



RFP

**Purchase of New Pumper/Tanker for the
Greater Madawaska Fire Department**

REQUEST FOR PROPOSAL NO.: FD01-2024

ISSUED: MAY 2, 2024

SUBMISSION DEADLINE: MAY 30, 2024 @ 1:00 P.M.

Submission Instructions

1. Bidding System Registration

To obtain documents online please visit <https://greatermadawaska.bidsandProposals.ca>
You can preview the bid documents with a Preview Watermark prior to registering for the opportunity. Documents are not provided in any other manner.

2. Submission of Proposals

Proposals must be submitted electronically through the bidding system at:
<https://greatermadawaska.bidsandProposals.ca>

Submissions by other methods will not be accepted.

In the event of any technical issues, respondents should contact the bidding system's technical support.

3. Proposals to be Submitted on Time

Proposals must be finalized and fully uploaded in the bidding system on or before the Submission Deadline of May 30, 2024, at 1:00 p.m. The time of receipt of Proposals will be determined by the bidding system web clock. Late submissions will not be accepted by the bidding system and will be disqualified as late.

Respondents are cautioned that the timing of submission is based on when the Proposal is received by the bidding system, not when a Proposal is submitted by a respondent. As transmission can be delayed due to file transfer size, transmission speed, or other technical factors, respondents should plan to submit Proposals well in advance of the submission deadline.

The bidding system will send a confirmation email to the respondent advising when the Proposal is submitted successfully. If you do not receive a confirmation email, contact the bidding system's technical support immediately.

4. Withdrawal of Proposals

Prior to the Submission Deadline, respondents may withdraw a submitted proposal through the bidding system. To withdraw a Proposal after the Submission Deadline, a notice of withdrawal must be sent to RFP Contact and must be signed by an authorized representative of the respondent.

5. Proposal Acceptance

The selected respondent will be notified by email and/or telephone. The lowest or any Proposal may not necessarily be accepted.

Terms and Conditions

1. Contract Period

Vehicle to be delivered within 120 days of **January 1st, 2025**. Submissions will be reviewed by Council on **June 20th, 2024**

The proponent will be required to execute an agreement with the Township upon selection of the preferred bidder and based on this RFP.

2. Scope Of Work / Specification

Refer to the enclosed truck specifications for scope of work.

3. Conditions Of RFP

Submissions that contain prices which appear to be so unbalanced as likely to affect adversely the interests of the Township may be rejected.

Wherever in a submission the amount proposed for an item does not agree with the extension of the estimated quantity and the proposed Unit Price, the Unit Price shall govern, and the amount shall be corrected accordingly.

More than one submission from a firm, partnership, or corporation under the same name or different names, will not be considered.

The Township reserves the right to waive informalities at its sole and unique discretion.

Bid prices are to be quoted in Canadian funds and are to be exclusive of HST.

The Township reserves the right to negotiate minor changes or variations with the successful bidder, without a general RFP recall, provided any such changes would not be deemed to influence the relative standing of the bidders or be in any way otherwise prejudicial to them.

The Township reserves the right to terminate the award for sufficient cause in its sole and unique discretion (non-performance, late deliveries, inferior quality, pricing problems, customer service, etc.).

During the lifetime of the award, the business resulting from this RFP shall not be assigned or subcontracted without prior written approval of the Township.

All current and applicable Federal, Provincial and Municipal Regulations and procedures shall be followed as they pertain to this work.

4. Conflict Of Interest

The bidder shall fully disclose any conflict of interest with this bid.

5. Acceptance Or Rejection of Bids

The Bidder acknowledges that the Township shall have the right to reject any, or all, proposals for any reason, or to accept any proposals which the Township in its sole unfettered discretion deems most advantageous to itself. The lowest, or any, bid will not necessarily be accepted, and the Township shall have the unfettered right to: Accept a non-compliant bid; Accept a bid which is not the lowest price; and reject any bid that is the lowest bid even if it is the only submission received.

The Township reserves the right to consider, during the evaluation of submissions all or some of the following criteria none of which shall be binding on the Township; information provided in the RFP document itself; information provided in response to enquiries of credit and industry references set out in the RFP; information received in response to enquiries made by the Township of third parties apart from those disclosed in the RFP in relation to the reputation, reliability, experience and capabilities of the Bidder; the manner in which the Bidder provides services to others; the experience and qualification of the Bidder's senior management, and project management; the compliance of the Bidder with the Township's requirements and specifications; innovative approaches proposed by the Bidder and the Township's policies relating to tendering and issuing contracts to third parties.

The Bidder acknowledges that the Township may rely upon the criteria which the Township deems relevant, even though such criteria may not have been disclosed to the Bidder. By submitting a bid, the Bidder acknowledges the Owner's rights under this Section and absolutely waives any right, or cause of

action against the Township and its consultants, by reason of the Township's failure to accept the bid submitted by the Bidder, whether such right or cause of action arises in contract, negligence, or otherwise. The Township reserves the right to investigate any and all references on any bidder including references not supplied by the bidder.

6. Submission Scoring Matrix

The Greater Madawaska Fire Department will use the scoring matrix below to evaluate the proposals received.

35 pts- Price * 1

25 pts- Compliance (Or Equivalent) with Truck Specs

10 pts- Warranty (Length, Covered Products, Criteria of Warranty Specs)

10 pts- Warranty Support (Distance to Departments District)

5 pts- Experience/Reputation

5 pts- Training/Support provided upon delivery of truck.

5 pts- Quality of Proposal

5 pts-References supplied / confirmed.

*1 – the lowest price will receive full points; each additional submitted price will receive points proportionate to the lowest price.

7. Acknowledgement

The bidder hereby acknowledges that by the submission of this document he/she has duly read and fully understands the full context and scope of the work detailed in the specifications, drawings and conditions of the RFP.

8. Collusion

By this submission, the bidder declares that the bid is not made in connection with any other business submitting a bid for the same commodity and is, in all respect, fair and without collusion or fraud.

9. Addenda

Bidders finding discrepancies or omissions in the specifications of having any doubt as to the meaning or intent shall at once notify the Township of Greater Madawaska, which shall send written instructions to all bidders. Bidders may during the bidding period, be advised by addenda of any additions, alterations or deletions to the specifications and document. Any addenda issued during the bidding period must be returned with the bid submission.

10. Validity

Proposed bids will be valid for a period of ninety (90) days from the date of the bid opening.

11. Termination Of Contract

In cases of continued unsatisfactory service, bankruptcy or other, the Township may terminate the contract by providing a ten-day (10) written notice.

12. Payments

Payment will be made upon delivery of the Pumper/Tanker as specified in the RFP to the satisfaction of the Township of Greater Madawaska on receipt of an approved invoice.

Before making any payments for the work to be performed here under, the Township may require the Contractor to satisfy the Township that all claims against the Contractor for labour, materials or things hired or supplied upon or for the works, have been paid or satisfied, or if any such claims are found to exist, may pay such sums and the Contractor shall repay the same within two days, or the Township may, at its option, withhold from the payment due sufficient amounts to satisfy the same.

13. Workplace Safety and Insurance Board (WSIB)/Insurance

The successful bidder shall put in effect and maintain in full force and effect or cause to be put into effect and maintained for the period during which this Contract is in effect, with insurers acceptable to the Township:

Commercial General Liability Insurance issued on an occurrence basis for an amount of not less than \$5,000,000 per occurrence / \$5,000,000 annual aggregate for any negligent acts or omissions by the bidder relating to their obligations under this Agreement. Such insurance shall include but is not limited to bodily injury and property damage including loss of use; personal injury; contractual liability; premises, property & operations; non-owned automobile; broad form property damage; owners & contractors protective; occurrence property damage; products & completed operations; employees as Additional Insured(s); contingent employers' liability; tenants legal liability; cross liability and severability of interest clause. Such insurance shall not exclude abuse liability. All the necessary insurance that would be considered appropriate for a prudent Contractor of this type undertaking a project similar to this Contract, including, where appropriate and without limitation, property, construction and errors and omissions insurance.

Automobile liability insurance with respect to owned or leased vehicles used directly or indirectly in the performance of the services covering liability for bodily injury, death, and damage to property with a limit of not less than \$2,000,000 inclusive for each and every loss.

Employee Dishonesty coverage in an amount of not less than \$20,000 covering all employees of the bidder and shall include a Third-Party Extension for the duration of the contract.

Upon Contract Award, the Contractor shall provide the Township with a valid certificate of insurance that references this Contract, confirms the above requirements, and identifies major exclusions in the policy.

The Contractor shall carry insurance, pursuant to the General Conditions, which names the Township of Greater Madawaska as an additional name insured for this project.

The Contractor shall indemnify and hold harmless the Township of Greater Madawaska, their agents, officers, and employees from and against all claims, demands, losses, expenses, costs, damages, actions, suits, or proceedings by third parties, directly or indirectly arising or alleged to arise out of the performance of or the failure to perform the Work.

14. Liens

The parties hereto and their surety on themselves, their executors, administrators, successors and assigns, and any and all other parties in any way concerned, shall fully indemnify the Township and all of its officers, servants and employees from any and all liability or expenses by way of legal costs or otherwise in respect to any claim which may be made for a lien or charge at law or inequity or liability under the Mechanic's Lien Act or to any attachment for debt, garnishee process or otherwise. The Township shall not in any case be liable to any greater extent than the amount paid by it to the Contractor, his executors, administrators, successors, and assigners.

15. Notice To Contractor

Any notice or communication to the Contractor shall be deemed to be well and sufficiently given and served if handed to the Contractor or any of his clerks or agents or if posted or sent to the address given in his bid for the work attached hereto or his usual place of business, or to the place where the work is to be or is being carried out on, or if posted to or left at his last known address; and any papers so left, sent or addressed to, shall be considered to be, and have been legally served upon the Contractor. In any written or printed notice to the Contractor in respect of general, special, or other repairs, or of any work of any nature required to be done under any of the provisions of the Contract or of any other matter, it shall not be obligatory upon the Director or designated agent to specify minutely or in detail everything required nor to specify by measurement the exact extent thereof, or the precise spot or spots where the work or material may be defective or faulty or where any of the requirements of the specifications have been observed: but a reference in such a notice to the clause or clauses bearing upon the matter, a description of the locality in general terms, and sufficiently clear, in the opinion of the Director or designated agent to indicate where the defect or trouble exists, shall be deemed to be, and shall be, ample notice.

16. Damages

The Contractor will be responsible to repair all damages done to the premises by his employees.

17. Remedy Of Township If Default By Contractor

If the Contractor fails to maintain the services in accordance to the attached specifications and to the satisfaction of Council of the Township of Greater Madawaska or the Director or their representatives or to perform any other obligation of the Contractor under this Agreement, the Director of the concerned department shall have the right, after twenty-four (24) hours written notice to the Contractor, to enter upon the described areas with the Township or other equipment at prevailing rental rates and to perform at the expense of the Contractor whatever matter or thing the Contractor has failed to perform, and the Contractor shall be liable for the expense incurred by the Township of Greater Madawaska and shall reimburse the Township of Greater Madawaska on demand for such expense.

18. References

The bidder must provide 3 references with the submission of similar work experience. Refer to specifications for additional details.

The Township reserves the right to investigate any and all other references not identified in this list if the Township deems it sufficient to do so.

19. Confirmation

Contractor must complete each and every column of the Specifications where it states that contractor has included the applicable section/paragraph in their bid ("Yes", "NO/EXCEPTION" & "NOTES").

This vehicle must be supplied with all standard equipment, plus all other equipment outlined in this specification, if not standard.

This specification is not intended to define every detail of the unit except those specifically required by the Township of Greater Madawaska. It is the responsibility of the supplier to deliver fully equipped and functional units for the work required.

The unit must be supplied fully serviced and ready for use by the Fire Department.

The unit supplied must be new from the factory.

**SUBMISSION FORM FOR
GMFD Pumper/Tanker Truck**

I have read and concur with the conditions specified in the RFP document and I am knowledgeable of the site conditions.

1.	New Pumper/Tanker Truck	\$
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Options for Loose Equipment

1.	<ul style="list-style-type: none"> • One (1) 28oz Vinyl Husky Portatank 3000 US GAL 	\$
2.	<ul style="list-style-type: none"> • One (1) set of rubber wheel chocks 	\$
3.	<ul style="list-style-type: none"> • One (1) Truck first aid kit 	\$
4.	<ul style="list-style-type: none"> • Two (2) 6" 10' Long handles hard suction hoses 	\$
5.	<ul style="list-style-type: none"> • One (1) set of Emergency Triangles in carry case 	\$
6.	<ul style="list-style-type: none"> • Two (2) 10' straight handle Pike Pole 	\$
7.	<ul style="list-style-type: none"> • One (1) Ladder set – 24" Extension, 14' Roof ladder w/ hooks, 10' Folding Attic. 	\$
8.	<ul style="list-style-type: none"> • 6" Low level strainer 	\$
9.	<ul style="list-style-type: none"> • 6" Floating dock strainer 	\$
10.	<ul style="list-style-type: none"> • 2.5" Female CSA to 5" Storz 	\$
11.	<ul style="list-style-type: none"> • In-cab fire extinguisher 	\$

****Note: HST is not to be included in the bid price.**

Company Name: _____

Address: _____

Company Official: _____ (Print Name)

Telephone: _____

Fax: _____

Email: _____

Signature: _____
(I have the legal authority to bind the corporation)

Date: _____

References to be submitted as attachments

**CONDITIONS OF CONTRACT FOR
GMFD Pumper/Tanker Truck CONTRACT**

Documents

The contract document shall consist of:

The executed Contract (the "Agreement")

Addenda to the RFP Document

RFP document, including its Statement of Work, Instructions to Contractors, General Conditions, Specifications, Schedule of Attachments, and other information provided as part of the RFP.
The bidder's price and any subsequent negotiated changes.

These documents and portions thereof, take precedence in the order in which they are named above, notwithstanding the chronological order in which they are issued or executed.

The successful Bid shall become an integral part of the Contract. It shall not, however, be considered the total binding obligation for the Contract. Any and all Bid conditions may be included at the discretion of the Township as part of the final negotiated and approved Contract.

The Township reserves the right to include additional terms and conditions during the process of Contract negotiations. These terms and Conditions shall be within the scope of the original Bid Document and Contract documents and shall be limited to cost, clarification, definition and administrative and legal requirements.

	TOWNSHIP OF GREATER MADAWASKA PUMPER/TANKER RFP	Compliant		NOTES
		Yes	No	
	GENERAL			
1. CERTIFICATIONS				
1.1.	<p>The Vehicle supplied shall meet or exceed the requirements of the following standards and requirements:</p> <ul style="list-style-type: none"> • Ministry of Transportation of Ontario standards as set out in the “<i>Highway Traffic Act and Regulations</i>”. • The latest applicable S.A.E. (Society of Automotive Engineers) and UL (Underwriter Laboratory) standards and regulations. • O.S.H.A. (Occupational Safety and Health Administration) recommended practices. • The Ontario <i>Occupational Health and Safety Act</i> (OHSA). <p>The vehicle shall meet all requirements of U.L.C. S515 M88 for Firefighting apparatus, Canadian Motor Vehicle safety standards (latest Edition), Canadian Standards Association C.S.A. C225-176, Society of Automotive Engineers S.A.E J343C-1975, American National Standards Institute ANSI, and Occupational Safety and Health Acts including all amendments, Welding Bureau of Canada CWB W59- 1989 W59 2-M1991 W47.1 S-M1989 W47.2 M-1987 (including all amendments), Ontario Highway Traffic Act, NFPA 1901- Most Current Edition (where indicated).</p> <p>All other applicable regulations pertaining to the supply and intended use of the equipment stated.</p> <p>The specified Vehicle(s) and/or equipment must comply with all requirements of the Canada <i>Motor Vehicle Safety Act</i> and its regulations (See CMVSS section below).</p>			
2. CERTIFICATIONS – CANADA MOTOR VEHICLE(S) SAFETY STANDARD (CMVSS) – See item above				
2.1.	<p>The specified Vehicle(s) (Apparatus) and Equipment must comply with all requirements of the Canada <i>Motor Vehicle(s) Safety Act</i> (CMVSS) and its regulations including, but not limited to:</p> <p>a) A compliance label on each Vehicle(s) (Apparatus) containing all required information including, but not limited to:</p> <ul style="list-style-type: none"> • Gross Vehicle(s) axle ratings for each axle, which shall not be less than the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces. • Gross Vehicle(s) weight ratings, which shall not be less than the loaded weight of a single completed Vehicle. 			

	<ul style="list-style-type: none"> Complete Vehicle(s) apparatus documents with the required information from all stages of manufacture; and, All information labels from all stages of manufacture. 			
2.2.	The specified vehicle (apparatus) and equipment must comply with all requirements of the National Fire protection Association (NFPA) standard – Standard for Automotive Fire Apparatus – Most current edition			
3. NATIONAL SAFETY MARK (NSM)				
3.1.	<p>The company involved in the initial, intermediate, and final stages of manufacture of the Vehicle(s) shall be authorized by the Minister and have a “National Safety Mark” and a compliance label prior to the delivery of the completed Vehicle(s).</p> <p>The compliance label on each Vehicle containing all required information including, but not limited to:</p> <ul style="list-style-type: none"> Requirement(s) related to the National Safety Mark (NSM). Gross vehicle axle ratings for each axle, which shall not be less than the load- carrying capacity. 			
3.2.	The final stage Manufacturer must be authorized by Transport Canada to apply the NSM label.			
4. PARTS AND SERVICE MANUALS				
4.1.	One (1) operators’ manual, in English, plus one (1) electronic file (USB drive) are required covering the operation and parts of the complete vehicle shall be provided with the unit on delivery.			
4.2.	Manufacturer’s warranty literature should be provided with the bid submission.			
4.3.	<p>One (1) complete hard copy 11” X 17” plus one (1) electronic file (USB drive) as-built wiring diagrams for the complete vehicle are required at delivery.</p> <p>Wiring diagrams must be in accordance with NFPA regulations. Wiring diagrams should identify the color and numbering on the wiring.</p>			
4.4.	One (1) chassis maintenance manual containing service information shall be provided with the unit on delivery.			
5. CONTACT INFORMATION FOR SERVICE FACILITY				
5.1.	The service facility shall be a 24/7 service center where a technician can be reach at any time or day for support or service call.			
5.2.	<p>For warranty repairs, the facilities, or portions thereof, as identified, shall be dedicated to the service and maintenance of the type of Vehicle(s) and/or equipment being offered.</p> <p>The Fire Department reserves the right, at any time prior to contract award and/or during the contract</p>			

	<p>period, to inspect the Contractor's, Service Provider's and/or Subcontractor's Service Facilities identified.</p> <p>The Fire Department shall provide twenty-four (24) hours prior notice for an inspection. The Fire Department shall verify that the Contractor's premise is deemed to have reasonable levels of trained personnel, documentation, licensing, and equipment, relevant to the work being maintained to support the requirements of the contract.</p>			
5.3.	The service provider shall have EVT certified technician on staff.			
5.4.	The service provider shall have 310T license mechanic on staff.			
5.5.	The service provider shall have certified on Waterous pump technician on staff.			
5.6.	The service provider shall have a mobile pump testing unit.			
6.	DECALS/SIGNAGE			
6.1.	Vehicle signage shall be bilingual (English/French) or universal symbol (use of graphic symbols as defined in SAE 1362 is acceptable), where applicable.			
7.	GENERAL WARRANTY			
7.1.	The warranty shall cover the complete vehicle, 100% parts and labor for the first two (2) years.			
7.2.	For clarification purposes, minor warranty repairs will include, but not be limited to; bulb, belt, and hose replacements etc.			
7.3.	The warranty will be based on years and shall include all ancillary equipment included and installed on the unit upon acceptance by Greater Madawaska Fire Department.			
7.4.	<p>It is the intent of the wording of the minimum warranties referenced in the respective sections shall include all parts and labour on the complete component for the duration specified.</p> <p>For example: Engine shall include all ancillary attachments to the engine such as wiring harnesses, alternators, injectors, injection pumps, etc. The complete engine, not just the internal components of the engine.</p> <p>This would not include oil filters, belts, tires, brakes pads.</p>			
7.5.	In the event of a dispute between The Fire Department and the manufacturer concerning the component in question, the component shall be forwarded to the Original Equipment Manufacturer for determination of failure. Should it be deemed to have failed because of negligence or abuse, the cost of the component will be borne by Greater Madawaska Fire Department, otherwise the cost will be borne by the Contractor.			

	This would apply to all ancillary attachments to all components as referenced.			
8. PAINT WARRANTY				
8.1.	The cab and chassis shall be covered by a limited manufacturer paint warranty. Body paint warranty shall be in effect for ten (10) years or 100,000 kilometers.			
9. WARRANTY AUTHORIZATION AND RESPONSIBILITY				
9.1.	If the vehicle becomes immobile during the warranty period due to the failure of a warrantable component, the Contractor shall be responsible for the towing and/or float charges to transport the vehicle to the Contractor's facility and the Contractor shall return the vehicle to The Fire Department facility all at the Contractor's sole expense, risk and responsibility.			
9.2.	Where applicable, if the manufacturer provides a longer warranty period or a warranty that is more extensive in its nature, then the provisions of such manufacturer's warranty shall apply.			
9.3.	The warranty period shall commence from the "Delivery Day date" which is the date that the vehicle/material is delivered to The Fire Department and received by The Fire Department authority.			
9.4.	Labour for the removal or installation of warranted parts, or components and any associated shipping fees will be the sole responsibility of the contractor.			
10. SPECIFICATIONS OVERVIEW				
10.1.	The vehicle and its components shall be designed to operate in Canadian climate weather conditions (-40 to +40 degrees Celsius.) As winter conditions are very corrosive from the use of salt preventive measures shall be incorporated in its design and equipment to address the problem of corrosion and galvanic reaction.			
10.2.	In the event of a conflict between the text of this document and the references cited herein, the text of the document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been indicated.			
10.3.	Any error or omission in the specifications shall be immediately reported to the purchaser for correction.			
10.4.	Where these specifications list only the major significant details of the units(s) or equipment required, it is the bidder's responsibility to provide a unit or the equipment fully equipped for its intended use, to provide dependable and efficient service and performance.			
10.5.	The Supplier shall assume complete and overall responsibility for design, implementation of design and satisfactory operation for the completely new			

	vehicle/equipment that meet this specification and its sub-systems.			
10.6.	<p>The Fire Department shall be responsible for all costs of meetings and inspections at the manufacturer's location. A minimum of five (5) business day's notification is required prior to each inspection. All meetings to be scheduled during the afternoon, between the hours of 1:00pm to 4:00pm.</p> <ol style="list-style-type: none"> 1. Factory pre-construction meeting and facilities tour 2. Chassis inspection 3. Pre-paint inspection 4. Factory final inspection* <p>Factory meetings and inspections denote the location the apparatus is built, and not at the dealer location the apparatus is delivered to prior to final delivery to the fire department. This is required to ensure that all requirements, changes, and other items deemed necessary by the Fire Department are carried out in the quickest fashion causing minimum delays.</p>			
10.7.	Concurrence by the Bidder to any specification requirement contained within this Request for Tender shall take precedence over any documentation accompanying the bid submission.			
11. INSURANCE				
11.1.	The Contractor shall provide and maintain, at its sole expense, during the term of the contract, the following policies of insurance			
11.2.	<p>Commercial General Liability insurance issued on an occurrence basis for an amount of not less than \$5,000,000 per occurrence for any negligent acts or omissions by the Contractor. Such insurance shall include, but is not limited to, bodily injury, death and property damage including loss of use: premises, property and operations liability; products and broad form completed operations liability; blanket contractual liability; cross liability; severability of interest clause; contingent employers liability; personal injury liability; non-owned automobile liability; broad form property damage; occurrence property damage; employees as additional insured and occurrence property damage. The Commercial General Liability insurance policies shall be in the name of the Contractor and shall name the Township of Greater Madawaska as an additional insured.</p>			
11.3.	Automobile Liability insurance with respect to owned or leased licensed vehicle(s) used directly or indirectly in the performance of the services subject to a limit not less than \$ 5,000,000 inclusive per occurrence for bodily injury, death and damage to property including loss of use.			
11.4.	Evidence of insurance satisfactory to The Fire Department shall be provided prior to the commencement of work.			

12. GENERAL, CONSTRUCTION AND DESIGN				
12.1.	The Bidder confirms and guarantees the apparatus delivered will be of the highest engineering standard and as such confirms and guarantees that the apparatus will be able to maintain their readability as per the NFPA 1901 Most Current Edition regulations in all emergency conditions over their projected twenty (20) year life span.			
12.2.	The design of the equipment shall be in accordance with the best engineering practices. The equipment design and accessory installation shall permit accessibility for use, maintenance, and service. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks, or other elements, which might cause injury to personnel or equipment.			
12.3.	The Bidder confirms that the Vehicle Stability (of the apparatus being built) meets all NFPA 1901 Most Current Edition Regulations.			
12.4.	All oil, hydraulic, and air tubing lines and electrical wiring shall be installed in protective positions properly attached to the frame or body structure and shall have protective loom or grommets at each point where they pass through structural members, except where a through-frame connector is necessary.			
12.5.	Parts and components should be located or positioned for rapid and simple inspection and recognition of excessive wear or potential failure. Whenever functional layout of operating components determines that physical or visual interference between items cannot be avoided, the item predicted to require the most maintenance shall be located for best accessibility.			
12.6.	Cover plates, which must be removed for component adjustment or part removal should be equipped with quick-disconnect fastenings or hinged panels.			
12.7.	Drains, filler plugs, grease fittings, hydraulic lines, bleeders, and check points for all components should be located so that they are readily accessible and do not require special tools for proper servicing. Design practices should minimize the number of tools required for maintenance.			
12.8.	All custom manufacturers must have the ability to shear/cut, brake and weld, to meet specifications required, to meet design requirements.			
12.9.	Materials shall conform to the specifications listed herein. When not specifically listed, materials shall be of the best quality for the purpose of commercial practice. Materials shall be free of all defects and imperfections that might affect the serviceability of finished product.			
12.10.	All nameplates and instruction plates shall have the information engraved, stamped, or etched thereon. Nameplates shall show make, model, serial numbers,			

	<p>and other such data necessary to positively identify the item and all fluid levels for vehicle.</p> <p>All nameplates shall be mounted in a conspicuous place; all warning and caution labels will be bilingual (English and French).</p>			
12.11.	<p>The manufacturing process, including quality control, shall be consistent with present industry standards. All equipment, material, and articles required under this specification are to be new or fabricated from new materials produced from recovered materials. The term "Recovered Materials" means materials, which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this document.</p> <p>The term "Heavy Duty", as used to describe an item, shall mean in "excess of" the standard, quantity, quality, or capacity and represents the best, most durable, strongest, etc., part, component, system, etc., that is available. The Fire Department or their designate shall be the sole judge of quality, construction and stability of the apparatus and equipment being offered.</p>			
12.12.	<p>Parts, equipment, and assemblies, which have been repaired or modified to overcome deficiencies, shall not be furnished without the approval of the purchaser. Welded, and bolted, construction shall be utilized in accordance with the highest standards of the industry. (NO POP RIVETS). Component parts and units shall be manufactured with proper fits, clearances, and uniformity. General appearance of the vehicle shall not show any evidence of poor quality of work.</p>			
12.13.	<p>Unless protected against electrolytic corrosion, dissimilar metals shall not be used in intimate contact with each other.</p>			
12.14.	<p>The engine and transmission manufacturer's approval of the proposed installation including a performance SCAAN.</p>			
12.15.	<p>The height of the fully loaded vehicle's center of gravity shall not exceed the chassis manufacturer's maximum limit and shall be identified on submitted drawings.</p>			
12.16.	<p>The front and rear weight distribution of the fully loaded vehicle as defined shall be within the limits set by the chassis manufacturer. The front axle loads shall not be less than the minimum axle loads specified by the chassis manufacturer, under full load and all other loading conditions.</p> <p>The actual loaded weight on any axle shall not exceed the maximum allowable in the Province of Ontario.</p>			
13. DELIVERY				
13.1.	<p>Acceptance of the delivered apparatus and equipment will be made upon satisfactory completion of all</p>			

	required tests, receipt of all specified equipment and documentation and commissioning unit into service.			
13.2.	<p>The following items shall be furnished upon delivery of the vehicle:</p> <ul style="list-style-type: none"> • Certification that the optical warning system has been supplied and installed in compliance with NFPA 1901- Most Current edition • A weight ticket from a certified scale showing the loading on the front axle, rear axle, and overall vehicle with water tank full but without hose, equipment or personnel • ULC or UL certification of the fire pump. No exceptions • Tested and certified in accordance with Sections 12.13, 15.13, and 20.16.5 of CAN/ULC-S515-13 • Certification of the water tank capacity. 			
13.3.	An electrical load report on the proposed apparatus showing all electrical loads in the response and on-scene modes.			
13.4.	Chassis line specifications ticket shall be supplied.			
14.	TRAINING			
14.1.	<p>The delivery shall include four (4) hours of apparatus familiarization, at minimum. It shall include vehicle familiarization and operation items only, as requested by the fire department. Topics to be discussed shall be provided by the Fire Department minimum two (2) weeks in advance to allow proper time to create a custom training session. The trainer shall be a body OEM supervisor familiar with all aspects of the apparatus construction.</p> <p>Under no circumstances will firefighting operations, tactics, and procedures be discussed as these are not relevant to fire apparatus manufacturing.</p> <p>The familiarization sessions shall be conducted in groups of four (4) firefighters.</p>			
CHASSIS				
15.	VEHICLE PERFORMANCE			
15.1.	The apparatus is expected to operate at elevations less than 2000 ft. (610 m) above sea level. The contractor shall ensure the apparatus will perform to all requirements at the maximum specified elevation.			
15.2.	<p>The apparatus, when fully equipped and loaded shall be capable of the following performance on dry, level, paved roads in good condition:</p> <ul style="list-style-type: none"> • From a standing start the vehicle shall attain a true speed of 55 km/h (35 mph) within 25 sec on a 0 percent grade. • From a steady speed of 24 km/h (15 mph) the vehicle shall accelerate to a true speed of 56 km/h 			

	<p>(35 mph) within 30 sec. This shall be accomplished without moving gear selector.</p> <ul style="list-style-type: none"> • The vehicle shall attain a maximum top speed of 105 km/h (65 mph). • The apparatus fully loaded shall be able to maintain a speed of at least 32 km/h (20 mph) on a 6 percent grade. • The service brakes shall be capable of bringing the fully loaded apparatus to a complete stop from a speed of 32 km/h (20 mph) in a distance not exceeding 10.7 m (35 ft.). 			
15.3.	The sound level within the cab shall not exceed 85 dba with the vehicle travelling at a steady speed with no audible warning devices sounding as regulated by the Ontario workplaces health and safety act.			
15.4.	The parking brakes shall be capable of positively holding the fully loaded apparatus on a 20% grade.			
15.5.	The minimum angle of approach and departure shall not be less than 11 degrees.			
16. CHASSIS SPECIFICATIONS				
16.1.	The cab and chassis shall be a model 2024 or newer.			
16.2.	It shall be a M2 112 conventional two (2) door chassis.			
16.3.	The cab and chassis shall meet or exceed all requirements of U.L. or U.L.C., NFPA and other applicable Canadian and Ontario standards.			
16.4.	It shall have a front set back axle.			
16.5.	The wheelbase shall not exceed 242”.			
16.6.	The maximum length of the apparatus shall not exceed 400”.			
16.7.	The maximum overall height of the apparatus shall not exceed 122” inches from the ground to the highest point on the apparatus body.			
16.8.	The total front axle G.A.W.R. shall be a minimum of 18,000 lbs.			
16.9.	The total rear axle G.A.W.R. shall be a minimum of 46,000 lbs.			
16.10.	The total chassis G.V.W.R. shall be a minimum of 64,000 lbs.			
16.11.	The G.A.W.R. and G.V.W.R. of the chassis and all related components shall exceed the weight of the fully equipped apparatus by approximately 10%, including the fully loaded water tank, the specified hose load and equipment, and unequipped personnel weight.			
16.12.	A final manufacturer’s certification of the G.V.W.R., along with a certification of the G.A.W.R., shall be supplied on a nameplate affixed to the vehicle.			
16.13.	The difference in weight on the end of each axle, from side to side, when the vehicle is fully loaded and equipped shall not exceed 5 percent.			

16.14.	The actual loaded weight of the vehicle shall not exceed 90% of the G.V.W.R of the front and rear axle ratings.			
17. FRAME – BUMPER				
17.1.	The frame shall be channel type, of sufficient dimension to handle the rigors of emergency service. The frames rails shall be one (1) continuous piece with no splices and for all purposes are considered a part of the frame/chassis system along with the cross members and shall not be cut, pierced, modified, or weakened in any way.			
17.2.	The top of frame rails shall be clear from all bolt heads or obstructions. Outside of frame rails rear of cab shall be clear of any obstructions (air, fuel tanks etc.).			
17.3.	Shall be equipped with a three (3) piece 14-inch painted steel bumper with collapsible ends. Front bumper shall be bolted directly to frame rails.			
17.4.	Two (2) heavy duty painted tow hooks or eyes shall be installed under front bumper. Tow hooks or eyes shall be bolted directly to chassis frame members.			
18. AXLES AND SUSPENSION				
18.1.	Tapper leaf front suspension.			
18.2.	The front axle shall be designed with a minimum of 18,000 lbs. G.A.W.R capacity. It shall be a Detroit DA-F-18.0-5.			
18.3.	Front springs shall meet or exceed the minimum 18,000 lbs. capacity of the front axle.			
18.4.	Shall be equipped with oil lubricated front wheel bearings with visual oil level indicators.			
18.5.	The rear axles shall be tandem axles, minimum 46,000 lbs. capacity G.A.W.R and shall include single reduction and oil lubricated rear wheel bearings. It shall be an RS-30-185 U-Series Fire/Emergency Service single axle.			
18.6.	Rear axle ratio shall be 4.89, capable of reaching top speed as required by N.F.P.A. 1901- Most Current edition.			
18.7.	Rear suspension capacity shall be designed to match or exceed the rated axle loading of the vehicle complete with heavy-duty shock absorbers. It shall be equipped with 46,000lbs rear suspension with helper and radius rod for fire/emergency service.			
18.8.	Brake dust shields shall be installed on the front and rear axles.			
18.9.	There shall be a driver controlled differential lock rear valve for single drive axle. It shall include a buzzer and blinking lamp with differential lock switch.			

	The differential will unlock with ignition off and will operate at less than 5mph.			
19. BRAKE SYSTEM				
19.1.	Service brakes to be Meritor air operated drum type and comply with all applicable Ontario and Canadian CMVSS-121 standards.			
19.2.	Front brakes shall be Meritor Q+ 16.5 X 6 cast spider heavy duty cam, Meritor automatic slack adjusters. Brakes shall be equipped with fire and emergency severe service, non-asbestos lining. Brake cast iron drum to be outboard mounted.			
19.3.	Rear brakes shall be Meritor Q+ 16.5 X 7 P cast spider cam double anchor, cast shoes with Haldex automatic slack adjusters with stainless steel clevis pins. Brakes shall be equipped with fire and emergency severe service, non-asbestos linings. Brake cast iron drum to be outboard mounted.			
19.4.	A Wabco 4S/4M anti-lock brake system with traction control will be provided on front and rear axles. Dash mounted anti-lock lamp will be provided to indicate malfunction.			
19.5.	The air compressor shall be 18.7 CFM minimum, capable of rapid air pressure build up, as required by N.F.P.A. 1901- Most Current edition.			
19.6.	Drive axle spring parking chambers shall be 36/36 Haldex Longstroke.			
19.7.	A separate air pressure tank of approximately 1,350 cu. in. shall be provided for the air horn system. The tank shall be provided with a pressure protection valve to prevent the use of air horns or other accessories when the system air pressure drops below (80 Psi).			
19.8.	All air reservoirs will be equipped with manual cable operated drain valves. Cables to be routed to be easily accessible by operator/driver. All drain cables must be equipped with labels attached to the rub railings to identify the air tank that is being drained.			
19.9.	A Wabco air dryer with heater shall be mounted inboard on RH rail.			
20. AUXILIARY BRAKING SYSTEM				
20.1.	The Detroit engine shall be equipped with a compression engine brake system.			
20.2.	An on/off dash switch shall control the engine brake. A light to indicate the activation shall be mounted in dash display.			
21. TIRES AND WHEELS				
21.1.	The tires and wheels shall meet the apparatus load range.			
21.2.	Front tires shall be MICHELIN XZU-S2 315/80R22.5 20 PLY radial tires.			

21.3.	Rear tires shall be MICHELIN XDS2 11R22.5 16 PLY radial tires.			
21.4.	Front wheels shall be polished Alcoa Ultra ONE 89U64X 22.5X9.00 10-Hub Pilot 5.99 Inset aluminum.			
21.5.	Rear outer wheels shall be polished Alcoa ULA18X 22.5X8.25 10-Hub Pilot Aluminum Disc.			
22. POWERTRAIN				
22.1.	The vehicle shall be equipped with a Detroit DD13 GEN 5 12.8L 450 HP @ 1625 RPM, 1900 GOV RPM, 1650 LB-FT @ 975 RPM.			
22.2.	Side of hood air intake with NFPA compliant ember screen and fire-retardant Donaldson air cleaner.			
22.3.	The cooling system shall have sufficient capacity to meet extended periods of full load operation in local ambient temperatures and maintain the engine at a temperature not to exceed the maximum or minimum operating temperature as recommended by the engine manufacturer			
22.4.	The radiator shall be of a design and size recommended by the engine and transmission manufacturers for the intended application.			
22.5.	Coolant shall be an extended life coolant type with protection to minus -60 degrees °F.			
22.6.	Coolant hoses shall be Gates Blue Stripe High-Temperature hose or equivalent. Coolant hoses shall be installed using constant tension hose clamps.			
22.7.	The engine cooling system shall incorporate a thermostatically controlled clutch fan. The Horton fan will include a dash switch and indicator light.			
22.8.	Apparatus manufacturer must install a closed-circuit auxiliary heat exchanger with control at the pump operator's panel to provide for additional cooling capacity without the loss of coolant.			
22.9.	All heater hose fittings and adaptors shall be brass. Plastic connector and fittings, shall not be acceptable.			
22.10.	Low coolant indicator light and buzzer alarm on dash and pump panel shall be provided.			
22.11.	The fuel system shall be compatible with the engine manufacturer's recommendations for flow and pressure.			
22.12.	The fuel system components shall be protected from exhaust heat and mechanical damage during the normal use of the apparatus.			
22.13.	The fuel tank shall be easily removable for repairs (brackets welded to tank will not be accepted). A single fuel tank with a minimum capacity of 189 Liter (50 US gallons) shall be installed. The tank shall be rectangular made of aluminum.			
22.14.	A D.E.F. 6 gallon tank shall be provided. The D.E.F. tank shall not encroach upon any designed stowage			

	compartment. A label on the body shall clearly identify the location of the D.E.F. tank.			
22.15.	Spin-on type fuel filter shall be installed as recommended by engine manufacturer.			
22.16.	Detroit fuel/water separator with water in fuel sensor, hand primer and 12-volt preheater shall be installed.			
22.17.	The vehicle shall be equipped with an Allison model 4000EVS automatic transmission. The transmission shall be configured to maximize the pump output.			
22.18.	The transmission shall be controlled by a pushbutton selector control mounted to the right of driver and lighted for night operation.			
22.19.	A transmission temperature gauge shall be supplied on the cab dash and pump panel with a warning light and/or buzzer for high transmission temperature.			
22.20.	The driveline shall be heavy-duty series and have glide coat spline on all slip shafts.			
22.21.	All portions of the driveline shall be balanced at maximum operating speed; driveline angle must be within Manufacture's specifications.			
22.22.	The exhaust system and after-treatment system shall be installed below the right hand side steps and meet all applicable noise standards. Heat shields shall be provided to protect any part of the apparatus susceptible to heat damage. The muffler shall be aluminized, and any flex tube used shall be stainless steel. Flex tube will be installed with overlapping clamp type seals.			
22.23.	An engine aftertreatment device, automatic over the road active regeneration and dash mounted single regeneration request/inhibit switch shall be supplied.			
22.24.	The exhaust pipe shall terminate in front of the right rear wheels 1 inch below body at 90 degrees.			
22.25.	The exhaust pipe shall be equipped with a diffuser system.			
23.	CAB EXTERIOR			
23.1.	Cab shall be an air ride			
23.2.	Front grill shall have a non-removable bug screen mounted behind grill.			
23.3.	Cab shall include LH and RH exterior grab handles with single rubber insert.			
23.4.	Bright finish front grill, radiator shell/hood bezel			
23.5.	Chrome hood mounted air intake grille			
23.6.	Two (2) Stutter tone 63.5 cm (25") or equivalent air horns shall be hood mounted. Horns shall include snow shield			
23.7.	The air horns shall be controlled by a lanyard(s) easily accessible by Officer and Driver.			

23.8.	A single electric horn shall be installed controlled by steering wheel center horn pad.			
23.9.	Where applicable, four (4) sets of keys shall be provided per vehicle for ignition, doors, cabinets, and all other attachments.			
23.10.	LED headlight composite headlamps with bright bezels shall be installed.			
23.11.	LED aerodynamic marker lights			
23.12.	Daytime running lights - low beam only			
23.13.	Dual west coast bright finish heated mirrors with led lights and LH and RH remote			
23.14.	LH and RH 8-inch bright finish convex mirrors mounted under primary mirrors			
23.15.	A RH down view mirror shall be installed on the right hand door.			
23.16.	Composite exterior sun visor			
23.17.	No rear window			
23.18.	Tinted door glass LH and RH with tinted operating wing windows			
23.19.	Electric door window regulators, with both window operations accessible to the Driver.			
23.20.	Tinted windshield			
23.21.	8 liter windshield washer reservoir, cab mounted, with fluid level indicator			
23.22.	Mud flaps shall be installed behind the front wheels to protect the body and components from road spray.			
23.23.	A windshield washer system with the largest available OEM reservoir shall be installed.			
24.	ALTERNATOR AND BATTERY			
24.1.	The alternator shall be a minimum 300 amp, 12-volt 40-SI brushless pad alternator with remote battery voltage sense. The alternator output must meet the minimum continuous electrical load requirement on this apparatus.			
24.2.	Three (3) batteries shall have a minimum combined value of 3000 CCA. High cycle 12 volt batteries shall be installed. All batteries will be contained within a box and covered to protect them from road spray.			
24.3.	A positive and negative post for jumpstart shall be located on the frame next to the starter and easy to access.			
25.	CAB INTERIOR			
25.1.	Opal gray vinyl interior.			
25.2.	The inside door shall be molded plastic door panel without vinyl insert with aluminum kick plate lower door.			
25.3.	Black mats with single insulation.			

25.4.	It shall have a forward roof mounted console with upper storage compartments without netting.			
25.5.	The dash will have a storage bin.			
25.6.	Gray/Charcoal flat dash.			
25.7.	Smart switch expansion module – dash mounted.			
25.8.	To include heater, defroster, and air conditioner.			
25.9.	Premium insulation option			
25.10.	Includes solid-state circuit protection and fuses.			
25.11.	It shall be a 12v negative ground electrical system.			
25.12.	Door activated dome/red map lights located in the cab roof forward LH and RH and rear LH, RH, and center.			
25.13.	LH and RH manual door locks.			
25.14.	Two (2) 12-volt power receptacles mounted in dash.			
25.15.	The driver's seat shall be a H.O Bostrom Sierra Air-50 high back air suspension with NFPA1901-2009/2016 compliant seat sensor.			
25.16.	The passenger seat shall be a H.O Bostrom Sierra Air-50 high back air suspension with NFPA1901-2009/2016 compliant seat sensor.			
25.17.	The seat sensor display shall be mounted in the upper forward center console.			
25.18.	LH and RH integral door panel armrests.			
25.19.	The driver and passenger seats shall be gray vinyl with vinyl insert.			
25.20.	The seat belts shall be NFPA 1901 high visibility orange.			
25.21.	All seats shall be equipped with three (3) point retractable seat belts.			
25.22.	The steering column shall be equipped with tilt and telescopic steering wheel column.			
25.23.	The steering column shall contain the self-cancelling turn signal switch with dimmer, washer/wiper (two speeds with delay) in handle and the hazard switch.			
25.24.	There shall be a driver and passenger interior sun visors			
26.	CAB INSTRUMENTS AND CONTROLS			
26.1.	There shall be an engine remote interface with park brake interlock.			
26.2.	Chassis shall include an engine remote interface for remote throttle.			
26.3.	Chassis shall include an engine remote interface connector at back of cab.			
26.4.	The heavy-duty onboard diagnostics interface connector shall be located below LH dash			
26.5.	An NFPA vehicle data recorder and seatbelt display shall be installed.			

26.6.	Instrument cluster shall have an engine hour meter, trip meter, turn signal indicators and high beam indicator.			
26.7.	Instrument cluster shall include a 2" electric fuel gauge, engine coolant temperature gauge and a 2" transmission oil temperature gauge.			
26.8.	Instrument cluster shall include 2" air pressure gauges for primary and secondary.			
26.9.	Instrument cluster shall include a low air pressure indicator light and audible alarm.			
26.10.	Air restriction indicator with graduations shall be mounted in the dash.			
26.11.	An electronic cruise control are on steering wheel.			
26.12.	Fast idle activated in dash cluster. <ul style="list-style-type: none"> • Stage one (1) set at 1000 RPM • Stage two (2) set at 1200 RPM. 			
26.13.	An electronic back-up alarm that is activated when the vehicle is in reverse shall be installed to warn persons near or on the apparatus that the vehicle is backing up.			
26.14.	The Chassis and vehicle shall be equipped with an Advanced Electronic Stability Control System. A dash-mounted warning light shall turn off after approximately ten (10) seconds if the sensor is functioning. The system shall continue to function in the event of non-critical faults.			
26.15.	A radio am/fm/wb world tuner with Bluetooth and USB and auxiliary inputs, j1939 shall be dash mounted.			
26.16.	Two (2) radio speakers shall be mounted in the cab.			
26.17.	The am/fm antenna shall be mounted on forward LH roof			
26.18.	There shall be one (1) valve parking brake system with dash valve control auto neutral and warning indicator.			
26.19.	Master battery switch left side of driver's seat shall be provided.			
26.20.	Keyed switch shall be provided,			
FIRE PUMP COMPARTMENT CONSTRUCTION GENERAL				
27. FIRE PUMP COMPARTMENT				
27.1.	The fire pump instrument panel shall be located on the left side of the fire apparatus (Side Mount).			
27.2.	Pump module compartment shall be fully enclosed, on all sides.			
27.3.	The pump module body shall be a self-supported structure mounted independently from the body and chassis cab. The pump module shall be constructed entirely of extrusions and aluminum plate. The framework shall be formed from beveled aluminum			

	alloy extrusions and shall be electrically seam welded at each joint using 5356 aluminum alloy welding wire. The main framework to be 3.00 x 2.00 x 0.25, 6061-T4 aluminum extrusion. The pump module design must allow normal frame deflection through isolation mounts without imposing stress on the pump module structure or side running boards. The pump module shall consist of a welded framework, properly braced to withstand chassis frame flexing. The pump module support shall be bolted to the frame rails of the chassis.			
27.4.	The pump module control panels shall be 1/8" aluminum.			
27.5.	The left lower pump panel shall be ease removable for ease of maintenance. The upper panel containing all gauges will be hinged on left side and able to swing open 90 degrees, closure will be compression latches. The panels shall have the controls displayed in an organized method of pump control with colour-coded labels to NFPA standard. All pump panel controls shall be clearly labelled to indicate function. The discharge controls shall be clearly labelled and colour-coded. Discharge drains and bleeder controls installed at the pump panel shall be colour-coded to match the corresponding discharge control.			
27.6.	The right lower pump panel shall be easily removable for maintenance. The upper panel will be hinged on the right side and able to swing open 90 degrees, closure will be compression latches. It shall allow easy access to plumbing and valves.			
27.7.	The engineering, layout, and functional "user friendly" design of the pump panel is of vital importance for this apparatus.			
27.8.	The left and right side pump panels shall be provided with a full LED bar light, lights with switch on the panel. The hooded panels shall prevent glare to operator's view.			
27.9.	Access shall be provided for servicing of the pump, all piping, valves, and controls. Wherever possible, hinged access doors and valve access panels shall be used to reduce repair costs. It is expected that the front, right side, and upper panels will be of quick removal type.			
28. PUMP ENCLOSURE HEATING				
28.1.	The pump house shall contain an engine recirculation heater that shall be plumbed to the engine cooling system and shall be controlled with a control on the operator's panel, minimum 40,000BTU.			
28.2.	The bottom of the pump house shall be fitted with a removable heat pan. The heat pan shall totally enclose all sides, front, and rear bottom of the pump house and shall be constructed from aluminum sheet and shall be installed to the underside of the pump house that shall be easily removable.			

29. PUMP TO CHASSIS WIRING				
29.1.	<p>Electrical wiring from the pump and applicable chassis wiring shall terminate in a sealed weatherproof junction box inside pump enclosure next to pump access door. All connectors must be labeled for easy identification on the wiring diagrams.</p> <p>This will accommodate removal of pump, should removal be required for service.</p>			
30. PUMP TRANSVERSE PRECONNECT HOSE BED				
30.1.	Over the fire pump enclosure shall be an area for a double pre-connect crosslay compartment (1 ½" hose). The compartment shall be an integral part of the pump enclosure construction and shall not be a bolted-on tray attached to the top of the apparatus body.			
30.2.	The crosslay bed will be flat sided. There will be a ¼ inch flat sided aluminum hose divider to form two (2) hose beds.			
30.3.	The double pre-connected bed will hold a minimum of 200' of 1.5" hose with nozzle in each hose bed.			
30.4.	The crosslay hose beds, shall have vinyl covers installed on each end of the crosslay bay openings. Covers shall be permanently attached to the top checker plate cover, and to the sides of the pump compartment, by hook and loop strips on each flap. The crosslay hose bed covers shall be black in colour.			
PUMP AND PLUMBING GENERAL				
31. PUMP WARRANTY				
31.1.	Waterous shall provide a limited manufacturer's pump warranty with total protection package to be free from defects in material and workmanship, under normal use and service, for a period of seven (7) years from the date placed into service.			
32. STAINLESS STEEL PLUMBING WARRANTY				
32.1.	A Stainless steel Plumbing/Piping warranty shall be offered for a period of ten (10) years from the date of delivery.			
32.2.	All auxiliary suction and discharge plumbing related fittings, and manifolds shall be fabricated with schedule 10 stainless steel pipe, brass, or high-pressure flexible piping with stainless steel couplings. Galvanized components and/or iron pipe shall NOT be accepted to ensure long life of the plumbing system without corrosion or deterioration of the waterway system. Where waterway transitions are critical (elbows, tees, etc.), no threaded fittings shall be allowed to promote the smooth transition of water flow to minimize friction loss and turbulence. All piping components and valves shall be non-painted, unless			

	<p>otherwise specified. All piping welds shall be wire brushed and cleaned for inspection and appearance.</p> <p>The high-pressure flexible piping shall be black SBR synthetic rubber hose with 300 PSI working pressure and 1200 PSI burst pressure for flexible piping sizes 1.5" through 4". Sizes 3/4", 1" and 5" are rated at 250 PSI working pressure and 1000 PSI burst pressure. All sizes are rated at 30 in HG vacuum. Reinforcement consists of two plies of high tensile strength tire cord for all sizes and helix wire installed in sizes 1" through 5" for maximum performance in tight bend applications. The material has a temperature rating of -40° F to +210° F.</p> <p>The stainless-steel full flow couplings are precision machined from high tensile strength stainless steel. All female couplings are brass. Mechanical grooved and male 3/4" and 1" couplings are brass. A high tensile strength stainless steel ferrule with serrations on the I. D. is utilized to assure maximum holding power when fastening couplings to hose.</p>			
33.	FIRE PUMP AND RELATED EQUIPMENT			
33.1.	The fire pump shall be tested and certified to CAN/ULC -S515-M88 by Underwriters Laboratory of Canada. A copy of the test results shall be provided to the purchaser upon delivery of the apparatus and an engraved certification plate shall be affixed to the pump operator's panel.			
33.2.	The fire pump shall be a Waterous CSU single stage centrifugal pump. It shall be of a size and design to mount on the chassis rails of commercial truck chassis with a minimum rated capacity of 5000 LPM – 1050 IGPM – 1250 GPM and shall meet all CAN/ULC - S515-M88 and NFPA current Edition requirements.			
33.3.	<p>The pump shall be the Class "A" type and shall deliver the percentage of rated discharge at pressures indicated below.</p> <ul style="list-style-type: none"> - 100% of rated capacity at 150 PSI net pump pressure - 100% of rated capacity at 165 PSI net pump pressure - 70% of rated capacity at 200 PSI net pump pressure - 50% of rated capacity at 250 PSI net pump pressure 			
33.4.	The entire pump shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by the latest NFPA Pamphlet No. 1901. Pump shall be free from objectionable pulsation and vibration.			
33.5.	The Pump drive unit shall be of sufficient size to withstand the full torque of the engine in both road and pump operating conditions. The drive unit shall be designed with ample capacity for lubrication reserve and to maintain the proper operating temperature without supplemental cooling.			

33.6.	Driveline equipment must be of the heavy-duty type, with hollow-tube driveline, and heavy-duty universals. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.			
33.7.	The Allison transmission shall be provided with direct gear pump lock-up provision. Transmission shift control pad in cab will lock transmission in direct drive pump position, when in pump gear.			
33.8.	The discharge and intake piping, valves, drain cocks and lines and intake and outlet closures, shall be suitable to withstand a minimum hydrostatic burst pressure of 3450 KPA (500 PSI.) The only exception to this requirement shall be the tank fill and tank suction piping on the tank side of the valve.			
33.9.	Stainless steel fittings shall be utilized (no galvanized fittings will be permitted) for tank fill or tank to pump.			
33.10.	The plumbing of the pump shall be built to firefighting standards, using stainless steel pipe or premium quality fire apparatus high-pressure Class 1 flexible piping. The flexible piping shall have a minimum burst pressure rating of 8400 kPa (1200 Psi) and a temperature rating of -40 to 210 degrees F. Where vibration or body flexing may damage or loosen piping or where a coupling is required for servicing, the piping shall be equipped with Victaulic couplings, 90-degree elbows shall be of the sweep type. All plumbing and valving shall meet NFPA standards.			
33.11.	In-line valves used in the fire pump installation shall be quarter-turn ball action, unless otherwise specified. To allow easy repair or replacement of valve seats, all control valves; discharge and intakes (suction) shall be AKRON heavy duty brass swing-out quarter turn full flow ball valves.			
33.12.	All valves, (suction) intake and discharge valves mounted on the pump shall be flush mounted type (exposed valves will not be acceptable). Either panel controlled or with remote control type handles. No valves shall be installed upside down.			
34. PUMP SHIFT				
34.1.	The drive unit shall be provided with an air pump shift system. The control valve shall be a spring loaded guard lever that locks in "Road" or "Pump" mode. To the left of the pump shift control, there shall be two indicator lights to show the position of the pump when the control is moved to "Pump" position. A green light shall be energized when the pump shift has been completed and shall be labeled "PUMP ENGAGED"; a second green light shall be labeled "OK TO PUMP" energized when both the pump shift has been completed and the chassis automatic transmission is engaged.			

	<p>A third green indicator light shall be installed adjacent to the throttle on the pump operator's panel. This light shall be labeled "PUMP ENGAGED".</p> <p>In addition to this indicator light, an additional indication shall be provided to the pump operator at the panel when the pump is ready to pump. This additional indication shall be that one (1) of the operator's panel illumination lights will only activate when the "OK TO PUMP" indicator is lit.</p>			
35. DRAINS AND BLEEDERS				
35.1.	<p>The pump shall be equipped with a Trident Master Pump drain to allow draining of the lower pump cavities, volute and selected water carrying lines and accessories. The drain shall have an all brass body with a stainless steel return spring. The valve shall be installed lower than the main pump body to permit complete draining of the pump and water carrying lines and accessories. Secondary drains shall be provided on any low points in the piping.</p> <p>All drains must be controlled from the left (driver's side) pump panel or pump panel nearest to the valve. All ball valve drains will be 3/4" lift handle type.</p>			
35.2.	<p>Valve intake shall be equipped with minimum 19 mm (3/4") bleeder valves controlled at the valve or pump panel.</p>			
35.3.	<p>All 2.5" or larger discharges shall be equipped with minimum 3/4" bleeder valves controlled at the valve or pump panel.</p>			
35.4.	<p>Drain and bleeder discharges shall terminate below the frame and heat pan of the apparatus.</p>			
35.5.	<p>Discharge drains and bleeder controls mounted at the pump panel shall be colour coded to match the corresponding discharge</p>			
36. PRIMING SYSTEM				
36.1.	<p>An air operated, 12-volt automatic operation, 2 - location primer system will be installed.</p> <p>The panel rocker switch will have a "PRIME" position, "OFF", and an "AUTO" position. When pushed and held in the "PRIME" position, air will be supplied to the primer causing sufficient vacuum to prime the fire pump. Once prime is achieved, the operator can move the rocker switch to the "AUTO" position which will automatically restart the primer if the discharge pressure drops below 20-PSIG. An indicator light built into the rocker switch will be lit when the "AUTO" mode is engaged. An interlock on the wiring harness will be wired to allow for AUTOMATIC operation only when the "OK to pump indicator" light is ON.</p> <ul style="list-style-type: none"> • Driver and passenger side master intakes will be plumbed separately. 			
37. ENGINE CONTROL				

37.1.	A FRC InControl 4 pressure governor and monitor shall be installed at pump operator's panel.			
37.2.	<p>The following continuous displays shall be provided:</p> <ul style="list-style-type: none"> - Engine RPM. - Battery voltage. - Engine coolant temperature. - Engine oil pressure. - Battery voltage. 			
38. MASTER GAUGES				
38.1.	<p>Innovative Controls, 4.5" gauges shall be provided. The master intake and discharge gauges shall indicate pressure from -30hg to 600 PSI. The pressure gauge shall be filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature material and be sealed from the water system using an isolating Sub Z diaphragm located in the stem.</p> <p>The gauges dial shall be provided with pressure measurement indication readings in kPa {kilopascals} in addition to Psi, providing dual pressure scales on the same dial.</p>			
39. WATER LEVEL GAUGE				
39.1.	There shall be one (1) FRC Tankvision Pro 400 LED electronic water level gauge located on the operator's control panel.			
40. TEST PORT				
40.1.	Test port connections for pressure and vacuum shall be provided at the pump operator's panel. One shall be connected to the intake side of the pump, and the other to the discharge manifold side of the pump. They shall have 0.25 in. standard pipe thread connections and be manufactured of non-corrosive polished stainless steel or brass plugs.			
41. INTAKE RELIEF VALVE DISCHARGE				
41.1.	<p>There shall be one (1) suction side stainless steel 2-1/2 inch intake relief pump valve with a discharge pipe that will exit to the left (driver side) of truck, below heat pan.</p> <p>For normal pumping operations, the relief valve shall not be capped and there shall be a placard stating "DO NOT CAP" installed.</p>			
42. PUMP COOLER				
42.1.	There shall be a 3/8 inch (9.5 mm) line running from the pump to the water tank to assist in keeping the			

	pump water from overheating. A quarter turn on/off valve shall be installed on the operator's panel.			
43. HEAT EXCHANGER				
43.1.	A closed circuit auxiliary heat exchanger shall be installed with controls at the pump operator's panel. The system shall provide additional engine cooling capacity without the loss of coolant. The operator must be able to shut off water to the heat exchanger from the pump panel. The intake water feed from the hydrant shall not feed the heat exchanger without the operator having opened the cooler valves on the pump panel.			
43.2.	Piping from the fire pump to the heat exchanger shall be with high pressure flexible hose lines with threaded copper fittings. The piping shall be installed to completely drain with no low points in the hose to prevent freezing.			
SUCTION				
44. SUCTION PORTS (6 INCH INTAKES)				
44.1.	A 6" pump manifold inlet shall be provided on each side of the pump. The main pump inlets shall have National Standard Threads and include removable screens designed to provide cathodic protection for reducing deterioration in the pump.			
44.2.	There shall be two (2) 6" long handled chrome plated self-venting lug caps installed on the apparatus. The caps shall be National Standard Thread.			
45. LEFT AND RIGHT PORTS (6 INCH INTAKES)				
45.1.	One (1) Electric Master Inlet Intake Valve (EMIV) shall be installed on each Main suction port. The valves shall be 6" NH and include a drain valve.			
46. LEFT AUXILLARY SUCTIONS				
46.1.	There shall be a 2.5" gated suction inlet with 75 inch bleeder installed on the left side of the apparatus, with the following specified components: A 2.5" Akron Brass 8800 series swing-out valve with stainless steel ball. The suction shall be controlled from the operator's panel. The plumbing shall consist of 2.5" piping and shall incorporate a manual drain control installed below the pump area for ease of access. The suction termination shall include the following components: One (1) 2.5" NST Swivel Female adapter with screen. One (1) 2.5" NST male self-venting plug, secured by a chain.			

47. TANK SUCTION				
47.1.	<p>One (1) 3" slow close valve shall be installed between the water tank and the pump. The valve shall be a quarter turn ball type. The valve shall be controlled from the operator's panel. The supply line shall have a minimum of 2273 L/min (500 imperial gpm) flow capacity and shall be flexible to allow movement between the tank and the pump module.</p> <p>A check valve shall be provided in the system to prevent pressurizing the water tank.</p>			
DISCHARGE				
48. DISCHARGE LEFT (DRIVER) SIDE				
48.1.	<p>There shall be two (2) gated discharge installed on the left side of the apparatus. They shall be provided with the following specified components:</p> <p>A 2.5" Akron Brass 8800 series swing-out valve with a stainless steel ball.</p> <p>The discharge shall be controlled from the operator's panel.</p> <p>The plumbing shall consist of 2.5" piping and shall incorporate a manual drain control installed below the pump area for ease of access.</p> <p>The 30 degree swivel discharge with 2.5" NH Male treads and 2.5" Female NH to 1.5" NPSH self-venting cap, secured by a chain.</p> <p>An Innovative Controls, 2.5" (63mm) gauge shall be supplied for the discharge pressure reading of 0-400 psi. The gauge shall be white faced and black lettering.</p> <p>The gauge dial shall be provided with pressure measurement indication readings in kPa {kilopascals} in addition to Psi, providing dual pressure scales on the same dial.</p>			
49. LARGE DISCHARGE RIGHT (OFFICER) SIDE				
49.1.	<p>There shall be a master discharge installed on the right side of the apparatus, with the following specified components:</p> <p>A 3" Akron Brass 8800 series Slo-cloz swing-out valve with a stainless steel ball.</p> <p>The discharge shall be controlled from the operator's panel.</p> <p>The plumbing shall consist of 4" piping and shall incorporate a manual drain control installed below the pump area for ease of access.</p> <p>The discharge termination shall include the following components:</p> <ul style="list-style-type: none"> One (1) 4" NST Female swivel by 4" Storz cast aluminum 30 degree elbow. 			

	<ul style="list-style-type: none"> One (1) 4" female Storz self-venting cap, secured by a chain. <p>An Innovative Controls, 2.5" (63mm) gauge shall be supplied for the discharge pressure reading of 0-400 psi. The gauge shall be white faced and black lettering.</p> <p>The gauge dial shall be provided with pressure measurement indication readings in kPa {kilopascals} in addition to Psi, providing dual pressure scales on the same dial.</p>			
50. DISCHARGE RIGHT (OFFICER) SIDE				
50.1.	<p>There shall be a gated discharge installed on the right side of the apparatus, with the following specified components:</p> <p>A 2.5" Akron Brass 8800 series swing-out valve with a stainless steel ball.</p> <p>The discharge shall be controlled from the operator's panel.</p> <p>The plumbing shall consist of 2.5" piping and shall incorporate a manual drain control installed below the pump area for ease of access.</p> <p>The 30 degree swivel discharge with 2.5" NH Male treads and 2.5" Female NH to 1.5" NPSH self-venting cap, secured by a chain.</p> <p>An Innovative Controls, 2.5" (63mm) gauge shall be supplied for the discharge pressure reading of 0-400 psi. The gauge shall be white faced and black lettering.</p> <p>The gauge dial shall be provided with pressure measurement indication readings in kPa {kilopascals} in addition to Psi, providing dual pressure scales on the same dial.</p>			
51. REAR RIGHT DISCHARGE				
51.1.	<p>There shall be gated discharges installed on the rear right at mid height of the apparatus, with the following specified components:</p> <p>A 2.5" Akron Brass 8800 series swing-out valve with a stainless steel ball.</p> <p>The discharge shall be controlled from the operator's panel.</p> <p>The plumbing shall consist of 2.5" piping and shall incorporate a manual drain control installed below the pump area for ease of access.</p> <p>The 30 degree swivel discharge with 2.5" NH Male treads and 2.5" Female NH to 1.5" NPSH self-venting cap, secured by a chain.</p> <p>An Innovative Controls, 2.5" gauge shall be supplied for the discharge pressure reading of 0-400 psi. The gauge shall be whited face and black lettering.</p> <p>The gauge dial shall be provided with pressure measurement indication readings in kPa {kilopascals}</p>			

	in addition to Psi, providing dual pressure scales on the same dial.			
52. CROSSLAY DISCHARGE – 1.5”				
52.1.	<p>Two (2) forward crosslays shall be installed on top of the pump module.</p> <p>These sections of the crosslay shall hold 200' of 1.5" double jacket fire hose each side. A 1.5" NPSH mechanical swivel hose connector shall be used in each crosslay to provide access to hose in either direction.</p> <p>Each crosslay shall have one (1) 2" Akron brass 8800 series valve. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures.</p> <p>Valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel.</p> <p>There shall be an Innovative Controls, 2.5" pressure gauge mounted on the panel near each control to indicate pressure. Each discharge shall also come equipped with a lift up ¾" drain valve. Each discharge must be capable of flowing 180 GPM or greater.</p>			
53. TANK FILL LINE				
53.1.	<p>One (1) 2" discharge with an Akron Brass 8800 series brass valve shall be plumbed to the tank. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2"(5.08cm) valve outlet terminates with 2" (5.08cm) grooved connection. The valve shall be controlled from the operator's panel.</p>			
TANK				
54. WATER TANK				
54.1.	The tank shall be Fire truck design with flat back, flattop, low center of gravity, low profile, design.			
54.2.	The tank shall be manufactured by Brayneck Canaplast Inc.			
54.3.	<p>The water tank shall have a minimum capacity of 2500 Imperial gallons. It shall be of a specific configuration and designed to meet the customer's requirements.</p> <p>The water tank shall be constructed of 1/2" thick copolymer material. Water tank shall be welded with Heavy Duty extruded joint inside and outside. The material shall be certified, high quality, non-corrosive, stress relieved thermoplastic. The tanks will be white in colour. The tank shell thickness may vary depending on the application and may range from ½ to 1" as required. The unit shall incorporate transverse partitions manufactured with 3/8" copolymer material which shall interlock with a series of longitudinal partitions constructed of 3/8" copolymer. All swash partitions shall be designed to allow for maximum</p>			

	water and air flow between compartments and are fully welded to each other as well as to the tank's walls and floor. Tank will be baffled in accordance with NFPA 1901 requirements. The top of the tank is equipped with lifting points designed to facilitate tank removal.			
55. FILL TOWER				
55.1.	The tank shall be equipped with a combination vent/overflow and manual fill tower. The fill tower shall have a minimum OD of 14" x 14". The tower shall be in the portion front of the tank. There shall be a vent / overflow installed inside and to the extreme rear of the tower approximately 2½" down from the top of the fill tower. This vent / overflow shall be of a standard schedule 40 polypropylene pipe with minimum ID of 4". The vent / overflow shall be piped internally through the tank and designed to discharge water behind the rear wheels as required in NFPA 1901 to not interfere with rear tire traction. The tower shall have a 3/8" thick removable copolymer screen and a stainless steel bolted hinged-type cover. The tank cover shall be constructed of 1/2" thick copolymer material, white in colour. The top of the cover shall be engraved in blue, green, yellow, or black indicating what the tower should receive.			
56. SUMP				
56.1.	There shall be one (1) sump standard per tank. The sump shall be constructed of a minimum of 1/2" copolymer material and be in the left front quarter of the tank, unless specified otherwise. On all tanks that require a front suction, a 3" schedule 40 polypropylene pipe shall be installed from the front of the tank to the sump location and equipped with an anti-swirl plate located approximately 3" above the inside floor. The sump shall have a minimum 3" NPT threaded outlet on the bottom for a drain valve Akron brass 8800 series and valve shall be controlled from pump panel. This shall be used as a combination clean-out and drain.			
57. TANK OUTLETS				
57.1.	There will be two (2) standard tank outlets: one (1) 3" for the tank-to-pump suction line, and one (1) 2" for tank fill line. All tank fill couplings shall be backed with a flow deflector especially designed to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1000 G.P.M.			
58. 4 INCH REAR TANK FILL				
58.1.	There shall be one (1) four (4) inch rear tank fill valve for direct tank fill lines on the rear left side of the apparatus.			
58.2.	The valve shall have a drain to release pressure.			
58.3.	The 4" outlet will terminate with a 30 degree drop 5" Storz with cap. This shall be labelled "Tank Fill".			

58.4.	Placement of the tank fill shall allow for the use of hose wrenches for tightening and loosening of water fill hoses.			
59. DUMP VALVE				
59.1.	Located at the rear of the apparatus there shall be a Ten (10) inch Stainless Steel 180 degree swivel dump chute.			
59.2.	The stainless-steel dump valve shall be electrically open and closed with one (1) control switch mounted on the driver's side and one (1) control switch mounted on the officer's side of the rear body panel. The switches shall be toggling style switches installed inside of protective mount.			
59.3.	Permanently attached to the dump shall be 8 inches by 12 inches Stainless Steel telescopic chute.			
59.4.	The rear dump valve shall be capable of discharging the water tank contents at a rate of 1800 GPM (minimum).			
60. HOSE BED				
60.1.	The apparatus hose bed compartment shall be provided on top of the water tank, it shall be smooth and free of sharp corners that may catch hose or couplings.			
60.2.	The hose bed shall be covered with black PVC Turtle-Tiles, to assist in air circulation and hose drying.			
60.3.	Adjustable width hose bed dividers constructed of aluminum shall be installed. The divider shall be reinforced as required to protect the divider from bending caused by shifting of the hoses. There shall be one (1) forward divider to separate a hose bed dunnage area where the water tank fill tower is located from the main hose bed. The divider shall be secured to the hose bed by utilizing adjustable track type channels and fasteners. The divider shall be the full length and depth of the hose bed. Two (2) adjustable hose bed dividers shall be supplied.			
60.4.	The hose bed shall be as large as possible, but hold the minimum required hose loads of the following: 800' of 4" hose 600' of 2.5" hose 400' of 1.5" hose			
60.5.	A heavy-duty UV resistant vinyl cover for the hose bed will be supplied. The cover shall have end flaps with yellow Velcro attachments. A ¼" aluminum bar will be sewn into the bottom hose bed tarp to ensure the flap remains downwards. Two (2) inch vinyl pouches with Velcro will be installed on each top side of the body to secure the tarp to the body. A 777 molding will be used at the front of the body to secure the tarp.			

61. TANK CERTIFICATION				
61.1.	All water tanks are fully inspected and tested for any leaks and defects. All tanks come with a tank certification that states the maximum fill rate, maximum fill pressure, tank weight, water and foam tank capacity, manufacturing date and the serial number.			
62. TANK MOUNTING				
62.1.	The tank shall be cradle mounted to the exact design suggested by the manufacturer and easily removed from the body. The tank shall be isolated from the cradle and chassis frame with 3" X 1" rubber sills.			
63. TANK WARRANTY				
63.1.	Brayneck Canaplast Inc. warrants each water tank, water skid tank and foam tank to be free from defects in material and workmanship for the service life of the original vehicle (vehicle must be used for normal fire suppression applications). This warranty is transferable within the United States and Canada only with prior written approval by Brayneck Canaplast.			
64. INTERMEDIATE REAR PLATFORM				
64.1.	The intermediate rear platform shall be 12" in depth and shall be centered on the rear of the truck. The step shall be constructed of diamond back tread plate. The step shall be mounted on the flat back of the apparatus with gusset-type mounting to provide sufficient support for loading and deploying hose and for gaining access to the hose bed area.			
BODY DESIGN				
65. GENERAL REQUIREMENTS: Apparatus Body, substructure, and sub-frame				
65.1.	The apparatus body, substructure, and sub-frame shall be designed with sufficient carrying capacity for the weight of the specified hose, equipment, water, and to withstand the rigours of emergency service operations typical of a busy urban fire department.			
65.2.	To extend the service life of the vehicle, the body shall be separate and removable from the chassis frame and be able to be reinstalled on a new chassis.			
65.3.	Prior to the construction of this vehicle, various chassis attachments such as battery boxes, air reservoirs, mufflers and tail pipes, filters and other bolt-on frame attachments may be removed and relocated to permit full utilization of the chassis for equipment compartments. The equipment removed shall be relocated as noted in these specifications and/or remounted under the chassis frame or cab.			
65.4.	Fabrication shall be with inert gas continuous feed welders only. The use of stick type welding is not acceptable on body due to heat distortion.			

65.5.	<p>The entire body shall be of welded construction. The use of pop rivets in any portion of the construction of the vehicle will not be acceptable; this includes body sheet metal, inner pans of compartment doors, or any other portions of the body.</p> <p>Stainless steel bolts, nuts and stainless steel sheet metal screws shall be used in mounting the exterior trim, hardware, or equipment.</p> <p>Dissimilar metals shall not come in immediate contact with each other to prevent corrosion and galvanic reaction.</p>			
66. BODY STRUCTURE				
66.1.	<p>The aluminum body shall be designed for fire and rescue service operations. Commercially designed bodies intended for use in other applications are not acceptable due to lower levels of quality, construction, and longevity. The body module shall utilize a fully welded sub-frame, separate from the chassis, incorporated into the welded body under the structure.</p>			
66.2.	<p>The complete body shall be formed and welded, built with 5052H32 marine grade 0.188" (3/16") aluminum, with 0.125" (1/8") non-slip polished aluminum checker plate overlays.</p>			
66.3.	<p>All exterior lower compartments and walls shall have fully welded seams with all upper walls, compartments, and interior dividers having stitch welding every 6" minimum. All welding and sheet metal fabrication shall be completed with the highest degree of quality and precision. All welds and seams shall be caulked and sealed with permanent pliable silicone.</p>			
66.4.	<p>Strict attention shall be given to the elimination of hazards to personnel and equipment, such as rough edges, sharp corners, or protruding nuts and bolts. All exposed welded corners on aluminum checker plate shall be polished to a bright finish. All exposed sharp corners shall be radiused and deburred. All structural seams shall be fully seam welded. All other body seams and shall be welded on 6" centers and then silicone caulked prior to painting.</p>			
66.5.	<p>Due to the engineered combination of specifically chosen materials, no dissimilar metals shall be used in the body and its supporting substructure without being separated by a sufficient corrosion and electrolysis inhibitor. All holes shall be drilled prior to painting. Any holes drilled after painting which break the paint seal shall be treated as dissimilar metal and shall be suitably separated. This shall consist of isolation pads, ECK, and other structural adhesives.</p>			
66.6.	<p>The body shall be completely modular in design thereby allowing its transfer to a new chassis without cutting or welding in the event of an accident or the replacement of the chassis. The apparatus body shall</p>			

	be form built and building a body directly on the chassis shall be not required or permitted.			
66.7.	The body and tank shall be supported over the frame cross tubing. These tubes shall be aluminum extrusions with a minimum dimension of 2" x 3" x 0.250" thickness. The exterior side compartments shall have an aluminum angle welded to cross channels and rear compartment walls. The front to rear angle shall be a minimum of 3.5" x 5" x .375" thickness extrusion.			
66.8.	The compartment floors shall be 0.188" aluminum and shall be "sweep" out construction design, which shall permit easy cleaning of the compartments. The outer flange of the compartment floors shall be fabricated to form a mounting area of exterior rub rails. This flange shall be a minimum of 3.5" vertical dimension, full width of the compartment floor.			
66.9.	The front entrance to the compartment shall have a 2" deep x 1" high recess break for mounting the compartment doors.			
66.10.	Each compartment shall include one (1) 4" circular vent with screen.			
66.11.	Each compartment shall be finished with full height Unistrut channel. All full depth compartments shall include two (2) channels on the left wall and two (2) channels on the right side wall. All half depth compartments shall include one (1) channel on the left wall and one (1) on the right side wall.			
66.12.	Each compartment shall include a drain hole in the left and right rear corners to allow wash-out and water drainage.			
66.13.	The front face of the body shall be finished with a 0.125" aluminum checker plate overlay. The rear of the body shall be unpainted smooth aluminum covered by ULC and NFPA required reflective chevrons.			
66.14.	The top of the storage compartments shall be 0.125" checker plate and shall be bolted to the body with stainless steel bolts.			
66.15.	The body shall be mounted to the chassis frame with floating spring attachment mounts and ridged mounts. These spring mounts shall allow the chassis to twist and bend independently from the body and shall prolong the structural life of the body. This combination of mounts shall be installed as per the chassis manufacturer recommendations.			
66.16.	All mounts to the chassis frame shall have rubber block isolators to permit movement of the chassis frame under the apparatus body.			
66.17.	The body shall be grounded to the chassis frame with a min of two (2) body ground straps mounted metal to metal contact and coated with dielectric grease.			
67.	REAR WHEEL WELLS			

67.1.	The outer wheel well fenders and wheel well liners shall be integral to the compartments and constructed of 0.188" smooth aluminum. Both shall be painted red and the wheel well liners covered with black gravel guard.			
68. LEFT SIDE BODY COMPARTMENTS				
68.1.	Compartment L1 The compartment dimensions shall be approximately 63" wide by 28" deep by 36" high. This compartment shall include: <ul style="list-style-type: none"> • One (1) full depth shelf. • One (1) pull out full depth tray (note that wide is 37") • One (1) storage pan 18" wide by 24" deep. 			
68.2.	Compartment L2-L3 The compartment dimensions shall be approximately 53" wide by 13" deep by 10" high.			
68.3.	Compartment L4 The compartment dimensions shall be approximately 27" wide by 28" deep by 36" high. This compartment shall include: <ul style="list-style-type: none"> • One (1) full depth shelf • One (1) pull out full depth tray. 			
69. RIGHT SIDE BODY COMPARTMENTS				
69.1.	Compartment R1 The compartment dimensions shall be approximately 63" wide by 28" deep by 36" high. This compartment shall include: <ul style="list-style-type: none"> • One (1) full depth shelf. • One (1) pull out full depth tray. 			
69.2.	Compartment R2-R3 The compartment dimensions shall be approximately 53" wide by 13" deep by 10" high.			
69.3.	Compartment R4 The compartment dimensions shall be approximately 27" wide by 28" deep by 36" high. This compartment shall include: One (1) full depth shelf <ul style="list-style-type: none"> • One (1) full depth shelf • One (1) pull out full depth tray. 			
70. PAN STYLE BOX DOOR				
70.1.	Compartments shall be equipped with pan style box door built from 1/8" 5052 Marine grade aluminum. <ul style="list-style-type: none"> • Quarter turn Whale Tale latch mechanism will be installed for opening and closing of door. 			

	<ul style="list-style-type: none"> • Weather strip foam seal will be installed on door jam. • Stainless steel piano hinge will be installed on the bottom of the door. • Travel restraint chains will be installed at both ends of the doors. • A door ajar switch system shall be provided and shall include magnetic proximity based components. The switch device shall be a military grade contact switch capable of meeting MIL-S-8805 which can only be activated through positive engagement of the door. 			
71.	ROLL-UP STYLE - COMPARTMENT DOORS			
71.1.	<p>Compartments shall be equipped with Amdor brand roll-up anodized aluminum doors complete with the following features:</p> <ul style="list-style-type: none"> • Amdor Luma Bar LED strip lighting, integral to the door frame on both sides of the door • 1" aluminum double wall slats with continuous ball & socket hinge joint designed to prevent water ingress and weather tight recessed dual durometer seals • double wall reinforced bottom panel with stainless steel lift bar latching system • bottom panel flange with cut-outs for ease of access with gloved hands, reusable slat shoes with positive snap-lock securement • smooth interior door curtain to prevent equipment hang-ups • one-piece aluminum door track / side frame • top gutter with non-marring seal • non-marring recessed side seals with UV stabilizers to prevent warping • dual leg bottom seal, with all wear component material to be Type 6 Nylon • A door ajar switch system shall be provided by Amdor and shall include magnetic proximity based components. The switch device shall be a military grade contact switch capable of meeting MIL-S-8805 which can only be activated through positive engagement of the lift bar. The door striker will include support beneath the lift bar to prevent door curtain bounce. 			
72.	COMPARTMENTS SHELVING			
72.1.	<p>There shall be adjustable shelves provided, constructed of 0.188" 5052 H32 marine grade aluminum. The shelves shall have 2" edges on all sides of the shelf, with fully welded corners.</p>			

72.2.	The shelves shall include heavy-duty mounts and be capable of a minimum 500 pounds load capacity.			
72.3.	All shelves shall be unpainted aluminum.			
73. ROLL-OUT TRAYS				
73.1.	There shall roll-out trays provided, constructed of 0.188" 5052 H32 marine grade aluminum. The trays shall have 2" edges on all sides of the shelf, with fully welded corners. The trays shall include sliding aluminum mechanisms, 3 stage 100% extension with a 500lb. capacity.			
73.2.	All trays shall be unpainted aluminum.			
73.3.	All trays shall include red and lime reflective tape on all sections of the tray that protrude from the side of the apparatus body			
74. LADDER STORAGE				
74.1.	The right side of the apparatus body shall have a horizontal mounted Ziamatic ladder rack. The rack shall be capable of storing the following: <ul style="list-style-type: none"> • One (1) 24' 2-Section extension ladder • One (1) 14' Roof ladder w/ hooks • One (1) 10' Folding attic ladder. 			
75. Pike Pole Storage				
75.1	There shall be storage for two (2) 10' pike poles, readily accessible, located on the truck.			
76. PORTA TANK STORAGE				
76.1.	A Ziamatic Quik-Lift electric portable water tank rack shall be installed on the left side above the compartments of the apparatus. The rack shall be powered by two (2) electric actuators rated at 1,000 lbs. which will allow for lowering the rack down against the side of the apparatus for tank removal and return the rack to the stored position. The Zico Porta Tank rack will store: One (1) – 3000 US GAL porta tank			
76.2. HARD SUCTION HOSE STORAGE				
76.3.	Two (2) six (6) inch hard suction hose storage options will be provided; <ul style="list-style-type: none"> • One (1) - Six (6) inch hard suction hose on top of Porta tank rack • One (1) - Six (6) inch hard suction hose on top of Ladder rack. 			
77. TAILBOARD				
77.1.	A bolt on DIAMOND BACK tailboard shall be installed on the rear of the apparatus spaced out from the body to provide drainage. The step shall be bolted to the body frame and finished with safety grip or similar			

	material to provide a durable anti-slip surface. The tailboard shall extend across the full width of the vehicle and shall extend out from the body sufficiently for standing while loading the hose			
78. HANDRAILS				
78.1.	Aluminum handrails with knurled finish shall be installed on the rear of the apparatus, tank and pump panel area as required to provide for three (3) point contact when climbing or mounting the tailboard and climbing onto the hose bed.			
79. RUB RAIL				
79.1.	Aluminum "C" channel rub rails shall be installed along the full length of the body. The rub rails shall be bolted on the exterior edge of the compartment floors, spaced from the body.			
79.2.	The rub rails shall extend a minimum of 1" from compartment doors.			
80. TOW EYES				
80.1.	Two (2) screw-in drop forged tow eyes or brackets shall be installed on the apparatus. Tow eyes or brackets shall be secured directly to the rear of chassis frame.			
81. REAR WHEEL FENDERETTES				
81.1.	Polished stainless steel fenderettes shall be bolted at each rear wheel opening. The fenderettes shall be positioned outside of the wheel well panel to cover any tire area that extends past the body.			
82. COMPARTMENT FLOORING				
82.1.	There shall be black PVC Turtle Tile protective flooring provided. The following locations shall include the flooring: - All adjustable shelves - All roll-out trays			
83. MUD FLAPS				
83.1.	Mud flaps shall be installed behind the rear wheels to protect the body and components from road spray.			
84. LICENSE PLATE HOLDER				
84.1.	There shall be one (1) Cast Products Inc. LP-0005-1-A polished cast aluminum license plate holder with LED light mounted at the rear of the apparatus.			
ELECTRICAL				
85. ELECTRICAL SYSTEMS				
85.1.	Shall be a 12 volt electrical system (NFPA 1901- Most Current Edition Standards.)			

85.2.	All wiring shall be of the design type GXL and size appropriate for the anticipated circuit loads.			
85.3.	All wiring shall be protected from heat and physical damage. Wiring shall be colour coded and labelled on the insulation every 4" minimum. Wires outside of cab or body shall be in loom and coded.			
85.4.	All terminals shall be crimp type, with insulated shanks or stud type bolted. Deutsch connectors or equivalent shall be utilized where possible.			
85.5.	All terminals and components in exposed areas shall be protected from the elements. Exposed area is defined as any area outside of the cab or body. Deutsch connectors shall be utilized on all outside connections.			
85.6.	The entire body and chassis electrical system shall be protected by automatic re-settable circuit breakers or fuses. Load not to exceed 80% of breaker or circuit ratings.			
85.7.	Lighted rocker type switches shall be used in the cab area to indicate when the switch is in the "on" position.			
85.8.	A master battery disconnect switch shall be used to activate the system and provide power to the power panel. A green pilot light (Battery on) shall illuminate to indicate that the battery bank is activated.			
85.9.	Individual body components such as the cab and compartments shall be grounded to each side of the frame with grounding cables.			
86.	CENTER CONSOLE			
86.1.	A center console equipment box shall be installed inside the cab. Centre console shall be constructed of 1/8"aluminum. The console shall be Poly Armour painted black.			
87.	DOOR AJAR			
87.1.	Compartment door "ajar" warning light and buzzer shall be installed according to most current NFPA 1901 requirements.			
88.	CHARGER, COMPRESSOR AND SHORELINE POWER			
88.1.	A Kussmaul Auto Charge Chief 4012 Model #091-266-12-40 shall be installed inside the cabin and connected to the shoreline power receptacle.			
88.2.	A Kussmaul Super 20 Auto Eject and Charger Status Bar Graph Display Model #091-055-51266-YW shall be mounted on the pump panel to provide 120-volt shoreline power to the battery charger, one (1) 120 volt power outlet in cab and the power outlet(s) in body compartment(s). The receptacle shall be in a conspicuous location visible to the driver when entering the cab.			
88.3.	A Kussmaul air compressor Model #091-9HP 120 volt shall be mounted inside the pump module. Power for			

	the compressor shall be provided from the Auto Eject shore power.			
89. MOBILE RADIO REQUIREMENTS				
89.1.	Center console will have radio provisions as follows; <ul style="list-style-type: none"> • Fused 12 volt master switched power • Fused 12 volt ignition switched power • Ground bus bar connection point. 			
89.2.	The vehicle shall be adequately radio interference suppressed to permit understandable voice radio communications under all operating conditions.			
89.3.	An antenna base, for use with an NMO type antenna, shall be mounted centered on the cab roof so not to interfere with light bars or other roof mounted equipment.			
89.4.	The antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center of the console.			
OPTICAL WARNING SYSTEM CONTROL, SIREN AND LIGHTING				
90. OPTICAL WARNING SYSTEM AND LIGHTING				
90.1.	Optical Warning System and Lighting shall comply with NFPA Standard 1901 Most Current Edition. Certification that the system has been installed within the geometric parameters shall be provided with the apparatus on delivery.			
90.2.	Emergency lighting control panel/switches to be mounted on the top of the center console.			
90.3.	Electrical body system shall be a Whelen multiplex system.			
90.4.	A Whelen WCX Cencom Core #CCTL6 controller shall be installed in center console.			
90.5.	One (1) 100 watt Whelen siren speaker shall be flush mounted in front left section of the bumper.			
90.6.	A Whelen NFPA 72" Freedom lightbar clear lens configured with white, red, and blue LED lights installed on the roof of the cab.			
90.7.	When the parking brake is applied all white warning lights shall deactivated in light bar.			
90.8.	Two (2) Whelen M Series - Model # M6RC LED warning lights with clear lenses and chrome bezel Model # M6FC shall be installed on the front grille.			
90.9.	Two (2) Whelen M Series - Model LED warning lights with clear lenses and chrome bezel Model # M6FC shall be installed forward of the front axle centerline and as close to the front corner of the apparatus as practical.			
90.10.	Two (2) Whelen M Series - Model # M6RC LED warning lights with clear lenses and chrome bezel Model # M6FC shall be installed forward of the rear axle centerline.			

90.11.	Two (2) Whelen M Series - Model # M6RC and LED warning lights with clear lenses and chrome bezel Model # M6FC shall be installed behind the rear axle centerline and as close to the rear corner of the apparatus as practical.			
90.12.	Two (2) Whelen M Series - Model # M6RC LED warning lights with clear lenses shall be installed behind in the rear facing brake lights clusters provided on the rear of the body.			
91. COMBINATION WARNING AND SCENE LIGHT				
91.1.	Two (2) Whelen M Series - Model # M9V2RC combination 180° warning/perimeter light with chrome bezel Model # M9FC shall be installed at the most forward point of the body side as high as possible.			
91.2.	Two (2) Whelen M Series - Model # M9V2RC combination 180° warning/perimeter light and chrome bezel Model # M9FC shall be installed at the most rear point of the body side, as high as possible.			
91.3.	Two (2) Whelen M Series - Model # M9V2RC combination 180° warning/perimeter light and chrome bezel Model # M9FC shall be installed at the back of the body as high as possible, in each corner.			
91.4.	The rear scene lights shall come on when the truck is put in reverse.			
92. BRAKE LIGHT CLUSTER				
92.1.	<p>There shall be two (2) rear facing brake like clusters provided on the rear of the body. Each cluster shall include the following:</p> <ul style="list-style-type: none"> • One (1) C62BTT red Whelen LED brake/tail light • One (1) C62T amber Whelen LED arrow turn indicator. • One (1) C62BU white Whelen LED back-up light. • One (1) M6RC red Whelen LED warning light. • One (1) M6FCV4 chrome plated Whelen bezel. 			
93. TRAFFIC ADVISOR				
93.1.	<p>Whelen Traffic Advisor™ model # TAL65 shall be installed at rear of the apparatus as high as possible.</p> <p>The controls for the TAL65 shall be mounted in center console.</p> <p>The directional light bar shall have a protective cover to protect it from objects coming from the hose bed.</p>			
94. GROUND LIGHTS				
94.1.	<p>Amdor Luma Bar H2O (High Output) led lights shall be installed on the apparatus.</p> <ul style="list-style-type: none"> • Two (2) twelve inch H2O shall be installed under chassis steps. One (1) on each side. 			

	<ul style="list-style-type: none"> Two (2) twelve inch H2O shall be installed under pump module. One (1) each side. Four (4) twelve inch H2O shall be installed, one (1) under each compartment (L1, L3, R1, R3). Two (2) twenty inch H2O shall be installed under the rear tailboard. <p>The lights shall be mounted to prevent accidental breakage.</p> <p>The lights shall be activated automatically when the parking brake is applied. Individual switch(s) shall not be installed. This shall be deemed to meet the individual door switching requirements of NFPA 1901- Most Current edition.</p>			
95. CHASSIS STEP LIGHT				
95.1.	Four (4) TecNiq LED step light part #D07 shall be installed under the chassis to illuminate the top step. Two (2) each side.			
95.2.	Four (4) TecNiq LED step light part #D07 shall be installed under the chassis to illuminate the first step. Two (2) each side.			
95.3.	Two (2) TecNiq LED step light part #D07 shall be installed between the rear ladder steps.			
95.4.	The lights shall be activated automatically when the parking brake is applied. Individual switch(s) shall not be installed. This shall be deemed to meet the individual door switching requirements of NFPA 1901- Most Current edition.			
96. REAR LADDER				
96.1.	A Battleshield folding ladder shall be installed on the rear left side of the body to access the hose bed.			
96.2.	The ladder shall be fitted with force assisted mechanisms to hold in the upright and lowered positions.			
97. COMPARTMENT LIGHTING				
97.1.	Four (4) compartments, each with two (2) Amdor Luma Bar LED lights, integral to door construction shall be installed.			
97.2.	The door switches shall be magnetic, switches shall be protected from physical damage and activate a light in the cab to indicate a compartment door is in the open position. When the parking brake is released, the light will flash, and an audible alarm will sound. This shall be deemed to meet the individual door switching requirements of NFPA 1901- Most Current edition.			
97.3.	The compartment lighting shall be activated by opening the roll up doors.			
98. HOSEBED LIGHTING				

98.1.	<p>There shall be lights provided to illuminate the hose bed for nighttime hose loading. The following lights shall be supplied:</p> <ul style="list-style-type: none"> • Two (2) TecNiq S17-RR0P-1 lights. One (1) on each side of all hose bed dividers. • The lights shall be activated automatically when the parking brake is applied. This shall be deemed to meet the individual door switching requirements of NFPA 1901- Most Current edition. 			
99. ENGINE COMPARTMENT LIGHTING				
99.1.	<p>One (1) twelve inch Amdor Luma Bar H2O (High Output) LED light shall be installed under the chassis hood to illuminate the engine.</p> <p>The lights shall be activated automatically when the parking brake is applied. Individual switch(s) shall not be installed. This shall be deemed to meet the individual door switching requirements of NFPA 1901- Most Current edition.</p>			
100. PUMP COMPARTMENT LIGHTS				
100.1.	<p>One (1) twelve inch Amdor Luma Bar H20 LED (High Output) light shall be installed in the pump compartments. The light shall activate with the pump panel lights switch.</p>			
101. SIDE TURN/MARKER LIGHTS				
101.1.	<p>The sides of the body shall include two (2) Weldon part # 9186-8580-29 LED round turn signal /side marker lights shall be installed in front of rear axle.</p>			
102. BODY CLEARANCE LIGHTS				
102.1.	<p>LED identification lights and reflectors shall conform to Canadian Motor Vehicle Safety Standards as well as Ontario Ministry of Transportation standards. The red and amber light shall be made by TecNiq and the part number is S33-RR-OP-01 and S33-AA-OP-01. All lower identification lighting shall be located within the rub rails for protection.</p>			
103. CAMERA SYSTEM				
103.1.	<p>There shall be a Fire Research inView™ TrueSight™ model BCA111-A00 kit to include:</p> <ul style="list-style-type: none"> • One (1) 130° camera with 18 infrared illuminators. • One (1) 7" digital monitor <p>Camera shall be located at the rear of apparatus as high as possible.</p> <p>The 7" colour screens and controls shall be located inside the cab on the driver side.</p>			
FINISHING				

104. PAINT WARRANTY				
104.1.	The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase or in service or the first 100,000 actual kilometers, whichever occurs first.			
105. CHASSIS				
105.1.	The chassis shall be painted during factory construction. Colour is to be chosen during Pre-Construction meeting.			
106. BODY				
106.1.	The aluminum body exterior shall have all mounted components removed prior to painting, to assure the full coverage of metal preparations. The apparatus shall be painted to match the cab paint colour.			
106.2.	All roll up doors and accessories shall be installed after painting to assure the proper paint coverage of the body.			
106.3.	The metal surface shall be sanded to remove all burrs and imperfections in the aluminum before preparation for painting.			
106.4.	The metal surface shall be cleaned and prepped with solvent and washed with fresh water to remove oxidization and other surface contaminants, to give a bright, conditioned, and chemically etched surface for finishing. The aluminum surface shall be conditioned with a conversion chemical treatment and washed with fresh water to produce a corrosion resisting conversion coating, to prevent oxidization and other surface contaminants, leaving a surface that allows excellent paint adhesion.			
106.5.	The aluminum surface shall have a spray on, wash primer, to seal and provide a smooth surface for final coats.			
106.6.	The aluminum body shall be painted with a high luster urethane paint to match the chassis red from the factory.			
107. THE FIRE DEPARTMENT GRAPHICS – FULL PACKAGE				
107.1.	All graphics shall be applied prior to apparatus delivery. A graphics layout must be provided prior to application to confirm accuracy and signed off by the fire department. Failure to do this is grounds for rejection if the graphics package is incorrect. The following shall be supplied: <ul style="list-style-type: none"> – Up to 1"x 4" x 1" white reflective stripe along the perimeter of the apparatus – Up to 100 x 4" or smaller white/black shadow reflective letters. 			
108. REFLECTIVE CHEVRONS				

108.1.	<p>The rear wall of the body shall have red and fluo-lime retroreflective 6" chevrons installed as per the requirements of ULC and NFPA.</p> <p>The front bumper shall have red and fluo-lime retroreflective 6" chevrons installed.</p>			
EQUIPMENT				
109. LOOSE EQUIPMENT				
109.1.	<ul style="list-style-type: none"> • One (1) 28oz Vinyl Husky Portatank 3000 US GAL • One (1) set of rubber wheel chocks • One (1) Truck first aid kit • Two (2) 6" 10' Long handles hard suction hoses • One (1) set of Emergency Triangles in carry case • Two (2) 10' straight handle Pike Pole • One (1) Ladder set – 24" Extension, 14' Roof ladder w/ hooks, 10' Folding Attic. • 6" Low level strainer • 6" Floating dock strainer • 2.5" Female CSA to 5" Storz • In cab fire extinguisher 			
109.2.	<p>All additional loose equipment that may be required by ULC or NFPA shall be provided by and installed by the Fire Department prior to the apparatus' entry into service. The Fire Department may be required to sign a waiver prior to the ULC test confirming they will be supplying the required equipment.</p>			
110. END OF SPECIFICATIONS				