parent company that has had a performance bond called in the last 10 years shall not be eligible to bid. Any bids from these manufactures shall be immediately rejected.

Each bid shall be accompanied with three sets of manufacturer's specifications consisting of a detailed description of the apparatus, construction methods, and equipment proposed to which the apparatus furnished under contract shall conform. These specifications shall indicate size, type, model and make of all components, parts and equipment, providing proof of compliance with each and every item in the departments advertised specifications. A letter only, even though written on company letterhead, shall not be sufficient.

In accordance with the current edition of NFPA 1901 standards, the proposal shall specify whether the fire department or apparatus dealership shall provide required loose equipment.

The purchaser will utilize this advertised specification to compare all submitted bid proposals. To facilitate comparison, all bid proposal specifications shall be submitted in the same sequence as the advertised specification. Any bidder who fails to submit a set of bid proposal specifications, or who photocopies and submits these specifications as their own construction details will be considered non responsive. This shall render such proposal ineligible for award.

The purchaser's specification shall, in all cases, govern the construction of the apparatus, unless a properly documented exception or deviation was approved. Any bid indicating that the manufacturer's proposal shall supersede the purchaser's specification will be considered a complete substitute and immediately rejected.

**The purchaser has the right to reject any bids which does not meet these specifications and is the sole decider to deem which bid is in the best interest of the purchaser**.

**Exceptions**

These specifications are based upon design and performance criteria which have been developed by the fire department as a result of extensive research and careful analysis. Subsequently these specifications reflect the only type of fire apparatus that is acceptable at this time and all specifications herein contained are considered as minimum. Therefore, exceptions to the specifications may not be accepted.

Bidders shall indicate in the "yes/no" column if their bid complies on each item (paragraph) specified.

If a product brand name is specified and is commercially available to all bidders, an exception to such items is not acceptable and such bid may be rejected.

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. All deviations, no matter how slight, shall be clearly explained on a separate sheet, in the bid sequence, citing the page and paragraph number(s) of the specifications, how the proposal deviation is different, how the deviation meets or exceeds the specifications and why it is necessary, and entitled "**Exceptions to Specifications**". The buyer reserves the right to require a bidder to provide proof in each case that a substituted item is equal to that specified. The buyer shall be the sole judge in determination of acceptable substitutes.

Proposals that are found to have deviations without listing them or bids taking total exceptions to these advertised specifications will be rejected.

Bids not including all exceptions are a material breach and shall result in the bid being immediately rejected.

**General Design and Construction**

The cab, chassis, aerial device, pump module, and body are to be entirely designed for municipal firefighting duties. Commercial cab and chassis' shall not be accepted. The cab and chassis shall be assembled and painted by the prime vehicle manufacturer, which minimizes third party involvement on engineering, design, service and warranty issues.

All bidders shall provide a list of the company, manufacturing location, and engineering source for each individual major component, including but not limited to the welded cab assembly, the pump house module assembly, the chassis assembly, aerial device, body and electrical system.  Apparatus using any subcontracted cab, chassis, pump module, aerial device, electrical system or body will not be acceptable.

The apparatus shall be designed with due consideration to distribution of load between the front and rear axles. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association.

The bidder shall make accurate statements as to the apparatus weight and dimensions.

**Quality and Workmanship**
All welding shall follow American welding Society recommendations for structural welding, certified Canadian equivalence shall be accepted. Employees classified as welders are tested and certified to meet the American Welding Society codes upon hire and every three (3) years thereafter. The manufacturer shall be required to have a certified welding inspector in plant during working hours to monitor weld quality.

The manufacturer shall also be certified to operate a Quality Management System under the requirements of ISO 9001. These standards sponsored by the International organization for Standardization (ISO) specify the quality systems that shall be established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance shall be included with the bid.

**Delivery**
Apparatus, to insure proper break in of all components while still under warranty, **shall be delivered under its own power** - rail or truck freight shall not be acceptable. A qualified delivery representative shall deliver the apparatus and remain for a sufficient length of time to instruct four individual firefighter shifts in proper operation, care and maintenance of the equipment delivered. All Engine oil and filter(s), fuel filter(s), transmission oil and filter(s) shall be changed at local dealership prior to delivery to the Cambridge Fire Department.

**Manuals and Service Information**
The manufacturer shall supply at time of delivery, complete operation and maintenance manuals covering the complete apparatus as delivered. A permanent plate shall be mounted in the drivers compartment which specifies the quantity and type of fluid required including engine oil, engine coolant, transmission, pump transmission lubrication, and drive axle. The fluids shall be listed in metric.

**Performance Tests and Requirements**
A road test shall be conducted with the apparatus fully loaded and a continuous run of sixteen (16) kilometers or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axle shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. Vehicle shall adhere to the following parameters:

A) The apparatus, when fully equipped and loaded, shall have not less than 25 percent nor more than 50 percent of the weight on the front axle, and not less than 50 percent nor more than 75 percent on the rear axle.

B) The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level highway without exceeding the maximum governed rpm of the engine.

C) The service brakes shall be capable of stopping a fully loaded vehicle in 35 feet at 20 mph on a level highway. The air brake system shall conform to Canadian Motor vehicle Safety Standards (CMVSS).

D) The apparatus, fully loaded, shall be capable of obtaining a speed of 65 mph on a level highway with the engine not exceeding the governed rpm (full load).

**Failure to Meet Test**
In the event the apparatus fails to meet the test requirements of these specifications on the first trial, second trials may be made at the option of the bidder within 30 days of the date of the first trial. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes to conform to any clause of the specifications, within 30 days after notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not constitute acceptance.

**Service and Warranty Support (Dealership)**
**To assure full service after delivery, the selling bidder/dealership must be capable of providing service when required.**

The bidder/dealership shall show that the company is in position to render prompt service and to furnish replacement parts.

Each bidder/dealership must be able to display that they are actively in the fire apparatus service business by operating in conjunction with a factory authorized service center and parts repository capable of satisfying the warranty service requirements and parts requirements of the vehicle(s) being purchased.

The bidder/dealership must state the location of this authorized service center. This service center must have a staff of a minimum of two factory-trained mobile mechanics, well versed in all aspects of service for all major components of the apparatus. These said mobile mechanics must be licensed by the Ontario College of Trades, hold a valid

310T certification and shall be EVT certified. The service center must be within one hundred (100) kilometers of the Guelph/Eramosa Fire Department.

**Service and Warranty Support (Manufacturer)**
The manufacturer shall stock sufficient inventory dedicated to service and replacement parts to ensure quick response and minimize down time. Furthermore, the manufacturer shall house the inventory in a dedicated facility, with a dedicated shipping area that ensures service parts are given priority. The bidder shall provide detailed documentation of service and replacement part resources.

Parts identification shall be provided to both the dealer and the Fire Department through an online web-based application for the specific truck reflected in this specification. Access will be granted using the specific VIN number of the vehicle. The online web application will provide the ability to view complete bills of materials, digital photographs, parts drawings, assembly drawings, and access to all current operation, maintenance and service publications.

The manufacturer must also maintain a 24 hour/ 7 day a week, toll free emergency hot line.

The phone number shall be provided: _____

The manufacturer shall employ a staff of adequate size specifically dedicated to providing customer support and parts for the fielded fleet of vehicles it has produced.

The manufacturer must be capable of providing both in-house and on-site service for the apparatus.

The manufacturer shall offer regional factory hands-on repair and maintenance training classes.

The manufacturer shall employ certified EVT technicians on staff, not only providing technical expertise in the repair of fire apparatus, but also demonstrating the commitment to service after the sale.

**Liability**
The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

To The: Township of Guelph/Eramosa

Hereinafter called the "Corporation"

Proposal For: The Manufacture and Supply of a Single Axle Rear Mount Aerial Platform

Under Contract No. Proposal FD2021-07

_____

(Name of Firm or Individual Tendering)

Address and Postal Code:

_____

_____

Name of Person Signing for Firm: _____

Position of Person Signing for Firm: _____

Phone Number: _____ Fax Number: _____

E-Mail: _____

We understand from the Specification, what is required and agree to provide in satisfactory working condition, an Aerial Apparatus for the total sum of (including licensing):

Price (CDN) $_____

H.S.T. ( 13%) $_____

Total $_____

State Delivery Terms & Date:

_____

Make and Model of Apparatus Proposed: _____

**Proposal FD2021-07**

**Single Axle Rear Mount Aerial Platform**

If more space is needed, bidders may submit additional information on company letterhead.

| Item | State Actual – Comments |
|---|---|
| Delivery Date (number of days after Purchase Order is issued) | |
| Vehicle Wheel Base | |
| Vehicle Turning Radius | |
| Cab size – center of front wheel to back of cab | |
| Vehicle Length | |
| Overall Vehicle Height | |
| Water Tank Size (Liters) | |
| Total Aerial Vertical Reach | |
| Total Aerial Horizontal Reach (At 0 degrees) | |
| Operating Range (-/+ degrees) | |
| Aerial Tip Load Limit (Dry waterway) @ 0 Degrees Full Extension | |
| Aerial Tip Load Limit (Wet waterway) @ 0 Degrees Full Extension | |
| Number of Stabilizers | |
| Number of Chassis Drive Axles | |
| Firefighter Training Included | |
| Pump size – Liters Per Minute | |
| Aerial Monitor flow – Liters Per Minute | |
| Ground Ladder Storage Location(s) | |
| Pike Pole Location(s) | |

I/We hereby agree that notification of acceptance of this Proposal shall be in writing, and may be sent by prepaid post, at the address set out herein, and if sent by prepaid post, acceptance shall be deemed to have been made on the date of the mailing of such notification.

I/We, agree that we have checked the Township of Guelph/Eramosa website and are in receipt of addenda ____ to ___ inclusive, and the tender price includes the provisions set out in such addenda.

I/We certify that we are fully compliant with the requirements of the Ontario Retail Sales Tax Act and with Harmonized Sales Tax legislation;

Ontario Retail Sales Tax # _____

Signed at the_____of_____ in the
(City/Town)

_____ this_____day of _____, 2021.
(County/Regional Municipality)

_____ _____

Signature of Authorized Signing Agent Signature of Corporate Witness

Seal of The Corporation
(if incorporated)

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

## Vehicle Appendix "A"

This section outlines the minimum specifications to be met. Manufacturers are to state whether or not their proposal meets the specification stated. Additional information can be supplied on company letterhead where specifications are exceeded.

**SINGLE SOURCE MANUFACTURER**

Bids shall only be accepted from a single source apparatus manufacturer. The definition of single source is a manufacturer that designs and manufactures their products using an integrated approach, including the chassis, cab weldment, cab, pump house (including the sheet metal enclosure, valve controls, piping and operators panel) body and aerial device being designed, fabricated and assembled on the bidder's premises. The electrical system (hardwire or multiplex) shall be both designed and integrated by the same apparatus manufacturer. The warranties relative to these major components (excluding component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body, pump house, cab weldment, chassis and aerial). The bidder shall provide evidence that they comply with this requirement.

The bidder shall state the location of the factory where the apparatus is to be built.

**ULC 2013 STANDARDS**

This unit must comply with the ULC standards effective November 1, 2014, except for fire department directed exceptions. These exceptions shall be set forth in the Statement of Exceptions.

Certification of slip resistance of all stepping, standing, and walking surfaces must be supplied with delivery of the apparatus.

A plate that is highly visible to the driver while seated shall be provided. This plate shall show the overall height, length, and gross vehicle weight rating. The plate shall read in metric and standard.

All safety warnings shall be in French and English.

The manufacturer shall have programs in place for training, proficiency testing and performance for any staff involved with certifications.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

An official of the company shall designate, in writing, who is qualified to witness and certify test results.

**ULC COMPLIANCY**

Apparatus proposed by the bidder shall meet the applicable requirements of the CAN/ULC-S515 standard as stated in the current edition at the time of contract execution. Fire department's specifications that differ from ULC specifications shall be indicated in the proposal as "non-ULC" compliant. The apparatus shall be in service at an elevation of less that 2000'.

**VEHICLE INSPECTION PROGRAM CERTIFICATION**

To assure the vehicle is built to current CAN/ULC-S515 standards, the apparatus, in its entirety, shall be third-party, independent, audit-certified through Underwriters Laboratory (UL) that it is built and complies to all applicable standards in the current edition of CAN/ULC-S515. The certification includes: all design, production, operational, and performance testing of not only the apparatus, but those components that are installed on the apparatus (no exception).

A placard shall be affixed in the driver's side area stating the third-party agency, the date, the standard and the certificate number of the whole vehicle audit.

**INSPECTION CERTIFICATE**

A third-party inspection certificate for the aerial device shall be furnished upon delivery of the aerial device. The certificate shall be Underwriters Laboratories Inc. Type 1 and shall indicate that the aerial device has been inspected on the production line and after final assembly.

Visual structural inspections shall be performed on all welds on both aluminum and steel ladders.

On critical weld areas, or on any suspected defective area, the following tests shall be conducted:

- Magnetic particle inspection shall be conducted on steel aerials to assure the integrity of the weldments and to detect any flaws or weaknesses. Magnets shall be placed on each side of the weld while iron powder is placed on the weld itself. The powder shall detect any crack that may exist. This test shall conform to ASTM E709 and be performed prior to assembly of the aerial device.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

- A liquid penetrant test shall be conducted on aluminum aerials to assure the integrity of the weldments and to detect any flaws or weaknesses. This test shall conform to ASTM E165 and be performed prior to assembly of the aerial device.

- Ultrasonic inspection shall conducted on all aerials to detect any flaws in pins, bolts and other critical mounting components.

In addition to the tests above, functional tests, load tests, and stability tests shall be performed on all aerials. These tests shall determine any unusual deflection, noise, vibration, or instability characteristics of the unit.

**PUMP TEST**

The pump shall be tested, approved and certified by Underwriter's Laboratory. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the manufacturer's record of pump construction details shall be forwarded to the Fire Department.

**UNITS OF MEASURE**

This apparatus shall be built for a destination in Canada and required ULC certifications shall be in the proper metric format such as liters, liters per minute, kpa, etc.

The following specification contains standard US units of measure for volume and pressure and are not converted to metric equivalents. However, specific individual options such as pressure gauges and speedometers may be described in metric terminology.

**APPROVAL DRAWING**

A drawing of the proposed apparatus shall be provided for approval before construction begins. The sales representative shall also have a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus shall be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing.

**ELECTRICAL WIRING DIAGRAMS**

Two (2) electrical wiring diagrams, prepared for the model of chassis and body, shall be provided.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**INSPECTION TRIPS**
There shall be three (2) trips to the Apparatus facility. These inspection trips shall be scheduled for pre-build and final inspection. All inspection trips shall include two (3) GEFD personnel. All expenses shall be paid by the bidder. Expenses are to be included regardless of travel restrictions at the time of this Proposal.

Every effort must be made to accommodate these trips, but in the event that travel is not possible due to travel restrictions set forth prohibiting border crossing then an alternative accommodation with the manufacturer shall be made. The Guelph/Eramosa Fire Department shall be credited the difference in cost between alternate accommodations and in-person inspection trips.

**CHASSIS**
Chassis provided shall be a new, tilt-type custom fire apparatus. The chassis shall be manufactured in the apparatus body builder's facility eliminating any split responsibility. The chassis shall be designed and manufactured for heavy-duty service, with adequate strength and capacity for the intended load to be sustained and the type of service required.

**OVERALL APPARATUS LENGTH**
The overall vehicle length shall be approx. 41’ (+/- 8”).

**WHEELBASE**
The wheelbase of the vehicle shall be no greater than 230” (+/-6”)

**GVW RATING**
The gross vehicle weight rating shall be a minimum of 56,300.

**FRAME**
The chassis frame shall be built with two (2) steel channels bolted to a minimum of five (5) cross members. A full-length frame liner shall be supplied.

The frame shall be painted job color.

**FRAME CORROSION PROTECTION**
All frame components shall be corrosion protected utilizing hot dipped galvanization to the highest level available (this includes individual rails, cross members, frame extensions, air tank brackets, and all metallic items bolted to the frame) or electronically charged and epoxy coated corrosion protected (E-Coat) of all frame components. Literature of corrosion protection provided shall be included in the bid.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

- The frame, cross members, frame extensions, air tank brackets shall be painted job color. This shall prevent excessive dirt collection in the finish.

**FRONT AXLE**
The front axle shall be a reverse "I" beam type with inclined king pins. It shall be minimum rated capacity of 23,000 lb.

A viewing window shall be provided on each side of the axle for checking the oil level.

**FRONT SUSPENSION**
The front springs shall be a three (3)-leaf, taper leaf design, 54.00" long x 4.00" wide, with a ground rating of 23,000 lb. to match the front axle.

**SHOCK ABSORBERS**
To provide a smoother ride, heavy-duty telescoping shock absorbers shall be provided on the front axle.

**FRONT OIL SEALS**
Oil seals with viewing window shall be provided on the front axle.

**FRONT TIRES**
The front tires shall be 385/65R22.50 radials, load range L, rated for 23,540 lb. maximum axle load and 68 mph maximum speed.

The tires shall be mounted on 22.50" x 12.25" polished aluminum disc type wheels with a ten (10) stud, 11.25" bolt circle.

**REAR AXLE**
The rear axle shall have a minimum capacity of 33,000 lb.

**TOP SPEED OF VEHICLE**
The required top speed of the vehicle shall be approximately 103 to 108 kilometers per hour. The rear axle ratio that provides optimal performance and still allows the apparatus to achieve the top speed shall be provided. Top speed may also be controlled via the chassis engine electronic control system.

**REAR SUSPENSION**
The rear suspension shall be sufficiently rated to match the rear axle.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**REAR OIL SEALS**
Oil seals shall be provided on the rear axle(s).

**REAR TIRES**
Rear tires shall be four (4) 315/80R22.50 radials, load range L, traction tread.

The tires shall be mounted on 22.50" x 9.00" polished aluminum disc wheels with a ten (10) stud 11.25" bolt circle.

**TIRE BALANCE**
All tires shall be balanced with Counteract balancing beads. The beads shall be inserted into the tire and eliminate the need for wheel weights.

**TIRE PRESSURE MANAGEMENT**
There shall be a LED tire alert pressure management system provided, that shall monitor each tire's pressure. A sensor shall be provided on the valve stem of each tire.

**MUD FLAPS**
Mud flaps shall be installed behind the front and rear wheels of the apparatus.

**WHEEL CHOCKS PROVIDED BY FIRE DEPARTMENT**
CAN/ULS-S515, current edition, section 5.8.2 requires two wheel chocks, each designed to hold the firefighting apparatus when loaded to its maximum in-service weight, when on a 20% grade with the transmission in neutral and the parking brake released, to be mounted in readily accessible locations.

The wheel chocks are not on the apparatus as manufactured. The fire department shall provide and install these wheel chocks.

**WHEEL CHOCK BRACKETS PROVIDED BY FIRE DEPARTMENT**
The wheel chock brackets are not on the apparatus as manufactured. The fire department shall provide and install the wheel chock brackets.

**ELECTRONIC STABILITY CONTROL**
A vehicle control system shall be provided as an integral part of the ABS brake system from Meritor Wabco.

The system shall monitor and update the lateral acceleration of the vehicle and compare it to a critical threshold where a side roll event may occur. If the critical threshold is met, the vehicle control system shall automatically reduce engine RPM,

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

engage the engine retarder (if equipped), and selectively apply brakes to the individual wheel ends of the front and rear axles to reduce the possibility of a side roll event.

The system shall monitor directional stability through a lateral accelerometer, steer angle sensor and yaw rate sensor. If spinout or drift out is detected, the vehicle control system shall selectively apply brakes to the individual wheel ends of the front and rear axles to bring the vehicle back to its intended direction.

**ANTI-LOCK BRAKE SYSTEM**

The vehicle shall be equipped with an anti-lock braking system. The ABS shall provide a four (4) channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology shall control the anti-lock braking system. Each wheel shall be monitored by the system. When any wheel begins to lockup, a signal shall be sent to the control unit. This control unit shall then reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system shall eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

**AUTOMATIC TRACTION CONTROL**

An anti-slip feature shall be included with the ABS. The Automatic Traction Control shall be used for traction in poor road and weather conditions. The Automatic Traction Control shall act as an electronic differential lock that shall not allow a driving wheel to spin, thereby supplying traction at all times. The ABS electronic control unit (ECU) shall work with the engine ECU, sharing information concerning wheel slip. Engine ECU shall use information to control engine speed, allowing only as much throttle application as required for the available traction, regardless of how much the driver is asking for. An "off road traction" switch shall be provided on the instrument panel. Activation of the switch shall allow additional tire slip to let the truck climb out and get on top of deep snow or mud.

**BRAKES**

The service brake system shall be a full air type design.

Front brakes shall be disc type with automatic pad wear adjustment and 17.00" rotors for improved stopping distance.

The rear brakes shall be 16.50" x 8.63" cam operated with automatic slack adjusters.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**BRAKE SYSTEM AIR COMPRESSOR**
The air compressor shall have 18.7 cubic feet per minute output.

**BRAKE SYSTEM**
The brake system shall include:

- Brake treadle valve
- Heated automatic moisture ejector on air dryer
- Total air system minimum capacity of 5,376 cubic inches
- Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi
- Spring set parking brake system
- Parking brake operated by a push-pull style control valve
- A parking "brake on" indicator light on instrument panel
- Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, with an automatic spring brake application at 40 psi
- A pressure protection valve to prevent all air operated accessories from drawing air from the air system when the system pressure drops below 80 psi (550 kPa)
- 1/4 turn drain valves on each air tank

The air tank shall be primed and painted to meet a minimum 750 hour salt spray test.

To reduce the effects of corrosion, the air tank shall be mounted with stainless steel brackets (no exception).

**BRAKE SYSTEM AIR DRYER**
The air dryer shall be properly sized for the brake system with spin-on coalescing filter cartridge and 100-watt heater.

**BRAKE LINES**
Color-coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom where necessary in the chassis.

**AIR INLET**
One (1) air inlet with 3D series male coupling shall be provided. It shall allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet shall be located forward in the driver side lower step well of cab. A check valve shall be provided to prevent reverse flow of air. The inlet shall discharge into the "wet" tank of

| Bidder Complies | |
|---|---|
| Yes | No |

the brake system. A mating female fitting shall also be provided with the loose equipment.

**ALL WHEEL LOCK-UP**

An additional all wheel lock-up system shall be installed which applies air to the front brakes only. The standard spring brake control valve system shall be used for the rear.

**ENGINE**

The chassis shall be powered by an electronically controlled engine as described below:

| | |
|---|---|
| Power: | 450 hp at 2100 rpm |
| Torque: | 1250 lb.-ft at 1400 rpm |
| Governed Speed: | 2200 rpm |
| Emissions Level: | EPA 2021 |
| Fuel: | Diesel |
| Cylinders: | Six (6) |
| Displacement: | 543 cubic inches (8.9L) |
| Starter: | Heavy duty |
| Fuel Filters: | Spin-on style primary filter with water separator and water-in-fuel sensor. Secondary spin-on style filter. |

The engine shall include On-board diagnostics (OBD), which provides self-diagnostic and reporting. The system shall give the owner or repair technician access to state of health information for various vehicle sub systems. The system shall monitor vehicle systems, engine and after treatment. The system shall illuminate a malfunction indicator light on the dash console if a problem is detected.

**HIGH IDLE**

A high idle switch shall be provided, inside the cab, on the instrument panel, that shall automatically maintain a preset engine rpm. A switch shall be installed, at the cab instrument panel, for activation/deactivation.

The high idle shall be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light shall be provided, adjacent to the switch. The light shall illuminate when the above conditions are met. The light shall be labeled "OK to Engage High Idle."

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**ENGINE BRAKE**
An engine brake is to be installed with the controls located on the instrument panel within easy reach of the driver.

The driver shall be able to turn the engine brake system on/off and have a high, medium and low setting.

The engine brake shall activate when the system is on and the throttle is released.

The high setting of the brake application shall activate and work simultaneously with the variable geometry turbo (VGT) provided on the engine.

The engine brake shall be installed in such a manner that when the engine brake is slowing the vehicle the brake lights are activated.

The ABS system shall automatically disengage the auxiliary braking device, when required.

**CLUTCH FAN**
A fan clutch shall be provided. The fan clutch shall be automatic when the pump transmission is in "Road" position, and constantly engaged when in "Pump" position.

**ENGINE AIR INTAKE**
The engine air intake shall be located above the engine cooling package. It shall draw fresh air from the front of the apparatus through the radiator grille.

A stainless steel metal screen shall be installed at the inlet of the air intake system that shall meet NFPA 1901 requirements.

The air cleaner and stainless steel screen shall be easily accessible by tilting the cab.

**EXHAUST SYSTEM**
The exhaust system shall be stainless steel from the turbo to the engine's aftertreatment device, and shall be 4.00" in diameter. The exhaust system shall include a single module aftertreatment device to meet current EPA standards. An insulation wrap shall be provided on all exhaust pipes between the turbo and aftertreatment device to minimize the heat loss to the aftertreatment device. The exhaust shall terminate horizontally ahead of the right-side rear wheels. A tailpipe diffuser shall be provided to reduce the temperature of the exhaust as it exits. Heat deflector shields shall be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**RADIATOR**
The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system standards.

For maximum corrosion resistance and cooling performance, the entire radiator core shall be constructed using long life aluminum alloy.

A drain port shall be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

**COOLANT LINES**
Rubber hose shall be used for all engine coolant lines to be installed by the chassis manufacturer.

Hose clamps shall be stainless steel constant torque type to prevent coolant leakage. They shall react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose.

**FUEL TANK**
A 65 gallon fuel tank shall be provided and mounted at the rear of the chassis. The tank shall be constructed of 12-gauge, hot rolled steel. It shall be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank shall be mounted with stainless steel straps (no exception).

A 0.75" drain plug shall be provided in a low point of the tank for drainage.

A fill inlet shall be located on the left-hand side of the body and be covered with a hinged, spring loaded, stainless steel door that is marked "Ultra Low Sulfur - Diesel Fuel Only."

**DIESEL EXHAUST FLUID TANK**
A 4.5 gallon diesel exhaust fluid (DEF) tank shall be provided and mounted in the driver's side body forward of the rear axle.

A 0.50" drain plug shall be provided in a low point of the tank for drainage.

A fill inlet shall be located on the driver's side of the body and be covered with a hinged, spring loaded, polished stainless steel door that is marked "Diesel Exhaust Fluid Only".

The tank shall meet the engine manufacturers requirement for 10 percent expansion space in the event of tank freezing.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The tank shall include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

**FUEL PRIMING PUMP**
An automatic electronic fuel priming pump shall be integrated as part of the engine.

**TRANSMISSION**
An electronic torque converting automatic transmission shall be provided.

The transmission shall be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display shall indicate when service is due.

**TRANSMISSION SHIFTER**
A five (5)-speed push button shift module shall be mounted to right of driver on console. Shift position indicator shall be indirectly lit for after dark operation.

The transmission ratio shall be:

| | |
|---|---|
| 1st | 3.49 to 1.00 |
| 2nd | 1.86 to 1.00 |
| 3rd | 1.41 to 1.00 |
| 4th | 1.00 to 1.00 |
| 5th | 0.75 to 1.00 |
| R | 5.03 to 1.00 |

**TRANSMISSION COOLER**
A plate and fin transmission oil cooler shall be provided using engine coolant to control the transmission oil temperature.

**DRIVELINE**
Drivelines shall be a heavy-duty metal tube and be equipped with universal joints.

The shafts shall be dynamically balanced before installation.

A splined slip joint shall be provided in each driveshaft where the driveline design requires it.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**STEERING**
Dual steering gear, with integral heavy-duty power steering, shall be provided. For reduced system temperatures, the power steering shall incorporate an air to oil cooler and hydraulic pump with integral pressure and flow control. All power steering lines shall have wire braded lines with crimped fittings.

A tilt and telescopic steering column shall be provided to improve fit for a broader range of driver configurations.

**STEERING WHEEL**
The steering wheel shall be 18.00" in diameter, have tilting and telescoping capabilities, and a 2-spoke design.

**BUMPER**
A one (1) piece, stainless steel bumper shall be attached the frame.

The bumper shall be extended to a maximum 13.00" from front face of cab.

**Gravel Pan**
A gravel pan, constructed of bright aluminum treadplate, shall be furnished between the bumper and cab face. The gravel pan shall be properly supported from the underside to prevent flexing and vibration of the aluminum treadplate.

**TOW HOOKS**
Two (2) chromed steel tow hooks shall be installed under the bumper and attached to the front frame members.

**CAB**
The cab shall be designed specifically for the fire service and manufactured by the chassis builder.

The cab shall be built by the apparatus manufacturer in a facility located on the manufacturer's premises (no exception).

For reasons of structural integrity and enhanced occupant protection, the cab shall be a heavy-duty design.

The crew cab shall be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The cab shall be 96.00" wide (outside door skin to outside door skin) to maintain maximum maneuverability.

The cab shall be a full tilt cab style.

A 3-point cab mount system with rubber isolators shall improve ride quality by isolating chassis vibrations from the cab.

**CAB ROOF DRIP RAIL**
For enhanced protection from inclement weather, a drip rail shall be furnished on the sides of the cab. The drip rail shall be painted to match the cab roof, and bonded to the sides of the cab. The drip rail shall extend the full length of the cab roof.

**INTERIOR CAB INSULATION**
The cab shall include 1.00" insulation in the ceiling, 1.50" insulation in the side walls, and 2.00" insulation in the rear wall to maximize acoustic absorption and thermal insulation.

**FENDER LINERS**
Full circular inner fender liners in the wheel wells shall be provided.

**WINDSHIELD**
Safety glass windshield shall be provided with over 2,775 square inches of clear viewing area. The windshield shall be full width and shall provide the occupants with a panoramic view.

**WINDSHIELD WIPERS**
Three (3) electric windshield wipers with washer shall be provided that meet FMVSS and SAE requirements.

The washer reservoir shall be able to be filled without raising the cab.

**ENGINE TUNNEL**
The engine hood shall be insulated for protection from heat and sound. The noise insulation keeps the dBA level within the limits stated in the current NFPA 1901 standards.

The smallest engine tunnel option available from the manufacturer shall be chosen.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**CAB REAR WALL EXTERIOR COVERING**
The exterior surface of the rear wall of the cab shall be overlaid with bright aluminum treadplate except for areas that are not typically visible when the cab is lowered

**CAB LIFT**
A hydraulic cab lift system shall be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves.

Lift controls shall be located on the right-side pump panel or front area of the body in a convenient location.

For increased safety, a redundant mechanical stay arm shall be provided that must be manually put in place on the left side between the chassis and cab frame when the cab is in the raised position. This device shall be manually stowed to its original position before the cab can be lowered.

**Cab Lift Interlock**
The cab lift system shall be interlocked to the parking brake. The cab tilt mechanism shall be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism shall be disabled.

**GRILLE**
A bright finished aluminum mesh grille screen, inserted behind a bright finished grille surround, shall be provided on the front center of the cab.

**DOOR JAMB SCUFFPLATES**
All cab door jambs shall be furnished with a polished stainless steel scuff plate, mounted on the striker side of the jamb.

**SIDE OF CAB MOLDING**
Chrome molding shall be provided on both sides of cab.

**MIRRORS**
A dual vision, motorized, west coast style mirror, with chrome finish, shall be mounted on each side of the front cab door with spring loaded retractable arms. The flat glass and convex glass shall be heated and adjustable with remote control within reach of the driver.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**DOORS**
Full length cab doors shall be provided. Door handles shall provide clearance for heavy gloved hands. Paddle style latches not accepted.

The cab steps at each cab door location shall be located inside the cab doors to protect the steps from weather elements.

**Door Panels**
The inner cab door panels shall be constructed out of brushed stainless steel.

**MANUAL CAB DOOR WINDOWS**
All cab entry doors shall contain a conventional roll down window.

**CAB STEPS**
The forward cab and crew cab access steps shall be a full size two (2) step design to provide largest possible stepping surfaces for safe ingress and egress. The bottom steps shall be designed with a grip pattern punched into bright aluminum treadplate material to provide support, slip resistance, and drainage

**CAB EXTERIOR HANDRAILS**
A 1.25" diameter slip-resistant, knurled aluminum handrail shall be provided adjacent to each cab and crew cab door opening to assist during cab ingress and egress.

**STEP LIGHTS**
There shall be six (6) white LED step lights installed for cab and crew cab access steps.

- One (1) light for the driver's access steps.
- Two (2) lights for the driver's side crew cab access steps.
- Two (2) lights for the passenger's side crew cab access steps.
- One (1) light for the passenger's side access step.

The lights shall be activated when the battery switch is on and the adjacent door is opened.

**FENDER CROWNS**
Stainless steel fender crowns shall be installed at the cab wheel openings.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**CREW CAB WINDOWS**
One (1) fixed window with tinted glass shall be provided on each side of the cab, to the rear of the front cab door. The windows shall be sized to enhance light penetration into the cab interior.

**CAB DASH**
The driver side dash, switch panel located to the right of the driver, and center console shall be an easily removable high impact resistant polymer cover.

The officer side dash shall be a flat top design with an upper beveled edge to provide easy maintenance and shall be constructed out of aluminum and painted to match the cab interior.

**MOUNTING PLATE ON ENGINE TUNNEL**
Equipment installation provisions shall be installed on the engine tunnel.

A 0.188" smooth aluminum plate shall be bolted to the top surface of the engine tunnel. The plate shall follow the contour of the engine tunnel and shall run the entire length of the engine tunnel. The plate shall be spaced off the engine tunnel .75" to allow for wire routing below the plate.

The mounting surface shall be painted to match the cab interior.

**CAB INTERIOR**
The cab interior shall be constructed of primarily metal (painted aluminum) to withstand the severe duty cycles of the fire service.

The engine tunnel shall be painted aluminum to match the cab interior.

For durability and ease of maintenance, the cab interior side walls shall be painted aluminum. The rear wall shall be painted aluminum.

Headliner shall be installed in both forward and rear cab sections. Headliner material shall be vinyl. A sound barrier shall be part of its composition. Material shall be installed on aluminum sheet and securely fastened to interior cab ceiling.

Forward portion of cab headliner shall permit easy access for service of electrical wiring or other maintenance needs.

**CAB INTERIOR UPHOLSTERY**
The cab interior upholstery shall be 36 oz dark silver-gray vinyl.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**CAB INTERIOR PAINT**
The cab interior metal surfaces, excluding the rear heater panels, shall be painted fire smoke gray, vinyl texture paint.

The rear heater panels shall be painted black, vinyl textured paint.

**CAB FLOOR**
The cab and crew cab floor areas shall be covered with floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler.

**DEFROST/AIR CONDITIONING SYSTEM**
A ceiling mounted combination heater, defroster and air conditioning system shall be installed in the cab above the engine tunnel area.

**Cab Defroster**
Shall provide maximum defrost and heating performance. The HVAC unit shall be hung from the ceiling in the cab and shall be the largest capacity unit available from the chassis manufacturer.

**Cab/Crew Auxiliary Heater**
Two (2) auxiliary heaters located below the rear facing crew seats.

The heater/defroster and crew cab heaters shall be controlled by an integral electronic control panel. The heater control panel shall allow the driver to control heat flow to the front and rear independently. The control panel shall include variable adjustment for temperature and fan control, and be conveniently located on the dash in clear view of the driver. The control panel shall include highly visible, progressive LED indicators for both fan speed and temperature.

**Air Conditioning**
A high-performance, customized air conditioning system shall be furnished.

The air conditioner refrigerant shall be R-134A and shall be installed by a certified technician.

The air conditioner shall be controlled by dual zone integral electronic control panels for the heater, defroster and air conditioner. The cab control panel shall be located in the center console. For ease of operation, the control panels shall include variable adjustment for temperature and fan control.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The HVAC system must be able to clear the windshield and side windows of all condensation quickly; otherwise, the dealer shall be responsible for installing two (2) window defrost fans to be mounted on the ceiling of the cab, located upper corners outboard.

**Climate Control**
An automotive style controller shall be provided to control the heat and air conditioning system within the cab. The controller shall have three (3) functional knobs for fan speed, temperature, and air flow distribution (front to rear) control.

The system shall control the temperature of the cab and crew cab automatically by pushing the center of the fan speed control knob. Rotate the center temperature control knob to set the cab and crew cab temperature.

**SUN VISORS**
Two (2) smoked polycarbonate sun visors shall be provided. The sun visors shall be located above the windshield with one (1) mounted on each side of the cab.

There shall be a black plastic thumb latch provided to help secure each sun visor in the stowed position.

**GRAB HANDLES**
A black rubber covered grab handle shall be mounted on the door post of the driver and officer's side cab door to assist in entering the cab. The grab handles shall be securely mounted to the post area between the door and windshield.

**ENGINE COMPARTMENT LIGHTS**
There shall be one (1) 12-volt DC, 3.00" white LED light(s) with chrome flange kit(s) installed under the cab to be used as engine compartment illumination.

These light(s) shall be activated automatically when the cab is raised.

**ACCESS TO ENGINE DIPSTICKS**
For access to the engine oil and transmission fluid dipsticks, there shall be a door on the engine tunnel, inside the crew cab. The door shall be on the rear wall of the engine tunnel, on the vertical surface.

The engine oil dipstick shall allow for checking only. The transmission dipstick shall allow for both checking and filling.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The door shall have a rubber seal for thermal and acoustic insulation. One (1) flush latch shall be provided on the access door.

**SEATING CAPACITY**
The seating capacity in the cab shall be six (6).

**DRIVER SEAT**
A seat shall be provided in the cab for the driver. The seat design shall be a cam action type, with air suspension. For increased convenience, the seat shall include a manual control to adjust the horizontal position (6.00" travel). The manual horizontal control shall be a towel-bar style located below the forward part of the seat cushion. To provide flexibility for multiple driver configurations, the seat shall have an adjustable reclining back. The seat back shall be a high back style with side bolster pads for maximum support. For optimal comfort, the seat shall be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat shall be furnished with a 3-point, shoulder type seat belt.

**OFFICER SEAT**
A seat shall be provided in the cab for the passenger. The seat shall be a fixed type with no suspension. For optimal comfort, the seat shall be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat back shall be an SCBA back style with 5 degree fixed recline angle. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat shall be furnished with a 3-point, shoulder type seat belt.

**RADIO COMPARTMENT**
A radio compartment shall be provided under the officer's seat.

A drop-down door with a chrome plated lift and turn latch shall be provided for access.

The compartment shall be constructed of smooth aluminum and painted to match the cab interior.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**REAR FACING DRIVER SIDE OUTBOARD SEAT**
There shall be one (1) rear facing seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat shall be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat back shall be an SCBA back style with 5 degree fixed recline angle. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat shall be furnished with a 3-point, shoulder type seat belt.

**REAR FACING PASSENGER SIDE OUTBOARD SEAT**
There shall be one (1) rear facing seat provided at the passenger side outboard position in the crew cab. For optimal comfort, the seat shall be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat back shall be an SCBA back style with 5 degree fixed recline angle. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat shall be furnished with a 3-point, shoulder type seat belt.

**FORWARD FACING CENTER SEATS**
There shall be two (2) forward facing seats provided at the center position in the crew cab. For optimal comfort, the seats shall be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat backs shall be an SCBA style with 90 degree back. The SCBA cavity shall be adjustable from front to rear in 1.00" increments to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seats shall be furnished with a 3-point, shoulder type seat belt.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**SEAT UPHOLSTERY**
All seat upholstery shall be leather grain 36 oz dark silver-gray vinyl resistant to oil, grease and mildew. The cab shall have six (6) seating positions.

**AIR BOTTLE HOLDERS**
All SCBA type seats in the cab shall have a "Hands-Free" auto clamp style bracket in its backrest. For efficiency and convenience, the bracket shall include an automatic spring clamp that allows the occupant to store the SCBA bottle by simply pushing it into the seat back. For protection of all occupants in the cab, in the event of an accident, the inertial components within the clamp shall constrain the SCBA bottle in the seat and shall exceed the NFPA standard of 9G. Bracket designs with manual restraints (belts, straps, buckles) that could be inadvertently left unlocked and allow the SCBA to move freely within the cab during an accident, shall not be acceptable.

There shall be a quantity of five (5) SCBA brackets.

**SEAT BELTS**
All cab and tiller cab (if applicable) seating positions shall have red seat belts. To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length shall meet or exceed the current edition of NFPA 1901 and CAN/ULC - S515 standards.

The 3-point shoulder type seat belts shall include height adjustment. This adjustment shall optimize the belts effectiveness and comfort for the seated firefighter. The 3-point shoulder type seat belts shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.

The 3-point shoulder type belts shall also include a D-loop assembly to the shoulder belt system. This feature adds an extender arm to the D-loop location placing the D-loop in a closer, easier to reach location.

**HELMET STORAGE PROVIDED BY FIRE DEPARTMENT**
CAN/ULC-S515, current edition, section 13.2.1.5 requires a location for helmet storage be provided.

There is no helmet storage on the apparatus as manufactured. The fire department shall provide a location for storage of helmets.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**CAB DOME LIGHTS**
There shall be four (4) dual LED dome lights with black bezels provided. Two (2) lights shall be mounted above the inside shoulder of the driver and officer and two (2) lights shall be installed and located, one (1) on each side of the crew cab.

The color of the LED's shall be red and white.

The white LED's shall be controlled by the door switches and the lens switch.

The color LED's shall be controlled by the lens switch.

**PORTABLE HAND LIGHTS PROVIDED BY FIRE DEPARTMENT**
CAN/ULC-S515, current edition, section 5.8.2 requires four portable hand lights.

The hand lights are not on the apparatus as manufactured. The fire department shall provide these hand lights.

**"DO NOT MOVE APPARATUS" INDICATOR**
A flashing red indicator light, located in the driving compartment, shall be illuminated automatically per the current NFPA requirements. The light shall be labeled "Do Not Move Apparatus If Light Is On."

The same circuit that activates the Do Not Move Apparatus indicator shall activate a pulsing alarm when the parking brake is released.

**SWITCH PANELS**
The built-in switch panels shall be located in the lower console or overhead console of the cab.

The switches shall be rocker-type and include an integral indicator light. For quick, visual indication the switch shall be illuminated whenever the switch is active. A 2-ply, scratch resistant laser engraved label indicating the use of each switch shall be placed below the switches. The label shall allow light to pass through the letters for improved visibility in low light conditions. Switches and light source are integral to the switch panel assembly.

**WIPER CONTROL**
Wiper control shall consist of a two (2)-speed windshield wiper control with intermittent feature and windshield washer controls.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**HOURMETER - AERIAL DEVICE**
The following aerial hour meter messages shall be included in the information centers:

- Aerial Hours, that keeps track of the time the aerial device is in motion.
- Aerial PTO Hours, that keeps track of the time the aerial master switch is on and the aerial PTO is engaged.

**AERIAL MASTER**
There shall be a master switch for the aerial operating electrical system provided.

**AERIAL PTO SWITCH**
A PTO switch for the aerial with indicator light shall be provided.

**SPARE CIRCUIT**
There shall be two (2) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires shall have the following features:

- The positive wire shall be connected directly to the battery power
- The negative wire shall be connected to ground
- Wires shall be protected to 15 amps at 12 volts DC
- Power and ground shall terminate officer side dash area
- Termination shall be with heat shrinkable butt splicing
- Wires shall be sized to 125 percent of the protection

The circuit(s) may be load managed when the parking brake is set.

**INFORMATION CENTER**
Multi-plex information center employing a touch screen (with buttons if available) color LCD display shall be encased in an ABS plastic housing. Screen located on the **driver's side** instrument panel. Screen lay-outs and functions to be decided at pre-build meeting

**VEHICLE DATA RECORDER**
There shall be a vehicle data recorder (VDR) capable of reading and storing vehicle information provided.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A USB cable can be used to connect the VDR to a laptop to retrieve required information. The program to download the information from the VDR will be available to download on-line.

The vehicle data recorder shall be capable of recording the following data via hardwired and/or CAN inputs:

- Vehicle Speed - MPH
- Acceleration - MPH/sec
- Deceleration - MPH/sec
- Engine Speed - RPM
- Engine Throttle Position - % of Full Throttle
- ABS Event - On/Off
- Seat Occupied Status - Yes/No by Position
- Seat Belt Buckled Status - Yes/No by Position
- Master Optical Warning Device Switch - On/Off
- Time - 24 Hour Time
- Date - Year/Month/Day

**Seat Belt Monitoring System**

A seat belt monitoring system (SBMS) shall be provided on the color display and in the center overhead of the cab instrument panel. The SBMS shall be capable of monitoring up to 10 seating positions indicating the status of each seat position per the following:

- Seat Occupied & Buckled = Green LED indicator illuminated
- Seat Occupied & Unbuckled = Red LED indicator with audible alarm
- No Occupant & Buckled = Red LED indicator with audible alarm
- No Occupant & Unbuckled = No indicator and no alarm

The seat belt monitoring screen shall become active on the color display when:

- The home screen is active:
    - and there is any occupant seated but not buckled or any belt buckled with an occupant.
    - and there are no other Do Not Move Apparatus conditions present. As soon as all Do Not Move Apparatus conditions are cleared, the SBMS shall be activated.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The SBMS shall include an audible alarm that shall warn that an unbuckled occupant condition exists and the parking brake is released, or the transmission is not in park.

**RADIO ANTENNA MOUNT**
There shall be one (1) standard 1.125", 18 thread antenna-mounting base(s) installed on the right side on the cab roof with high efficiency, low loss, coaxial cable(s) routed to the instrument panel area. A weatherproof cap shall be installed on the mount.

**VEHICLE CAMERA SYSTEM**
There shall be a color vehicle camera system provided with the following:

- One (1) camera located at the rear of the apparatus, pointing rearward, displayed automatically with the vehicle in reverse

The camera images shall be displayed on the driver's vehicle information center display. Audio from the microphone on the active camera shall be not provided.

**Power and Ground Studs**
Spare circuits shall be provided in the primary distribution center for two-way radio equipment.

The spare circuits shall consist of the following:

- One (1) 12-volt DC, 30-amp battery direct spare
- One (1) 12-volt DC ground and un-fused switched battery stud located in or adjacent to the power distribution center

**EMI/RFI Protection**
To prevent erroneous signals from crosstalk contamination and interference, the electrical system shall meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system shall be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

The apparatus shall have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system shall meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10Khz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, shall provide EMC testing reports from testing conducted on an entire apparatus and shall certify that the vehicle meets SAE J551/2 and SAE J1113/25

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

Region 1, Class C EMR for 10Khz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.

EMI/RFI susceptibility shall be controlled by applying appropriate circuit designs and shielding. The electrical system shall be designed for full compatibility with low-level control signals and high-powered two-way radio communication systems. Harness and cable routing shall be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

**ELECTRICAL**

All 12-volt electrical equipment installed by the apparatus manufacturer shall conform to modern automotive practices. All wiring shall be high temperature crosslink type. Wiring shall be run, in loom or conduit, where exposed and have grommets where wire passes through sheet metal. Automatic reset circuit breakers shall be provided which conform to SAE Standards. Wiring shall be color, function and number coded. Function and number codes shall be continuously imprinted on all wiring harness conductors at 2.00" intervals. Exterior exposed wire connectors shall be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids.

**BATTERY SYSTEM**

There shall be four (4) 12-volt batteries that include the following features shall be provided:

- 950 CCA, cold cranking amps
- 190-amp reserve capacity
- High cycle
- Group 31
- Rating of 3800 CCA at 0 degrees Fahrenheit
- 760 minutes of reserve capacity
- Threaded stainless steel studs

Each battery case shall be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover shall be manifold vented with a central venting location to allow a 45 degree tilt capacity.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The inside of each battery shall consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

**BATTERY CHARGER/ AIR COMPRESSOR**
There shall be a 40-amp battery charger with air compressor system provided. A bar graph display shall be included with the installation.

The air compressor shall be a 120-volt AC 100 psi with auto drain installed to maintain the air system pressure when the 120-volt AC shoreline is energized.

The battery charger and air compressor shall be wired to the AC shoreline inlet through a junction box located near the components.

Battery charger/compressor shall be located in the cab behind the driver's seat.

**BATTERY SYSTEM**
There shall be a single starting system with an ignition switch and starter button provided and located on the cab instrument panel.

**MASTER BATTERY SWITCH**
There shall be a master battery switch provided within the cab within easy reach of the driver to activate the battery system.

An indicator light shall be provided on the instrument panel to notify the driver of the status of the battery system.

**AUTO EJECT FOR SHORELINE**
There shall be one (1) 20-amp 120-volt AC shoreline inlet(s) provided to operate the dedicated 120-volt AC circuits on the apparatus.

The shoreline inlet(s) shall include red weatherproof flip up cover(s).

There shall be a release solenoid wired to the vehicle's starter to eject the AC connector when the engine is starting.

The shoreline(s) shall be connected to the battery charger.

There shall be a mating connector body supplied with the loose equipment.

There shall be a label installed near the inlet(s) that state the following:

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

- Line Voltage
- Current Ratting (amps)
- Phase
- Frequency

The shoreline receptacle shall be located on the driver side of cab, above wheel.

**BATTERY COMPARTMENTS**
Batteries shall be placed on non-corrosive mats and be stored in well ventilated compartments located under the cab.

Heavy-duty battery cables shall be used to provide maximum power to the electrical system. Cables shall be color coded.

Battery terminal connections shall be coated with anti-corrosion compound. Battery solenoid terminal connections shall be encapsulated with semi-permanent rubberized compound.

**JUMPER STUDS**
One (1) set of battery jumper studs with plastic color-coded covers shall be included on the battery compartments.

The battery charger indicator shall be located on the driver's seat riser.

**ALTERNATOR**
An alternator shall be provided that has a rated output current of 320 amps, as measured by SAE method J56. The alternator shall feature an integral, self-diagnostic regulator and rectifier. The alternator shall be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

**ELECTRONIC LOAD MANAGER**
An electronic load management (ELM) system shall be provided that monitors the vehicles 12-volt electrical system, automatically reducing the electrical load in the event of a low voltage condition, and automatically restoring the shed electrical loads when a low voltage condition expires. This ensures the integrity of the electrical system.

For improved reliability and ease of use, the load manager system shall be an integral part of the vehicle's solid state control system requiring no additional components to perform load management tasks. Load management systems which require additional components shall not be allowed.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The system shall include the following features:

- System voltage monitoring.
- A shed load shall remain inactive for a minimum of five minutes to prevent the load from cycling on and off.
- Sixteen available electronic load shedding levels.
- Priority levels can be set for individual outputs.
- High Idle to activate before any electric loads are shed and deactivate with the service brake.
    - If enabled:
        - "Load Man Hi-Idle On" shall display on the information center.
        - Hi-Idle shall not activate until 30 seconds after engine start up.
- Individual switch "on" indicator to flash when the particular load has been shed.
- The information center indicates system voltage.

The information center, where applicable, includes a "Load Manager" screen indicating the following:

- Load managed items list, with priority levels and item condition.
- Individual load managed item condition:
    - ON = not shed
    - SHED = shed

**SEQUENCER**

A sequencer shall be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation shall allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12-volt load to prolong the life of the alternator.

For improved reliability and ease of use, the load sequencing system shall be an integral part of the vehicle's solid state control system requiring no additional components to perform load sequencing tasks. Load sequencing systems which require additional components shall not be allowed.

Emergency light sequencing shall operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

shall be activated one by one at half-second intervals. Sequenced emergency light switch indicators shall flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer shall deactivate the warning light loads in the reverse order.

Sequencing of the following items shall also occur, in conjunction with the ignition switch, at half-second intervals:

- Cab Heater and Air Conditioning
- Crew Cab Heater (if applicable)
- Crew Cab Air Conditioning (if applicable)
- Exhaust Fans (if applicable)
- Third Evaporator (if applicable)

**HEADLIGHTS**
There shall be four (4) rectangular halogen lights mounted in the front quad style, chrome housing on each side of the cab grille:

- The outside light on each side shall contain a halogen low and high beam module.
- The inside light on each side shall contain a halogen high beam module only.

**DIRECTIONAL LIGHTS**
There shall be two (2) deep amber LED populated arrow directional lights provided on the front of the cab, above the headlights. Each light shall be housed in the same quad common bezel as the front warning light. The lens color(s) to be clear.

**INTERMEDIATE LIGHT**
There shall be two (2) amber LED turn signal marker lights furnished, one (1) each side, in the rear fender panel. The light shall double as a turn signal and marker light.

**CAB CLEARANCE/MARKER/ID LIGHTS**
There shall be seven (7) amber LED lights provided per the following:

- Three (3) amber LED identification lights shall be installed in the center of the cab above the windshield.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

- Two (2) amber LED clearance lights shall be installed, one (1) on each outboard side of the cab above the windshield as close to the outside of the apparatus as practical.
- Two (2) amber LED clearance lights shall be installed, one (1) on each side of the cab as high and far forward as practical.

**FRONT CAB SIDE DIRECTIONAL/MARKER LIGHTS**
There shall be two (2) amber LED lights installed front of the cab door, one (1) on each side of the cab.

The lights shall activate as marker lights with the headlight switch and directional lights with the corresponding directional circuit.

**REAR CLEARANCE/MARKER/ID LIGHTING**
There shall be three (3) LED identification lights located at the rear installed per the following:

- As close as practical to the vertical centerline
- Centers spaced not less than 6.00" or more than 12.00" apart
- Red in color
- All at the same height

There shall be two (2) LED lights installed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following:

- To indicate the overall width of the vehicle
- One (1) each side of the vertical centerline
- As near the top as practical
- Red in color
- To be visible from the rear
- All at the same height

There shall be two (2) LED lights installed on the side of the apparatus used as marker lights as close to the rear as practical per the following:

- To indicate the overall length of the vehicle
- One (1) each side of the vertical centerline
- As near the top as practical
- Red in color

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

- To be visible from the side
- All at the same height

The lights shall be mounted with no guard.

There shall be two (2) red reflectors located on the rear of the truck facing to the rear. One (1) each side, as far to the outside as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

There shall be two (2) red reflectors located on the side of the truck facing to the side. One (1) each side, as far to the rear as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

Per FMVSS 108 and CMVSS 108 requirements.

**MARKER LIGHTS**
There shall be one (1) pair of amber and red LED marker lights with rubber arm, located at the rear most lower corner of the body. The amber lens shall face the front and the red lens shall face the rear of the truck.

These lights shall be activated with the running lights of the vehicle.

**REAR FMVSS LIGHTING**
There shall be two (2) wrap around tri-cluster LED modules provided on the face of the rear body compartments.

Each tri-cluster shall include the following:

- One (1) LED stop/taillight
- One (1) LED directional light
- One (1) LED backup light

**LICENSE PLATE BRACKET**
There shall be one (1) license plate bracket mounted on the rear of the body.

A white LED light shall illuminate the license plate. A stainless steel light shield shall be provided over the light that shall direct illumination downward, preventing white light to the rear.

**BACK-UP ALARM**

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

A solid-state electronic audible back-up alarm that actuates when the truck is shifted into reverse shall be provided. The device shall sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum ten (10) dBA above surrounding environmental noise levels.

**CAB PERIMETER SCENE LIGHTS**
There shall be four (4) 20.00" white LED strip lights provided, one (1) for each cab door.

These lights shall be activated automatically when the battery switch is on and the exit doors are opened or by the same means as the body perimeter scene lights.

**PUMP HOUSE PERIMETER LIGHTS**
There shall be one (1) 20.00" LED weatherproof strip light with bracket provided under the passenger's side pump panel running board.

If the combination of options in the vehicle does not permit clearance for a 20.00" light, a 12.00" version of the light shall be installed.

The light shall be activated when the battery switch is on and controlled by the same means as the body perimeter lights.

**BODY PERIMETER SCENE LIGHTS**
There shall be two (2) 350 lumens, 20.00" long, with white LED's, 12-volt lights provided.

The lights shall be mounted in the following locations:

- One (1) light under the driver's side turntable access steps
- One (1) light under the passenger's side turntable access steps

The perimeter scene lights shall be activated when the battery switch is on and the parking brake is applied.

**12 VOLT LIGHTING**
There shall be one (1) 17,750 lumens 12-volt DC light(s) with a combination of flood and spot optics provided on the front visor, centered.

The housing(s) painted parts of this light assembly to be black.

The light(s) shall be controlled by a switch at the driver's side switch panel and by a switch at the passenger's side switch panel.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

These light(s) may be load managed when the parking brake is applied.

**12 VOLT DC SCENE LIGHTS**
There shall be two (2) 16,000 lumens 12-volt DC powered light(s) with white LEDs installed on the cab located, left side and right-side cab raised roof over mid crew windows.

The surface mount housing(s) shall be provided with a black cover.

The light(s) shall be activated by a switch at the driver's side switch panel.

The light(s) may be load managed when the parking brake is applied.

**12 VOLT LIGHTING**
There shall two (2) 13,306 lumens 2.56" high x 46.00" long x 2.45" deep 12-volt DC light(s) with white LEDs and with a combination of spot, and flood optics installed on the apparatus located, body catwalk on top of compartments L2 and R2.

The painted parts of the light housing and brackets to be black.

The light(s) shall be controlled by a switch at the driver's side switch panel.

The light(s) may be load managed when the parking brake is applied.

**WORK LIGHTS**
Two (2)-6.00" deck lights shall be provided at the rear of the apparatus. The lights shall be furnished with a halogen flood bulb.

**HOSE BED LIGHTS**
There shall be two (2), 40.00" long 12-volt DC light strips with white LEDs and 45 degree extruded aluminum bracket provided to illuminate the hose bed area.

- One (1) light shall be installed on the left side of the hose bed.
- One (1) light shall be installed on the right side of the hose bed.

The lights shall be activated when the aerial device parking brake is applied.

**WALKING SURFACE LIGHT**

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

There shall be 4" round black 12-volt DC LED floodlight(s) with bolt mount provided to illuminate the entire designated walking surface on top of the body.

The light(s) shall be activated when the body step lights are on.

**BODY HEIGHT**
The height of the body shall be approx. 84" (+/- 4”) from the bottom of the body to the top of the body. Overall body height should be as close to the same height as the cab as possible.

**BODY LENGTH**
The length of the body shall be approx. 270" (+/- 4”) from the front wall of the body to rear wall of the body.

**WATER TANK**
The water tank shall have a capacity of 1892 liters minimum and shall be constructed of polypropylene plastic in a rectangular shape. (no exceptions)

The tank shall be baffled in accordance with NFPA Bulletin 1901 requirements.

A sump shall be provided at the bottom of the water tank. The sump shall include a drain plug and the tank outlet.

**WATER TANK LOCATION**
The water tank shall not be located in a position that inhibits mechanical repair access to the fire pump or plumbing. The water tank shall be mounted in a traditional location over the rear axle.

**HOSE BED**
The hose bed flooring shall consist of removable aluminum grating with a top surface that is perforated to aid in hose aeration.

Hose bed shall have the capacity to store a minimum of the following:

- Ten (10) lengths of 65mm diameter hose utilizing regular 15m lengths.
- Sixteen (16) lengths of 100mm diameter hose utilizing regular 15m lengths.

The hose bed shall have two chutes, one on each side of the aerial turntable. The majority of the hose load shall be stored ahead of the turntable under the ladder.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

Acorn nuts will be installed on all bolts in the hose bed which have exposed threads.

**AERIAL HOSE BED HOSE RESTRAINT**
The hose in the hose beds shall be restrained by black nylon hook and loop straps at the top of the hose bed and 1.00" black nylon web design with a 2.00" box pattern at the rear of the hose beds. The Velcro strap shall be installed to the top of the hose bed side sheets. The rear webbing shall have 1.00" web straps that loop through footman loops and fasten with spring clip and hook fasteners.

**RUNNING BOARDS**
The running boards shall be fabricated of bright aluminum treadplate and supported by structural steel angle assemblies bolted to the chassis frame rails.

A splash guard shall be provided to keep road dirt or water from splashing up onto the pump panels.

The running boards shall have a riser on the body to protect the painted surface from damage by stepping on the running boards.

The entire surface of the running boards shall be covered with bright aluminum treadplate.

**TURNTABLE STEPS**
Access to the turntable shall be provided by a set of swing-down steps, one on the driver side and one on the passenger side of the truck.

The access steps shall be located rearward of the compartmentation.

The steps shall be connected to the "Do Not Move Truck" indicator in the cab.

**STEP LIGHTS**
There shall be three (3) LED step lights provided for each set of aerial turntable access steps.

The step lights shall be actuated by the aerial master switch in the cab.

**SMOOTH ALUMINUM REAR WALL**
The rear wall shall be smooth aluminum.

**TOW EYES**

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

Two (2) rear painted tow eyes shall be located at the rear of the apparatus and shall be mounted directly to the frame rails. The inner and outer edges of the tow eyes shall be radiused.

**COMPARTMENTATION**
Compartmentation shall be fabricated of 0.125" 5052 aluminum.

Side compartments shall be an integral assembly with the rear fenders.

Circular fender liners shall be provided. For prevention of rust pockets and ease of maintenance, the fender liners shall be formed from aluminum and removable for maintenance.

Compartment flooring shall be of the sweep out design with the floor higher than the compartment door lip.

Drip protection shall be provided above the doors by means of bright aluminum extrusion, formed bright aluminum treadplate or polished stainless steel.

The top of the compartment shall be covered with bright aluminum treadplate rolled over the edges on the front, rear and outward side. These covers shall have the corners welded.

Side compartment covers shall be separate from the compartment tops.

All screws and bolts, which are not Grade 8, shall be stainless steel and where they protrude into a compartment shall have acorn nuts on the ends to prevent injury.

**AGGRESSIVE WALKING SURFACE**
All exterior surfaces designated as stepping, standing, and walking areas shall comply with the required average slip resistance of the current NFPA standards.

**LOUVERS**
All body compartments shall be vented to provide one (1) way airflow out of the compartment that prevents water and dirt from gaining access to the compartment.

**COMPARTMENTATION**
All compartment doors shall be roll up, double faced, aluminum construction and satin exterior finish. (Non-painted)

No single door shall exceed 84” in width.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

Doors shall be constructed using 1.00" extruded double wall aluminum slats which will feature a flat smooth interior surface to provide maximum protection against equipment hang-up.

A stainless steel lift bar to be provided for opening the door and located at the bottom of each door with latches on the outer extrusion of the door frame. A ledge is to be supplied over lift bar for additional area to aid in closing the door. The lift bar shall be located at the bottom of door with striker latches installed at the base of the side frames.

The header for the roll-up door assembly shall not exceed 4.00".

A heavy-duty magnetic switch shall be used for control of open compartment door warning lights.

**REAR COMPARTMENT**
A compartment shall be provided at the rear of the unit.

The compartment shall be furnished with a satin finish roll-up door.

**REAR BUMPER**
An aluminum rub rail shall be provided at the rear of the unit. It shall extend the full width of the body.

**COMPARTMENT LIGHTING**
There shall be seven (7) compartment(s) with two (2) white 12-volt DC LED compartment light strips. The dual light strips shall be centered vertically along each side of the door framing. There shall be two (2) light strips per compartment. The dual light strips shall be in all body compartment(s).

Any remaining compartments without light strips shall have a 6.00" diameter light. Each light shall have a number 1076 one filament, two wire bulb.

Opening the compartment door shall automatically turn the compartment lighting on.

**MOUNTING TRACKS**
There shall be recessed tracks installed vertically to support the adjustable shelf(s).

Tracks shall not protrude into any compartment in order to provide the greatest compartment space and widest shelves possible.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The tracks shall be provided in each compartment except for the one that contains the pump operator's panel.

**ADJUSTABLE SHELVES**
There shall be four (4) shelves with a capacity of 500 lb. provided.

The shelf construction shall consist of .188" aluminum painted spatter gray with 2.00" sides.

Each shelf shall be infinitely adjustable by means of a threaded fastener, which slides in a track.

The shelves shall be held in place by .12" thick stamped plated brackets and bolts.

The location(s) shall be determined at pre-construction meeting.

**SLIDE-OUT FLOOR MOUNTED TRAY**
There shall be four (4) floor mounted slide-out tray(s) provided.

Each tray shall have 2.00" high sides and a minimum capacity rating of 500 lb. in the extended position.

Each tray shall be constructed of aluminum painted spatter gray

The location(s) shall be RS1, RS3, LS1 and LS3.

**MATTING, COMPARTMENT TRAYS AND SHELVES**
Rubber compartment matting shall be provided in all compartments on the compartment trays, shelves and compartment bottoms where there are no trays.

The matting shall be black and have holes in the decking to allow air to flow.

**RUB RAIL**
Bottom edge of the side compartments shall be trimmed with a bright aluminum extruded rub rail.

**BODY FENDER CROWNS**
Polished stainless steel fender crowns shall be provided around the rear wheel openings.

An unpainted fender liner shall be provided to avoid paint chipping. The liners shall be removable to aid in the maintenance of rear suspension components.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

A dielectric barrier shall be provided between the fender crown fasteners (screws) and the fender sheet metal to prevent corrosion.

**HANDRAILS**
The handrails shall be 1.25" diameter knurled aluminum to provide a positive gripping surface.

Chrome plated end stanchions shall support the handrail. Plastic gaskets shall be used between end stanchions and any painted surfaces.

Drain holes shall be provided in the bottom of all vertically mounted handrails.

Handrails shall be provided to meet NFPA 1901 section 15.8 requirements. The handrails shall be installed as noted on the sales drawing.

**AIR BOTTLE STORAGE**
A total of four (4) air bottle compartments shall be provided and located on the left side ahead of the rear wheel, on the left side behind the rear wheel, on the right side ahead of the rear wheel and on the right side behind the rear wheel. The air bottle compartment shall be a minimum of 15.00" wide x 7.50" tall x 26.00" deep. A polished stainless steel door with a chrome plated flush lift & turn latch shall be provided to contain the air bottle. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal.

Inside the compartment, black rubber matting shall be provided.

**EXTENSION LADDER**
There shall be a 35' three (3) section aluminum extension ladder provided.

**AERIAL EXTENSION LADDER**
There shall be one (1) 24' two (2) section aluminum extension ladder(s) provided and located in the ladder storage compartment.

**ROOF LADDERS**
There shall be two (2) 16' aluminum roof ladders provided.

**AERIAL FOLDING LADDER**
There shall be one (1) 10' aluminum folding ladder(s) provided and located in the ladder storage compartment.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**GROUND LADDER STORAGE**
Ladder tunnels shall be provided at the rear of the apparatus on either side of the turntable.

Tunnels shall be capable of holding required ladders.

The ladders shall be held captive top and bottom by stainless steel tracks. A polyethylene wear plate shall be provided to prevent ladders from being scuffed by contacting metal parts. The plate shall be mounted to the bottom of the entrance area of the ladder tunnels.

All ladders shall be removable individually without having to remove any other ladder.

A hook and loop strap shall be provided to help contain the ladders.

A smooth aluminum door shall be provided on each ladder tunnel.

**PIKE POLES**
There shall be two (2) 12' pike pole(s) with fiberglass handles provided. The pike pole(s) shall be stored in tubular holders located in the ground ladder storage compartment.

**8' PIKE POLE**
There shall be two (2) 8' pike pole(s) with fiberglass handle provided. The pike pole(s) shall be stored in tubular holders located in the ground ladder storage compartment.

**6' PIKE POLE**
There shall be one (1) 6' pike pole(s) with fiberglass handle provided. The pike pole(s) shall be stored in tubular holders located in the ground ladder storage compartment.

**3' PIKE POLE**
There shall be two (2) 3' pike pole(s) with fiberglass shaft and "D" handles shipped loose.

**PIKE POLE STORAGE IN TORQUE BOX/LADDER STORAGE**
There shall be ABS tubing provided in the torque box/ladder storage area for a total of six (6) pike poles.

If the head of a pike pole can come into contact with a painted surface, a stainless steel scuff plate shall be provided.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**PULL-OUT/DROP DOWN STEP**
A total of two (2) pull-out and drop down, camper style step(s) shall be provided on the rear wall of the body, one (1) each side on the left and right side to provide easy access to the rear hose bed(s).

Each step shall be 19.00" wide x 8.00" deep. The stepping surface shall be bright aluminum treadplate.

Each step shall include an Amdor LumaBar, Model AY-LB-12HW0** to illuminate the ground area beneath the step.

Each step shall include a white 12-volt DC LED light to illuminate the stepping surface.

**PUMP**
Pump shall be a 2000 gpm single (1) stage midship mounted centrifugal type.

Pump shall be the class "A" type.

Pump shall deliver the percentage of rated discharge at pressures indicated below:

- 100% of rated capacity at 150 psi net pump pressure.

-70% of rated capacity at 200 psi net pump pressure.

-50% of rated capacity at 250 psi net pump pressure.

Pump body shall be close-grained gray iron, bronze fitted, and horizontally split in two (2) sections for easy removal of the entire impeller shaft assembly (including wear rings).

Pump shall be designed for complete servicing from the bottom of the truck, without disturbing the pump setting or apparatus piping.

Pump case halves shall be bolted together on a single horizontal face to minimize a chance of leakage and facilitate ease of reassembly. No end flanges shall be used.

Discharge manifold of the pump shall be cast as an integral part of the pump body assembly and shall provide a minimum of three (3) 3.50" openings for flexibility in providing various discharge outlets for maximum efficiency.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The three (3) 3.50" openings shall be located as follows: one (1) outlet to the right of the pump, one (1) outlet to the left of the pump, and one (1) outlet directly on top of the discharge manifold.

Impeller shaft shall be stainless steel, accurately ground to size. It shall be supported at each end by sealed, anti-friction ball bearings for rigid precise support. Impeller shall have flame plated hubs assuring maximum pump life and efficiency despite any presence of abrasive matter in the water supply.

Bearings shall be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. No special or sleeve type bearings shall be used.

**MECHANICAL SEALS**

Pump shall be equipped with a self-adjusting, maintenance-free, mechanical shaft seal.

The mechanical seal shall consist of a flat, highly polished, spring fed carbon ring that rotates with the impeller shaft. The carbon ring shall press against a highly polished stainless steel stationary ring that is sealed within the pump body.

In addition, a throttling ring shall be pressed into the steel chamber cover, providing a very small clearance around the rotating shaft in the event of a mechanical seal failure. The pump performance shall not deteriorate, nor shall the pump lose prime, while drafting if the seal fails during pump operation.

Wear rings shall be bronze and easily replaceable to restore original pump efficiency and eliminate the need to replace the entire pump casing due to wear.

**PUMP TRANSMISSION**

The pump transmission shall be made of a three (3) piece, aluminum, horizontally split casing. Power transfer to pump shall be through a high strength Morse HY-VO silent drive chain. By the use of a chain rather than gears, 50% of the sprocket shall be accepting or transmitting torque, compared to two (2) or three (3) teeth doing all the work.

Drive shafts shall be 2.35" diameter hardened and ground alloy steel and supported by ball bearings. The case shall be designed to eliminate the need for water cooling.

**PUMPING MODE**

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

An interlock system shall be provided to ensure that the pump drive system components are properly engaged so that the apparatus can be safely operated. The interlock system shall be designed to allow stationary pumping only.

**AIR PUMP SHIFT**
Pump shift engagement shall be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab. A manual back-up shift control shall also be located on the left side pump panel.

Two (2) indicator lights shall be provided adjacent to the pump shift inside the cab. One (1) green light shall indicate the pump shift has been completed and be labeled "pump engaged". The second green light shall indicate when the pump has been engaged, and that the chassis transmission is in pump gear. This indicator light shall be labeled "OK to pump".

The pump shift shall be interlocked to prevent the pump from being shifted out of gear when the chassis transmission is in gear to meet NFPA requirements.

The pump shift control in the cab shall be illuminated to meet NFPA requirements.

**TRANSMISSION LOCK-UP**
The direct gear transmission lock-up for the fire pump operation shall engage automatically when the pump shift control in the cab is activated.

**AUXILIARY COOLING SYSTEM**
A supplementary heat exchange cooling system shall be provided to allow the use of water from the discharge side of the pump for cooling the engine water. Heat exchanger shall be a separate unit. It shall be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger shall be plumbed to the master drain valve.

**INTAKE RELIEF VALVE - PUMP**
There shall be One (1) relief valve(s) installed on the suction side of the pump preset at 125 psig.

The relief valve shall have a working range of 75 psi to 250 psi.

The outlet shall terminate below the frame rails with a 2.50" National Standard hose thread adapter and shall have a "do not cap" warning tag.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The relief valve pressure control shall be located behind the right-side pump panel with a stainless steel access door.

**PRESSURE CONTROLLER**
A pressure governor shall be provided.

A pressure transducer shall be installed in the water discharge manifold on the pump.

The display panel shall be located at the pump operator's panel.

**PRIMING PUMP**
The priming pump shall be a compressed air powered, high efficiency, multistage venturi based priming system, conforming to standards outlined in the current edition of NFPA 1901.

All wetted metallic parts of the priming system are to be of brass and stainless steel construction.

One (1) priming control shall open the priming valve and start the pump primer.

**PUMP MANUALS**
There shall be a total of two (2) pump manuals provided by the pump manufacturer and furnished with the apparatus. The manuals shall be provided by the pump manufacturer in the form of two (2) electronic copies. Each manual shall cover pump operation, maintenance, and parts.

**PLUMBING, STAINLESS STEEL AND HOSE**
All inlet and outlet lines shall be plumbed with either stainless steel pipe, flexible polypropylene tubing or synthetic rubber hose reinforced with hi-tensile polyester braid. All hose's shall be equipped with brass or stainless steel couplings. All stainless steel hard plumbing shall be a minimum of a schedule 10 wall thickness.

Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping shall be equipped with victaulic or rubber couplings.

Plumbing manifold bodies shall be ductile cast iron or stainless steel.

All piping lines are to be drained through a master drain valve or shall be equipped with individual drain valves. All drain lines shall be extended with a hose to drain below the chassis frame.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

All water carrying gauge lines shall be of flexible polypropylene tubing.

All piping, hose and fittings shall have a minimum of a 500 PSI hydrodynamic pressure rating.

**MAIN PUMP INLETS**
A 6.00" pump manifold inlet shall be provided on each side of the vehicle. The suction inlets shall include screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

**MAIN PUMP INLET CAP**
The main pump inlets shall have National Standard Threads with a long handle chrome cap.

The cap shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

**SHORT SUCTION TUBE(S)**
The suction tube(s) on the water pump shall have short suction tube(s) installed to allow for installation of adapters, elbows or intake valves without excessive overhang.

**VALVES**
All discharges shall use in-line ball valves.

**LEFT SIDE INLET**
There shall be one (1) auxiliary inlet with a 2.50" valve at the left side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter.

The auxiliary inlet shall be provided with a strainer, chrome swivel and plug.

The location of the valve for the one (1) inlet shall be recessed behind the pump panel.

**INLET CONTROL**
The side auxiliary inlet(s) shall incorporate a quarter-turn ball valve with the control located at the inlet valve. The valve operating mechanism shall indicate the position of the valve.

**INLET BLEEDER VALVE**
A 0.75" bleeder valve shall be provided for each side gated inlet. The valves shall be located behind the panel with a swing style handle control extended to the outside of the panel. The handles shall be chrome plated and provide a visual indication of valve

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. The water discharged by the bleeders shall be routed below the chassis frame rails.

**TANK TO PUMP**
The booster tank shall be connected to the intake side of the pump with stainless steel piping and a quarter turn 3.00" full flow line valve with the control remotely located at the operator's panel. Tank to pump line shall run straight (no elbows) from the pump into the front face of the water tank and angle down into the tank sump. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing.

A check valve shall be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.

**TANK REFILL**
A 1.50" combination tank refill and pump re-circulation line shall be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel.

**LEFT SIDE DISCHARGE OUTLETS**
There shall be Two (2) discharge outlets with a 2.50" valve on the left side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

**RIGHT SIDE DISCHARGE OUTLETS**
There shall be One (1) discharge outlet with a 2.50" valve on the right side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

**LARGE DIAMETER DISCHARGE OUTLET**
There shall be a 4.00" discharge outlet with a 4.00" Akron valve installed on the right side of the apparatus, terminating with a 4.00" (M) National Standard hose thread adapter. This discharge outlet shall be actuated with a handwheel control at the pump operator's control panel.

An indicator shall be provided to show when the valve is in the closed position.

**DISCHARGE CAPS/ INLET PLUGS**
Chrome plated, rocker lug, caps with chain shall be furnished for all discharge outlets 1.00" thru 3.00" in size, besides the pre-connected hose outlets.

Chrome plated, rocker lug, plugs with chain shall be furnished for all auxiliary inlets 1.00" thru 3.00" in size.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The caps and plugs shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

**OUTLET BLEEDER VALVE**
A 0.75" bleeder valve shall be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.

The valves shall be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles shall be chrome plated and provide a visual indication of valve position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders shall be located at the bottom of the pump panel. They shall be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders shall be routed below the chassis frame rails.

**LEFT SIDE OUTLET EBLOWS**
The Two (2) discharge outlets, located on the left side pump panel, shall be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) CSA, chrome plated, 30 degree elbow.

The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

**RIGHT SIDE OUTLET ELBOWS**
The One (1) discharge outlet, located on the right-side pump panel, shall be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) CSA, chrome plated, 30 degree elbow.

The elbow shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

**ADAPTER**
The 4.00" outlet shall be furnished with a 4.00" (F) National Standard hose thread x 4.00" Storz straight adapter with Storz cap and cable.

**ADAPTER**
There shall be two (2) adapters with 1.50" FNST X NPSH. These adapters shall be installed on 2- 1.5" crosslays.

**ADAPTER**

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

There shall be two (2) adapters with 2.50" Female NST x 2.50" Male CSA installed 2.5" crosslay 2.5" aerial monitor.

**DISCHARGE OUTLET CONTROLS**
The discharge outlets shall incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism shall indicate the position of the valve.

If a handwheel control valve is used, the control shall be a minimum of a 3.9" diameter stainless steel handwheel with a dial position indicator built into the center of the handwheel.

Any 3.00 inch or larger discharge valve shall be a slow-operating valve in accordance with NFPA 16.7.5.3.

The deluge riser shall have male National Pipe Threads for mounting the monitor.

**AERIAL OUTLET**
The aerial waterway shall be plumbed from the pump to the water tower line with 5.00" pipe and a 4.00" valve. The handwheel control for the waterway valve shall be located at the pump operator's panel.

An indicator shall be provided to show the position of the valve.

**CROSSLAY HOSE BEDS**
Two (2) crosslays with 1.50" outlets shall be provided. Each bed to be capable of carrying 200' of 1.75" double jacketed hose and shall be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve.

Outlets to be equipped with a 1.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay controls shall be at the pump operator's panel.

The center crosslay dividers shall be fabricated of 0.25" aluminum and shall provide adjustment from side to side. The divider shall be unpainted with a brushed finish.

Vertical scuff plates constructed of stainless steel shall be provided at the front and rear ends of the bed on each side of vehicle.

Crosslay bed flooring shall consist of removable perforated brushed aluminum.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**2.50" CROSSLAY HOSE BED**
One (1) crosslay with 2.50" outlets shall be provided. This bed to be capable of carrying 200' of 2.50" double jacketed hose and shall be plumbed with 2.50" i.d. pipe and gated with a 2.50" quarter turn ball valve.

Outlet to be equipped with a 2.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay control shall be at the pump operator's panel.

The center crosslay dividers shall be fabricated of 0.25" aluminum and shall provide adjustment from side to side. The divider shall be unpainted with a brushed finish. The remainder of the crosslay bed shall be painted job color.

Stainless steel vertical scuff plates shall be provided at hose bed ends (each side of vehicle). Bottom of hose bed ends (each side) shall also be equipped with a stainless steel scuff plate.

Crosslay bed flooring shall consist of removable perforated brushed aluminum.

**CROSSLAY/DEADLAY HOSE RESTRAINT**
Elastic netting shall be provided across the top and ends of two (2) crosslay/deadlay opening(s) to secure the hose during travel. The netting shall be permanently attached at the top center of the crosslay/deadlay bed and removable on each end.

**PUMP COMPARTMENT**
The pump compartment shall be separate from the hose body and compartments so that each may flex independently of the other. The pump compartment shall be constructed of the same material as the body compartmentation.

The pump compartment substructure shall be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards.

The pump compartment shall be mounted on the chassis frame rails with rubber biscuits in a four-point pattern to allow for chassis frame twist.

Pump compartment, pump, plumbing and gauge panels shall be removable from the chassis in a single assembly.

**PUMP MOUNTING**

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

Pump shall be mounted to a substructure which shall be mounted to the chassis frame rail using rubber isolators. The mounting shall allow chassis frame rails to flex independently without damage to the fire pump.

**LEFT SIDE PUMP CONTROL PANELS**
All pump controls and gauges shall be located at the left (driver's) side of the apparatus and properly identified.

Layout of the pump control panel shall be ergonomically efficient and systematically organized.

The pump operator's control panel shall be removable in two (2) main sections for ease of maintenance:

The upper section shall contain sub panels for the mounting of the pump pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable). Sub panels shall be removable from the face of the pump panel for ease of maintenance. Below the sub panels shall be located all valve controls and line pressure gauges.

The lower section of the panel shall contain all inlets, outlets, and drains.

All push/pull valve controls shall have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods shall be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls shall be capable of locking in any position. The control rods shall pull straight out of the panel and shall be equipped with universal joints to eliminate binding.

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

All discharge outlets shall have color coded identification tags, with each discharge having its own unique color. Color coding shall include the labeling of the outlet and the drain for each corresponding discharge.

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

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

the face of the pump panel for ease of maintenance. The casting shall be color coded to correspond with the discharge identification tag.

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

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

Trim rings shall be installed around all inlets and outlets.

**PUMP PANEL CONFIGURATION**
The pump panel configuration shall be arranged and installed in an organized manner that shall provide user-friendly operation.

**PUMP OPERATOR'S PLATFORM**
A pull out, flip down platform shall be provided at the pump operator's control panel.

The platform shall be wired to the "step not stowed" indicator in the cab.

**PUMP OPERATOR'S PLATFORM PERIMETER LIGHT**
There shall be an 20.00" white 12-volt DC LED strip light provided to illuminate the ground area.

**PUMP AND GAUGE PANEL**
The pump and gauge panels shall be constructed of aluminum with a black vinyl finish. A polished aluminum trim molding shall be provided around each panel.

The right-side pump panel shall be removable and fastened with swell type fasteners.

**PUMP COMPARTMENT LIGHT**
There shall be one (1) 3.00" white 12-volt DC LED light(s) with flange(s) installed in the pump compartment.

There shall be a switch accessible through a door on the pump panel included with this installation.

Engine monitoring graduated LED indicators shall be incorporated with the pressure controller.

Also provided at the pump panel shall be the following:

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

- Master Pump Drain Control

**THROTTLE READY GREEN INDICATOR LIGHT**
There shall be a green indicator light integrated with the pressure governor and/or engine throttle installed on the pump operators panel that is activated when the pump is in throttle ready mode.

**OK TO PUMP INDICATOR LIGHT**
There shall be a green indicator light installed on the pump operators panel that is activated when the pump is in Ok To Pump mode.

**ALUMINUM HEAT ENCLOSURE**
A heat enclosure shall be installed, trapping hot air radiated from the engine exhaust system, which shall warm the fire pump. The enclosure shall consist of an aluminum understructure, with easily removable aluminum panels. Also, a covering above the pump shall be provided, so warm air cannot escape freely.

**ELECTRIC GAUGE HEATER**
A 12v electric gauge heater shall be provided for all water carrying gauges.

**PUMP COMPARTMENT HEATER**
Two (2) hot water heaters rated for 33,000 BTU each, shall be installed in the pump compartment. One (1) shall be mounted high and one (1) shall be mounted low facing the back of the pump panel.

Controls for the heaters shall be located at the pump operator's panel.

The pump compartment shall be enclosed at the top to retain the heat generated by the heater inside the pump compartment.

Both the supply and the return lines shall have shutoff valves.

**INSERT INTAKE CAPS**
The inserts in the intake caps shall be the Canadian Flag.

**VACUUM AND PRESSURE GAUGES**
The pump vacuum and pressure gauges shall be liquid filled.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The gauges shall be a minimum of 4.00" in diameter and shall have white faces with black lettering, with a pressure range of 30.00"-0-600 PSI/KPA.

Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

The pump pressure and vacuum gauges shall be installed adjacent to each other at the pump operator's control panel.

Test port connections shall be provided at the pump operator's panel. One (1) shall be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They shall have 0.25 in. standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They shall be marked with a label.

This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

**PRESSURE GAUGES**

The individual "line" pressure gauges for the discharges shall be interlube filled.

They shall be a minimum of 2.00" in diameter and shall have white faces with black lettering.

Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

Gauges shall have a pressure range of 30"-0-400 PSI/KPA.

The individual pressure gauge shall be installed as close to the outlet control as practical.

This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

**WATER LEVEL GAUGE**

There shall be an electronic water level gauge provided on the operator's panel that registers water level by means of five (5) colored LED lights. The lights shall be durable, ultra-bright five (5) LED design viewable through 180 degrees. The water level indicators shall be as follows:

- 100 percent = Green

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

- 75 percent = Yellow
- 50 percent = Yellow
- 25 percent = Yellow
- Refill = Red

The light shall flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights shall flash sequentially when the water tank is empty.

The level measurement shall be based on the sensing of head pressure of the fluid in the tank.

The display shall be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components. The encapsulated design shall provide complete protection from water and environmental elements. An industrial pressure transducer shall be mounted to the outside of the tank. The field calibratable display measures head pressure to accurately show the tank level.

**LIGHT SHIELD**
There shall be a polished, 16 gauge stainless steel light shield installed over the pump operator's panel.

- There shall be 12-volt DC white LED lights installed under the stainless steel light shield to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights shall be activated by the pump panel light switch. Additional lights shall be included every 18.00" depending on the size of the pump house.
- One (1) pump panel light shall come on when the pump is in ok to pump mode.

There shall be a light activated above the pump panel light switch when the parking brake is set. This is to afford the operator some illumination when first approaching the control panel.

**AIR HORN SYSTEM**
There shall be two (2) air horns recessed in the front bumper. The horn system shall be piped to the air brake system wet tank utilizing 0.38" tubing. A pressure protection valve shall be installed in-line to prevent loss of air in the air brake system.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**Air Horn Location**
The air horns shall be located on each side of the bumper, towards the outside.

**Air Horn Control**
The air horns shall be actuated by a chrome push button located on the officer's side of the engine tunnel and by the horn button in the steering wheel. The driver shall have the option to control the air horns or the chassis horns from the horn button by means of a selector switch located on the instrument panel.

**AIR HORN SWITCH**
An air horn control switch will be provided at the pump operator's control panel. This switch will be red and properly labeled. The switch will be located within easy reach of the operator in the electrical switch panel.

**ELECTRONIC SIREN**
An electronic siren with noise canceling microphone shall be provided.

This siren to be active when the battery switch is on and that emergency master switch is on.

Electronic siren head shall be recessed in the driver side center switch panel.

The electronic siren shall be controlled on the siren head only. No horn button or foot switches shall be required.

**SPEAKER**
There shall be one (1) black nylon composite, 100-watt, speaker with through bumper mounting brackets and polished stainless steel grille provided. The speaker shall be connected to the siren amplifier.

The speaker(s) shall be recessed in the center of the front bumper.

**FRONT ZONE UPPER WARNING LIGHTS**
There shall be two (2) 21.50" LED lightbars mounted on the cab roof, one (1) on each side, above the driver's and passenger's door, facing forward.

The driver's side lightbar shall include the following:

- One (1) red flashing LED module in the outside end position.
- One (1) red flashing LED module in the outside front corner position.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

- One (1) red flashing LED module in the outside front position.
- One (1) red flashing LED module in the inside front position.
- One (1) red flashing LED module in the inside front corner position.

The passenger's side lightbar shall include the following:

- One (1) red flashing LED module in the inside front corner position.
- One (1) red flashing LED module in the inside front position.
- One (1) red flashing LED module in the outside front position.
- One (1) red flashing LED module in the outside front corner position.
- One (1) red flashing LED module in the outside end position.

There shall be clear lenses included on the lightbar.

There shall be a switch in the cab on the switch panel to control the lightbars.

**FRONT BASKET WARNING LIGHTS**
There shall be two (2) 1.50" high x 5.00" long x 0.50" deep warning lights installed on the front of the basket per the following:

- the left side light to include red flashing LEDs
- the right-side light to include red flashing LEDs

There shall be a switch in the cab on the switch panel to control the lights. The lights shall be deactivated when the boom is lifted out of the cradle.

**SIDE BASKET WARNING LIGHTS**
There shall be two (2) 1.50" high x 5.00" long x 0.50" deep warning lights installed on the sides of the basket per the following:

- the left side light to include red flashing LEDs
- the right-side light to include red flashing LEDs

There shall be as switch in the cab on the switch panel to control the lights. The lights shall be deactivated when the boom is lifted out of the cradle.

**LIGHTS, FRONT ZONE LOWER**
Two (2) LED flashing warning lights shall be installed on the cab face above the headlights, in a common bezel with the directional lights.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The driver's side front warning light to be red.

The passenger's side front warning light to be red.

Both lights shall include a clear lens.

There shall be a switch located in the cab on the switch panel to control the lights.

**HEADLIGHT FLASHER**
The high beam headlights shall flash alternately between the left and right side.

There shall be a switch installed in the cab on the switch panel to control the high beam flash. This switch shall be live when the battery switch and the emergency master switches are on.

The flashing shall automatically cancel when the hi-beam headlight switch is activated or when the parking brake is set.

**SIDE ZONE LOWER LIGHTING**
There shall be four (4) 4.31" high x 6.75" wide x 1.37" deep flashing LED warning lights with chrome trim installed per the following:

- Two (2) lights, one (1) each side on the bumper extension. The left side, side front light to include red warning LEDs and the right side, side front light to include red warning LEDs.
- Two (2) lights, one (1) each side on the rear fender panel. The left side, side rear light to include red warning LEDs and the right side, side rear light to include red warning LEDs.
- The warning light lens color(s) to be clear.

There shall be a switch in the cab on the switch panel to control the lights.

**REAR ZONE LOWER LIGHTING**
There shall be two (2) 4.31" high x 6.75" wide x 1.37" deep flashing LED warning lights with chrome trim located at the rear of the apparatus per the following:

- The left side rear warning light to include red LEDs
- The right-side rear warning light to include red LEDs
- The warning light lens color(s) to be clear

There shall be a switch in the cab on the switch panel to control the lights.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**REAR/SIDE ZONE UPPER WARNING LIGHTS**
There shall be two (2) LED warning beacons provided at the rear of the truck, located one (1) each side. There shall be a switch located in the cab on the switch panel to control the beacons.

The color of the lights shall be red LEDs with both domes clear.

**TRAFFIC DIRECTING LIGHT**
There shall be one (1) 36.00" long x 2.87" high x 2.25" deep, amber LED traffic directing light installed at the rear of the apparatus.

The control head shall be included with this installation.

The controller shall be energized when the battery switch is on.

The auxiliary flash not activated.

This traffic directing light shall be mounted on top of the body below the turntable with a treadplate box at the rear of the apparatus.

The traffic directing light control head shall be located in the driver side overhead switch panel in the right panel position.

**100 FOOT OR GREATER AERIAL PLATFORM**

**CONSTRUCTION STANDARDS**
The ladder shall be constructed to meet all of the requirements as described in the current NFPA 1901 standards.

The aerial device shall be a true ladder type device; therefore, ladders attached to booms shall not be considered.

These capabilities shall be established in an unsupported configuration.

All structural load supporting elements of the aerial device that are made of a ductile material shall have a design stress of not more than 50% of the minimum yield strength of the material based on the combination of the live load and the dead load. This 2:1 structural safety factor meets the current NFPA 1901 standard.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |
| All structural load supporting elements of the aerial device that are made of non-ductile material shall have a design stress of not more than 20% of the minimum ultimate strength of the material, based on the combination of the rated capacity and the dead load. This 5:1 safety factor meets the current NFPA 1901 standard.<br><br>Wire ropes and attaching systems used to extend and retract the fly sections shall have a 5:1 safety factor based on the ultimate strength under all operating conditions. The factor of safety for the wire rope shall remain above 2:1 during any extension or retraction stall. The minimum ratio of the diameter of wire rope used to the diameter of the sheave used shall be 1:12. Wire ropes shall be constructed of seven (7) strands over an inner wire core for increased flexibility. The wire rope shall be galvanized to reduce corrosion.<br><br>The aerial device shall be capable of sustaining a static load one and one-half times its rated tip load capacity (live load) in every position in which the aerial device can be placed when the vehicle is on a firm level surface.<br><br>The aerial device shall be capable of sustaining a static load one and one-third times its rated tip load capacity (live load) in every position the aerial device can be placed when the vehicle is on a slope of five degrees downward in the direction most likely to cause overturning.<br><br>With the aerial device out of the cradle and in the fully extended position at zero degrees elevation, a 350lb test load shall be applied in a horizontal direction normal to the centerline of the ladder. The turntable shall not rotate and the ladder shall not deflect beyond what the product specification allows.<br><br>All welding of aerial components, including the aerial ladder sections, turntable, pedestal, and outriggers, shall be in compliance with the American Welding Society standards. All welding personnel shall be certified, as qualified under AWS welding codes.<br><br>The aerial device shall be capable of operating in conditions of wind up to 35 mph and icing conditions of up to a .25" coating over the aerial structure.<br><br>All of the design criteria must be supported by the following test data (no exception):<br><br>- Strain gage testing of the complete aerial device<br><br>- Analysis of deflection data taken while the aerial device was under test load | | |

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The following standards for materials are to be used in the design of the aerial device:

- Materials are to be certified by the mill that manufactured the material

- Materials that are certified or recertified by vendors other than the mill shall not be acceptable

- Material testing that is performed after the mill test shall be for verification only and not with the intent of changing the classification

- All welded structural components for the ladder shall be traceable to their mill lots.

**AERIAL LOAD CHART**
The bidder shall include a copy of the actual aerial load chart installed on the apparatus. This chart shall show all aerial positions, actual weight capacities in both dry/wet waterway applications, show allowable ice buildup capacities along with wind restrictions.

**AERAIL TIP LOAD RATED CAPACITY**
The ladder shall have the capability to support a minimum of 750 pounds at the tip in the unsupported configuration, based upon 360 degree rotation, up to full extension and from -10 degrees to +77 degrees.

This shall allow for the rescue operations including two firefighters and one victim.

**VERTICAL HEIGHT**
The ladder shall be able to operate at minimum of 100' above the ground at full extension and elevation. The measurement of height shall be consistent with NFPA standards.

**HOROZONTAL REACH**
The rated horizontal reach shall be a minimum of 90'. The measurement of horizontal reach shall be consistent with NFPA standards.

**TURNTABLE**
The upper turntable assembly shall connect the aerial ladder to the turntable bearing. The steel structure shall have a mounting position for the aerial elevation cylinders, ladder connecting pins, and upper turntable operator's position.

**STABILIZERS**

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

There shall be only one stabilizer on each side of the body that extends horizontally, this shall allow for easy setup on congested streets. Additional downrigger style stabilizer that doesn't extend horizontally from the body shall be allowed.

**SHORT JACK CAPABILITY**
The Aerial device shall be capable of short jacking. The Aerial device shall be able to operate with limitations when full stabilizer extension cannot be achieved. The bidder shall provide information of this system and its limitations.

**HYDRAULIC CYLINDERS**
All cylinders used on the aerial device shall be produced by a manufacturer that specializes in the manufacture of hydraulic cylinders.

Each cylinder shall include integral safety holding cartridges. No manifold or transfer tube mounted cartridge shall be acceptable.

Each cylinder shall be designed to a minimum safety factor of 4:1 to failure.

**EXTENSION/RETRACTION SYSTEM**
A hydraulically powered, extension and retraction system shall be provided through dual hydraulic cylinders and wire ropes. Each set shall be capable of operating the ladder in the event of a failure, of the other. For safety, systems that use only a single extension/retraction system shall not be acceptable. The extension cylinder rod shall be chrome plated to provide smooth operation of the aerial device and reduce seal wear. The extension/retraction cylinders shall be equipped, with integral holding valves, to prevent the unit from retracting should the charged line be severed, at any point within the hydraulic system. The integral holding valves shall NOT be located in the transfer tubes.

Wire ropes and attaching systems used to extend and retract the fly sections shall have a 5:1 safety factor based on the ultimate strength under all operating conditions. The factor of safety for the wire rope shall remain above 2:1 during any extension or retraction stall. The minimum ratio of the diameter of wire rope used to the diameter of the sheave used shall be 1:12. Wire ropes shall be constructed of seven (7) strands over an inner wire for increased flexibility. The wire rope shall be galvanized to reduce corrosion.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The extension/retraction system shall be controlled by the microprocessor. Linear transducers shall measure the ladder extension. The microprocessor shall provide the following features:

- Automatic deceleration at the end of stroke, in maximum extend and retract positions

All sheaves shall require lubrication. They shall have bronze bushings and grease zerks.

**MANUAL OVERRIDE CONTROLS**
Manual override controls shall be provided for all aerial and stabilizer functions.

**LADDER SLIDE MECHANISM**
UHMW polyethylene wear pads shall be used between the telescoping ladder sections, to provide greater bearing surface area for load transfer. Adjustable slide pads shall be used to control side play between the ladder sections.

**ROTATION SYSTEM**
The rotation system shall be controlled by the microprocessor. The microprocessor shall provide the following features:

- Collision avoidance to prevent accidental body damage
- Prevent the aerial from being rotated into an unstable condition
- Require the use of a “Manual Override” to swing to the “Short Jack” side of the truck

**BASKET LEVELING SYSTEM**
A basket leveling system shall be provided and so designed, that the basket with its rated load, can be supported and maintained level, relative to the turntable, regardless of the elevation or flexion of the ladder.

**LADDER CRADLE INTERLOCK SYSTEM**
A ladder cradle interlock system shall be provided through the microprocessor to prevent the lifting of the aerial device from the nested position until the operator places all the stabilizers in a load supporting configuration. A switch shall be installed at the boom support to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

**AERIAL TORQUE BOX/PEDESTAL**
The pedestal assembly shall be a welded assembly made of high strength 0.25" plate. The vertical member shall be a 0.375" reinforced wall cylinder with a 28.00" outside

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

diameter and shall connect the rotation bearing mounting plate to the lower substructure.

The pedestal assembly shall be bolted to the chassis frame with 0.88" diameter Grade 8 bolts, and shall be utilized to mount the outrigger jacks and reservoir for the aerial hydraulic system.

**AERIAL BOOM PANEL**
There shall be one boom panel provided on the driver's side of the aerial ladder base section. The boom panel shall be painted black.

The boom panel shall be designed so no mounting bolts are in the face of the panel. This shall keep the lettering surface free of holes.

**AERIAL DEVICE RUNG COVERS**
Each rung shall be covered with a secure, heavy-duty, fiberglass pultrusion that incorporates an aggressive, no-slip coating.

**STOKES STORAGE BOX**
There shall be one (1) aluminum storage box(es) provided at the base section of the aerial ladder on the right side of the aerial device while viewed from the turntable. The box(es) shall be painted to match the aerial device. The box(es) shall be located in place of the aerial boom panel and have a hinged cover with pair of rubber draw latches to secure the stokes basket. The cover shall have the same finish as the box. The cover shall be tied into the open door indicator circuitry when in the open position. The box(es) shall have no louvers.

The size of the stokes basket shall be 84.00" long x 25.00" wide x 9.00" high.

The maximum capacity of each box shall be 75 lb.

**STABILITY TEST**
An aerial stability test shall be run on this apparatus using the maximum weight allowance for tip options.

**BASKET STRUCTURE**
The complete basket structure shall be constructed of welded high strength steel certified by the manufacturer to have a minimum of 100,000 lb. per square inch yield strength. The aerial basket shall be fully tested and independent third party certified.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The flooring of the basket shall be a combination of aluminum treadplate and punched aluminum grating, preventing the accumulation of water on the standing surface. The stepping surfaces shall meet the skid-resistance requirements per the current edition of NFPA 1901

The basket interior shall be illuminated as required per the current edition of NFPA 1901.

**BASKET SIDES**
The sides of the basket shall be of tubular steel construction with aluminum panels, and along with the basket doors, shall form a continuous 42.00" high wall around the basket.

**BASKET ENTRANCES/EXITS**
Two swing-in, spring-loaded, self-closing doors constructed of tubular high strength steel with aluminum panels shall be provided at the front of the basket. The rear of the basket shall be equipped with a vertical self-closing gate for transfer to and from the platform's ladder device. Handrails shall be provided to bridge the gap between the basket and the fly section at all elevations.

**LIGHTS FOR TURNTABLE WALKWAY**
There shall be white LED lights provided at the aerial turntable. The lights shall be located to illuminate the entire walking surface of the turntable including the area around the turntable console. These lights shall be activated by the aerial master switch.

**AERIAL TURNTABLE CONTROLS**
There shall be one (1) control station located on the left side of the turntable so the operator may easily observe the ladder while operating the controls. All elevation, extension and rotation controls shall operate from this location. A console cover shall be provided at the turntable control station. The following items shall also be provided at the turntable control station, clearly identified and illuminated for nighttime operation and conveniently located for ease of operation and viewing:

- Intercom controls
- Tip tracking light switch
- Emergency stop switch
- Emergency power unit switch
- Operator's load chart
- Two (2) position switch for selecting aerial operational speed
- Ladder illumination switch

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

- Aerial monitor switches

**TURNTABLE CONSOLE LIGHTING**

There shall be one (1), white LED light strip mounted in the turntable console cover to illuminate the controls located on both the upper and lower portion of the turntable control station. These lights shall be activated by the aerial master switch.

**INFORMATION CENTER**

There shall be an information multiplex display located at the aerial control station. It shall display rung alignment, elevation, extension, rotation, stabilizer deployment, flowmeter, and provide system diagnostic services.

**AERIAL DEVICE CONTROL STATIONS**

There shall be two (2) aerial device control stations, one (1) shall be referred to as the basket control station, and the other as the turntable control station. All elevation, extension, and rotation controls shall operate from both of these locations. The controls shall permit the operator to regulate the speed of the aerial functions, within the safe limits as determined by the manufacturer and NFPA standards. The controls shall be clearly marked and illuminated for night time operation.

Each control shall be equipped with an operator presence, preventing accidental activation.

**BASKET CONTROL STATION**

The basket control station shall be located at the front, center of the platform basket. The following items shall also be provided at the basket control station and be clearly identified and illuminated for nighttime operation and conveniently located for ease of operation and viewing:

- Multi-axis controller for aerial movements. Side to side movement controls device rotation, fore and aft controls device elevation, and left and right rotation controls device extension and retraction

- Intercom controls

- Tip tracking light switch

- Basket leveling switches

- Operator's load chart

| | Bidder Complies | |
|---|---|---|
| | Yes | No |
| - Aerial monitor switches<br><br>**HIGH IDLE**<br>The high idle shall be controlled by the microprocessor. The microprocessor shall automatically adjust the engine rpm, to compensate for the amount of load placed upon the system. The system shall include a safety device that allows activation of the high idle, only when the parking brake is set and the transmission is placed in neutral.<br><br>.<br><br>**STABLIZER CONTROLS**<br>Stabilizer controls shall be located on each side on the rear of the body. Clear vision to the stabilizer and its path shall be easily seen by the operator. Electronic auto-leveling as well as manually operated leveling shall be employed.<br><br>A latched, vertically hinged smooth aluminum weatherproof door shall be installed on each stabilizer control panel.<br><br>**STABILIZER PLACEMENT**<br>There shall be two (2) cameras provided and installed on the body, one (1) directly above each stabilizer. The cameras shall be activated with a switch in the cab and shall provide a picture to specify the fully extended stabilizer position allowing the driver the ability to position the vehicle with the proper clearance for stabilizer deployment.<br><br>**POWER TAKEOFF/HYDRAULIC PUMP**<br>The apparatus shall be equipped with a power takeoff driven by the chassis transmission and actuated by an electric shift, located inside the cab. The power takeoff which drives the hydraulic pump shall meet all the requirements for the aerial unit operations.<br><br>A green indicator light shall be installed on the cab instrument panel to notify the operator that the power takeoff is engaged.<br><br>An interlock shall be provided that allows operation of the aerial power takeoff shift only after the chassis spring brake has been set and the chassis transmission has either been placed in the neutral position or drive position after the driveline has been disengaged from the rear axle. | | |

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**EMERGENCY PUMP**
The hydraulic system shall be designed with an auxiliary power unit meeting the guidelines of the current NFPA 1901 standard.

**AERIAL SWIVEL**
An aerial swivel that allows for continuous 360 degree rotation operation of water, electric and hydraulic functions shall be included.

**AERIAL SWIVEL WARRANTY**
Five year full warranty coverage of the Aerial Swivel shall be included.

**UNDER BASKET LIGHTS**
There shall be one (1) 4,100 lumens 12-volt DC LED light with adjustable mount installed under the basket of the aerial device. The painted parts of this light assembly to be white.

The light will be controlled with the tracking and tip lights.

**TIP LIGHT**
There shall be one (1) 4,100 lumens 12-volt DC LED light with adjustable mount installed on the front of the basket. The tip light to include white painted parts.

**TRACKING LIGHTS**
There shall be two (2) 12-volt DC LED lights with profile pedestal mounts installed on the base section of the aerial device.

- One (1) located on the driver's side.
- One (1) located on the passenger's side.

Power to the lights shall be controlled by a master on/off switch at the turntable control operator's position.

The painted parts of this light assembly to be white.

The light shall be mounted below the top edge of the aerial device so as not to increase the overall height of the unit.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**TIP, UNDER BASKET AND TRACKING LIGHT CONTROL**
There shall be two (2) on/off switches installed to control the tip, under basket and tracking lights per the following:

- One (1) switch shall be installed at the basket control panel
- One (1) switch shall be installed at the turntable control panel

**STABILIZER WARNING LIGHTS**
There shall be two (2) LED flashing warning lights with clear lenses and chrome flanges installed on the stabilizer cover panels, one (1) each side.

- The LED lights shall be red.

These warning lights shall be activated by the same switch as the side warning lights.

**STABILIZER BEAM WARNING LIGHTS**
There shall be two (2) 2.00" round red LED flashing lights mounted on each out and down stabilizer, one (1) facing forward and one (1) facing rearward.

The lights shall be recessed in the horizontal beam of the stabilizer.

These warning lights shall be activated with the aerial master switch.

**STABILIZER SCENE LIGHTS**
There shall be three (3) 190 lumens, 12.00" long, white LED strip lights installed to illuminate the area around the aerial stabilizers, one (1) light per stabilizer. The lights shall be activated by the aerial master switch.

**2-WAY AERIAL COMMUNICATION SYSTEM**
There shall be a two-way intercom system provided. The control module with an LED volume display and push-button volume control shall be located on the turntable operator console.

A hands-free module shall be located at the aerial tip or platform and constantly transmit to the other module unless the control module push-to-talk button is pressed.

Each intercom unit shall be weatherproof.

**AERIAL PEDESTAL**

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The aerial pedestal shall accommodate the height of the cab.

**AERIAL TURNTABLE SAFETY BARS**
Safety bars shall be installed at the aerial turntable.

**WATER SYSTEM**
A waterway system shall be provided consisting of the following components and features:

A 5.00" pipe shall be connected to the water supply on one end and to a 5.00" internal diameter water swivel at the rotation point of the turntable. The water swivel shall permit 360 degree continuous rotation of the aerial device.

A 1.50" drain valve shall be located at the lowest point of the waterway system.

**AERIAL MONITOR**
An electric monitor shall be provided at the front of the platform with a TFT 1250 gpm Model M-ERP1250SNJ electric nozzle.

The controls for the electronic monitor shall be located at the platform and the turntable control console.

**VALVE UNDER MONITOR**
A valve under the monitor and manifold shall be provided between the aerial waterway and aerial monitor.

An electric valve shall be provided for the electric monitor utilizing the four (4) ports as follows:

- Upward facing port: blind plug
- Right outboard port: 1.00" NPT female shower adapter
- Right outboard port: pressure relief valve
- Downward facing port: external automatic drain valve

The valve shall be controlled at the basket and turntable pedestal. Wireless remote control shall be available thru the monitor wireless remote control, if selected. An automatic ball drain shall be provided on the valve.

Indicator lights shall be provided on the electric valve controller to show when the valve is open or closed.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**AERIAL WATERWAY FLOW METER**
Waterway flow, including total water flowed, shall be monitored by the microprocessor. An LCD display shall be located at the turntable control station.

**REAR INLET**
A 5.00" NST inlet to the aerial waterway shall be provided at the rear of the apparatus. The inlet shall have 5.00" aluminum plumbing. It shall be furnished with a 5.00" chrome plated adapter and a 5.00" chrome plated, long handle cap.

**TOOLS**
The following tools shall be provided for retorquing of all specified bolts as recommended by the manufacturer:

- Torque Wrench
- All Required Extensions, Sockets and Adapters
- 4-to-1 Multiplier

**MANUALS**
The aerial manufacturer shall provide two (2) operator maintenance manuals and two (2) wiring diagrams pertaining to the aerial device.

**INITIAL INSTRUCTION**
On initial delivery of the fire apparatus, the contractor shall supply a qualified representative to demonstrate the apparatus and provide initial instruction to the fire department regarding the operation, care, and maintenance of the apparatus for a period of three (3) consecutive days.

**LOOSE EQUIPMENT**
The following equipment shall be furnished with the completed unit:

- One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit

**NFPA REQUIRED LOOSE EQUIPMENT PROVIDED BY FIRE DEPARTMENT**
All loose equipment as outlined in NFPA 1901, 2016 edition, section 9.9.3 and 9.9.4 shall be provided by the fire department.

**AERIAL LADDER BELTS**
The following ladder belts shall be provided:

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

- no small/medium belts
- two (2) large/extra large belts for 34"-42" waist
- one (1) XXL belt for 42"-50" waist

.

**CAB TWO-TONE PAINT**
The cab shall be painted two-tone with the upper section painted black and the lower section painted red. There shall be a standard two-tone cab paint break provided.

**BODY PAINT**
The body shall be painted to match the lower section of the cab.

**PAINT CHASSIS FRAME ASSEMBLY**
The chassis frame assembly shall be finished with a single system black top coat before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc.

Components that are included with the chassis frame assembly that shall be painted are:

- Frame rails
- Frame liners
- Cross members
- Axles
- Suspensions
- Steering gear
- Battery boxes
- Bumper extension weldment
- Frame extensions
- Body mounting angles
- Rear Body support substructure (front and rear)
- Pump house substructure
- Air tanks
- Steel fuel tank
- Castings
- Individual piece parts used in chassis and body assembly

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

Components treated with epoxy E-coat protection prior to paint:

- Two (2) C-channel frame rails
- Two (2) frame liners

**AXLE HUB PAINT**
All axle hubs shall be painted black

**COMPARTMENT INTERIOR PAINT**
The interior of all compartments shall be painted with a gray spatter type paint.

**AERIAL DEVICE PAINT COLOR**
The aerial device paint procedure shall consist of a six (6) step finishing process as follows:

- Aerial basket: black
- Aerial device ladder sections and extension cylinders: black
- Aerial turntable: black
- Aerial control console: black
- Aerial lift cylinders: black
- Aerial boom support: black

**REFLECTIVE BAND**
A 6.00" black reflective band shall be provided across the front of the vehicle and along the sides of the body.

The reflective band provided on the cab face shall be at the headlight level.

**REAR CHEVRON STRIPING**
There shall be alternating chevron striping located on the rear-facing vertical surface of the apparatus. Covered surfaces shall include the rear wall and aluminum doors. Roll up doors and stainless steel access doors shall not be covered in chevron.

The colors shall be red and fluorescent yellow green diamond grade.

Each stripe shall be 6.00" in width.

This shall meet the requirements of the current edition of NFPA 1901, which states that 50% of the rear surface shall be covered with chevron striping.

**REFLECTIVE STRIPE ON STABILIZERS**

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

There shall be a 4.00" wide fluorescent yellow green diamond grade reflective stripe provided on the forward and rear facing side of all aerial stabilizers.

**CAB DOOR REFLECTIVE STRIPE**
A 6.00" x 16.00" white reflective stripe shall be provided across the interior of each cab door. The stripe shall be located approximately 1.00" up from the bottom, on the door panel.

This stripe shall meet the NFPA 1901 requirement.

**LETTERING**
One (1) to twenty (20) reflective lettering, 10.00" high, with outline shall be provided.

**LETTERING**
One (1) to twenty (20) reflective lettering, 3.00" high, with no outline or shade shall be provided.

**EMBLEM**
There shall be two (2) pair of emblems showing a "Dept. Patch" installed on the Driver and Passenger doors. The emblem shall be made with reflective material. The size shall be approximately 12.00" high x 12.00" wide.

**CAB GRILLE DESIGN**
A Canadian flag design shall be painted on the cab grille.

**FIRE APPARATUS PARTS MANUAL**
There shall be one (1) custom parts manual(s) in USB flash drive format for the complete fire apparatus provided.

**Service Parts Internet Site**
The service parts information included in these manuals are also available on the Internet.

**CHASSIS SERVICE MANUALS**
There shall be one (1) chassis service manuals on USB flash drives containing parts and service information on major components provided with the completed unit.

The manual shall contain the following sections:

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

- Job number
- Table of contents
- Troubleshooting
- Front Axle/Suspension
- Brakes
- Engine
- Tires
- Wheels
- Cab
- Electrical, DC
- Air Systems
- Plumbing
- Appendix

The manual shall be specifically written for the chassis model being purchased. It shall not be a generic manual for a multitude of different chassis and bodies.

**CHASSIS OPERATION MANUAL**
The chassis operation manual shall be provided on one (1) USB flash drive.

**ONE (1) YEAR MATERIAL AND WORKMANSHIP**
Each new piece of apparatus shall be provided with a minimum **one (1) year** basic apparatus material and workmanship limited warranty. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**ENGINE WARRANTY**
A **five (5) year** limited engine warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package.

**STEERING GEAR WARRANTY**
A **one (1) year** limited steering gear warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package.

**FIFTY (50) YEAR STRUCTURAL INTEGRITY**

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

The chassis frame shall be provided with a **fifty (50) year** material and workmanship limited warranty. The warranty shall cover the chassis frame as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**FRONT AXLE WARRANTY**
A **five (5)-year/100,000 mile** parts and labor warranty shall be provided.

**SINGLE REAR AXLE FIVE (5) YEAR MATERIAL AND WORKMANSHIP WARRANTY**
A 5 year limited warranty shall be provided.

**BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY**
A **three (3) year** brake system limited warranty shall be provided.

**TEN (10) YEAR STRUCTURAL INTEGRITY**
The new cab shall be provided with a **ten (10) year** material and workmanship limited warranty. The warranty shall cover such portions of the cab built by the manufacturer as being free from structural failures caused by defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**TEN (10) YEAR PRO-RATED PAINT AND CORROSION**
Each new piece of apparatus shall be provided with a **ten (10) year** pro-rated paint and corrosion limited warranty on the apparatus cab. The warranty shall cover painted exterior surfaces of the body to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**FIVE (5) YEAR MATERIAL AND WORKMANSHIP**
The electronic modules and display(s) shall be provided with a five (5) year material and workmanship limited warranty. The warranty shall cover electronic modules to be free from failures caused by defects in material and workmanship.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**CAMERA SYSTEM WARRANTY**
A fifty four (54) month warranty shall be provided for the camera system**.**

**COMPARTMENT LIGHT WARRANTY**
A ten (10) year material and workmanship limited warranty shall be provided for the Pierce 12-volt DC LED strip lights**.** The warranty shall cover the LED strip lights to be free from defects in material and workmanship that would arise under normal use.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**TRANSMISSION WARRANTY**
The transmission shall have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty is to be provided by transmission supplier and not the apparatus builder.

**TRANSMISSION COOLER WARRANTY**
The transmission cooler shall carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a collateral damage warranty shall also be in effect for the first three (3) years of the warranty coverage and shall not exceed $10,000 per occurrence. A copy of the warranty certificate shall be submitted with the bid package.

**WATER TANK WARRANTY**
The poly water tank shall be provided with a lifetime material and workmanship limited warranty.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**TEN (10) YEAR STRUCTURAL INTEGRITY**
Each new piece of apparatus shall be provided with a **ten (10) year** material and workmanship limited warranty on the apparatus body. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY**
A roll-up door limited warranty shall be provided. The mechanical components of the roll-up door shall be warranted against defects in material and workmanship for the lifetime of the vehicle. A **six (6) year** limited warranty shall be provided on painted and satin roll up doors.

A copy of the warranty certificate shall be submitted with the bid package.

**PUMP WARRANTY**
The pump shall be provided with a Seven (7) year material and workmanship limited warranty.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**TEN (10) YEAR PUMP PLUMBING WARRANTY**
The stainless steel plumbing components 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 only to the original purchaser for a period of ten years from the date of delivery.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**TWENTY (20) YEAR AERIAL DEVICE STRUCTURAL INTEGRITY WARRANTY**
The aerial device shall be provided with a twenty (20) year material and workmanship limited warranty. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service. This warranty shall be limited to the torque box, turntable, aerial sections and other structural components.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**AERIAL SWIVEL WARRANTY**
A five (5) year limited swivel warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package (no exception).

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**HYDRAULIC SYSTEM COMPONENTS WARRANTY**
Aerial hydraulic system components shall be provided with a five (5) year material and workmanship limited warranty.

**HYDRAULIC SEAL WARRANTY**
Aerial hydraulic seals shall be provided with a three (3) year material and workmanship limited warranty.

A copy of the warranty certificates shall be submitted with the bid package (no exception).

**AERIAL WATERWAY WARRANTY**
A ten (10) year limited waterway warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package (no exception).

**FOUR (4) YEAR PRO-RATED PAINT AND CORROSION**
The aerial device shall be provided with a four (4) year pro-rated paint and corrosion limited warranty. The warranty shall cover exterior painted surfaces of the aerial device to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**TEN (10) YEAR PRO-RATED PAINT AND CORROSION**
Each new piece of apparatus shall be provided with a **ten (10) year** pro-rated paint and corrosion limited warranty on the apparatus body. The warranty shall cover painted exterior surfaces of the body to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**ONE (1) YEAR MATERIAL AND WORKMANSHIP**
The graphic lamination shall be provided with a one (1) year material and workmanship limited warranty. The warranty shall cover the graphic lamination as being free from

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

defects in material, workmanship, fading, and deterioration that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (no exception).

**VEHICLE STABILITY CERTIFICATION**
The fire apparatus manufacturer shall provide a certification stating the apparatus complies with NFPA 1901, current edition, section 4.13, Vehicle Stability. The certification shall be provided at the time of bid.

**ENGINE INSTALLATION CERTIFICATION**
The fire apparatus manufacturer shall provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification shall be provided at the time of delivery.

**POWER STEERING CERTIFICATION**
The fire apparatus manufacturer shall provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification shall be provided at the time of bid.

**CAB INTEGRITY CERTIFICATION**
The fire apparatus manufacturer shall provide a cab crash test certification with this proposal. Testing shall meet or exceed the requirements below:

- European Occupant Protection Standard ECE Regulation No.29.
- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.
- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks.

There shall be no exception to any portion of the cab integrity certification. Nonconformance shall lead to immediate rejection of bid.

**CAB DOOR DURABILITY CERTIFICATION**
Robust cab doors help protect occupants. Cab doors shall survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder shall certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear.

| | Bidder Complies | |
|---|---|---|
| | Yes | No |

**WINDSHIELD WIPER DURABILITY CERTIFICATION**
Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers shall survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles.* The bidder shall certify that the wiper system design has been tested and that the wiper system has met these criteria.

**SEAT BELT ANCHOR STRENGTH**
Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design shall withstand 3000 lb. of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder shall certify that each anchor design was pull tested to the required force and met the appropriate criteria.

**SEAT MOUNTING STRENGTH**
Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design shall be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder shall certify, at time of delivery, that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

**PERFORMANCE CERTIFICATIONS**

**Cab Air Conditioning**
Good cab air conditioning temperature and air flow performance keeps occupants comfortable, reduces humidity, and provides a climate for recuperation while at the scene. The cab air conditioning system shall cool the cab from a heat-soaked condition at 100 degrees Fahrenheit to an average of 78 degrees Fahrenheit in 30 minutes. The bidder shall certify that a substantially similar cab has been tested and has met these criteria.

**Cab Defroster**
Visibility during inclement weather is essential to safe apparatus performance. The defroster system shall clear the required windshield zones in accordance with SAE J381 Windshield Defrosting Systems Test Procedure And Performance Requirements - Trucks, Buses, And Multipurpose Vehicles. The bidder shall certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

**Cab Auxiliary Heater**

| | Bidder Complies | |
|---|---|---|
| | Yes | No |
| Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. An auxiliary cab heater shall warm the cab 77 degrees Fahrenheit from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder shall certify, at time of delivery, that a substantially similar cab has been tested and has met these criteria.<br><br>**AMP DRAW REPORT**<br>The bidder shall provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system. | | |