Town of Fairfield

Sullivan Independence Hall
725 Old Post Road

Fairfield, Connecticut 06824
Purchasing Department

(203) 256-3060
FAX (203) 256-3080

BID #2017-11
FIRE PUMPER APPARATUS

TOWN OF FAIRFIELD
PURCHASING AUTHORITY
725 OLD POST ROAD
INDEPENDENCE HALL
FAIRFIELD, CT 06824.

SEALED BIDS are subject to the standard instructions set forth on the attached sheets. Any modifications must be specifically accepted by the Town of Fairfield, Purchasing Authority.

First Selectman

Director of Purchasing

8/3/2016
Date

Date Submitted _____, 2016.

Delivery _____days after receipt or order.

Bidder:

_____
Doing Business As (Trade Name)

_____
Address

_____
Town, State, Zip

_____
Name and Title

_____
Signature

_____ _____
Phone Fax

_____
Email

Sealed bids will be received by the Purchasing Authority at the office of the Director of Purchasing, First Floor, Independence Hall, 725 Old Post Road, Fairfield, Connecticut 06824, up to:

11:00AM, Thursday, 15th September, 2016

To provide labor, materials, equipment, and all else necessary, to furnish and deliver one (1) complete fire pumper apparatus for the Town of Fairfield, as detailed in the attached specifications.

NOTES:

1. Bidders are to complete all requested data in the upper right corner of this page and must return this page and the Proposal page with their bid.
2. No bid shall be accepted from, or contracts awarded to, any person/company who is in arrears to the Town of Fairfield upon debt, or contract or who has been within the prior five (5) years, a defaulter as surety or otherwise upon obligations to the Town of Fairfield.
3. Bid proposals are to be submitted in a sealed envelope and clearly marked "**BID #2017-11**" on the outside of the envelope, including all outer packaging such as DHL, FedEx, UPS, etc.
4. Bid proposals are to be submitted without plastic binders or covers, nor may the bid proposal contain any plastic inserts or pages. Submit two copies including one marked as "ORIGINAL."

INVITATION TO BID

The Town of Fairfield ("Town, Owner") on behalf of its Fire Department (FFD) is seeking competitive bids from qualified suppliers to furnish and deliver one (1) new complete and operational Quint type (or Owner approved equal manufacturer) fire pumper apparatus with minimum five (5) year bumper-to-bumper warranty. Apparatus must include all equipment and training as stated per the attached specifications. The apparatus must be built in the continental United States by a company which has an established reputation in the field of fire apparatus construction.

BID SUBMITTALS

The Town of Fairfield is dedicated to waste reduction and the practice of using and promoting the use of recycled and environmentally preferable products. Bidders are encouraged to submit bids that are printed double-sided (except for the signed proposal page) on recycled paper, and to use paper dividers to organize bids for review. All bid pages should be secured with a binder clip, staple or elastic band, and may not be submitted in plastic binders or covers, nor may the bid contain any plastic inserts or pages. Submit two (2) copies including one (1) marked as "ORIGINAL."

REQUESTS FOR INFORMATION (RFI) / ADDENDA

Direct requests to: Town of Fairfield, Purchasing Department
Attention: Phillip Ryan, Buyer
725 Old Post Road, Fairfield, CT 06824
E-mail: PRyan@fairfieldct.org

NOTE: Written requests for information will not be accepted after **12:00pm** on **Friday, 26th August.** No Exceptions.

Response will be in the form of an addendum that will be posted approximately **Monday, 5th September** (close of business) to the Town of Fairfield Purchasing Department website: www.fairfieldct.org/purchasing

It is the responsibility of each bidder to retrieve addenda from the website. Any contact about this bid between a Bidder and any other Town official and/or department manager and/or Town of Fairfield employee, other than as set forth above, may be grounds for disqualification of that Bidder. No questions or clarifications shall be answered by phone, in person or in any other manner than specified above. Addenda will not be mailed, e-mailed or faxed out.

REQUIREMENTS

1. Warranty: Provide optional extended warranty details offered on any equipment and/or services with proposal.
2. Questions concerning all said equipment to be supplied and/or installed should be directed in writing to the contact person as indicated above.
3. Technical Data: The awarded contractor will be required to supply all manufacturer manuals and schematics upon delivery of equipment, provided on CD ROM or in hardcopy format.
4. Acceptance: The Town of Fairfield will not accept receipt of equipment (installed or otherwise) unless all specifications stated in the bid document have been accommodated and/or approved by written consent. The awarded contractor shall be required to correct any nonconforming issues, at no expense to the Town.
5. Provide the Town with fire department references who have acquired equipment as submitted in proposal.
6. All equipment and materials supplied as specified shall be new and of current manufacture, and shall meet or exceed all specifications described herein. Any deviation to the specifications and/or scope of work must be indicated with the proposal response. Bidders are required to provide full details of any exceptions to the attached specifications; details must be submitted separately and attached to the proposal page. All exceptions must be labeled with each chapter number and title description per the Table of Contents.
7. The awarded contractor must be an authorized dealer and/or distributor for all items as per specifications submitted in proposal, and submit descriptive literature on all items being provided/supplied/installed.
8. The awarded contractor shall remain the single-point-of-contact for all warranty and equipment services, and must have a full-time service department and employ trained personnel for all equipment being supplied and installed.
9. The awarded contractor shall provide emergency repair services (24/7/365) within 24-hours of notice.
10. The awarded contractor may be required upon request to provide proof of all applicable licensing and certification.
11. A list of all subcontractors to be employed by the Contractor that shall perform services as part of this contract must be attached with the proposal.
12. Details of warranty against defective materials and workmanship must be provided with proposal.
13. Costs submitted are to include all labor, materials, equipment, minimum five-year bumper-to-bumper warranty (unless otherwise specified by the Town in the specifications and scope of work) and delivery of vehicle to the Fairfield Fire Department, 600 Jennings Road, Fairfield, CT 06824.

PROPOSAL

PAGE 1 OF 3

PROPOSAL TO: Town of Fairfield, Purchasing Department
First Floor, Sullivan Independence Hall
725 Old Post Road, Fairfield, Connecticut 06824

I, _____ have received the following contract documents,

1. *BID Document #2017-11,*
2. *Fire Pumper Apparatus Specifications,*
3. *Addenda numbered _____ through _____, posted at http://fairfieldct.org/purchasing and have included their provisions in my proposal.*

I shall supply all labor, materials, equipment, technical service, taxes, permits, etc., in accordance with all of the contract documents, to furnish and deliver one (1) complete and operational fire pumper apparatus with minimum five (5) year bumper-to-bumper warranty, including all related equipment and training as stated in the specifications, for the total lump sum amount of:

BASE BID: $_____ /Lump Sum

Written Amount: _____

Make _____

Model _____

Apparatus _____

Engine _____

Transmission _____

Delivery Date _____

Provide total years experience in construction of equipment as specified: _____

DEDUCT THE FOLLOWING ALLOWANCES FROM BASE BID AMOUNT

A. MID INSPECTION TRIP: $_____ (deduct)

B. FINAL INSPECTION TRIP: $_____ (deduct)

TOTAL DEDUCTIONS (A+B): $_____ (deduct)

_____ _____
Name of Authorized Representative *Title of Authorized Representative*

_____ _____
Signature of Authorized Representative *Date*

PROPOSAL

OPTIONAL PREPAY DISCOUNT

Deduct ($_____) /lump sum from Base Bid amount with _____% down payment.

NOTE: If multiple prepay options are available, please provide detailed cost structure and attach to this page.

All costs submitted as above are to include labor, materials, equipment, training and minimum five (5) year bumper-to-bumper warranty, including delivery of the vehicle to Fairfield Fire Department, 600 Jennings Rd, Fairfield, CT.

EQUIPMENT & MOUNTING (PAGE 78-79):

David Clark Wireless Intercom System	$_____ /lump sum
Spanner Wrenches & Mounts	$_____ /lump sum
Irons & Mount	$_____ /lump sum
TFT Foam Attachments	$_____ /lump sum
TFT Automatic Nozzles	$_____ /lump sum
TFT Twister Nozzles	$_____ /lump sum
Elkhart Nozzles & Tips	$_____ /lump sum
Akron Piercing Nozzle	$_____ /lump sum
Supply Hose	$_____ /lump sum
Booster Hose	$_____ /lump sum
Fire Attack Hose	$_____ /lump sum
Fire Hose	$_____ /lump sum
Equipment Mounting	$_____ /lump sum
Grand Total:	$_____ /lump sum

Provide a complete list of all equipment, including unit prices, as itemized on pages 78 and 79. All items must be priced individually and are not to be included in the Base Bid amount.

_____ _____

Name of Authorized Representative *Title of Authorized Representative*

_____ _____

Signature of Authorized Representative *Date*

PROPOSAL

SERVICE CENTER / PARTS DEPOT

Location of Authorized Service Center: _____ (Town/State)

Location of Parts Depot (if separate): _____ (Town/State)

Number of Factory Trained EVT / ASE Certified Technicians Employed: _____ (full time) _____ (part time)

24-Hour Road Service Unit – Minimum Response Time: _____ (hours after receipt of request from FFD)

CONSTRUCTION – Identify the factory or factories where the apparatus is to be manufactured:

Location 1: _____ (Town/State) Details: _____

Location 2: _____ (Town/State) Details: _____

_____ _____

Name of Authorized Representative *Title of Authorized Representative*

_____ _____

Signature of Authorized Representative *Date*

Provide details of fire departments who have recently acquired equipment as specified:

REFERENCE #1:

Name of Fire Dept _____ Phone _____

Contact Person _____ Cell _____

Town/State/Zip _____ Fax _____

Delivery Date _____ Email _____

REFERENCE #2:

Name of Fire Dept _____ Phone _____

Contact Person _____ Cell _____

Town/State/Zip _____ Fax _____

Delivery Date _____ Email _____

REFERENCE #3:

Name of Fire Dept _____ Phone _____

Contact Person _____ Cell _____

Town/State/Zip _____ Fax _____

Delivery Date _____ Email _____

REFERENCE #4:

Name of Fire Dept _____ Phone _____

Contact Person _____ Cell _____

Town/State/Zip _____ Fax _____

Delivery Date _____ Email _____

REFERENCE #5:

Name of Fire Dept _____ Phone _____

Contact Person _____ Cell _____

Town/State/Zip _____ Fax _____

Delivery Date _____ Email _____

Provide subcontractor details, if any are to be employed as part of this contract:

SUBCONTRACTOR #1:

Name of Company _____ Fed ID # _____

Contact Person _____ Phone _____

Company Address _____ Fax _____

Trade _____ Email _____

SUBCONTRACTOR #2:

Name of Company _____ Fed ID # _____

Contact Person _____ Phone _____

Company Address _____ Fax _____

Trade _____ Email _____

SUBCONTRACTOR #3:

Name of Company _____ Fed ID # _____

Contact Person _____ Phone _____

Company Address _____ Fax _____

Trade _____ Email _____

SUBCONTRACTOR #4:

Name of Company _____ Fed ID # _____

Contact Person _____ Phone _____

Company Address _____ Fax _____

Trade _____ Email _____

SUBCONTRACTOR #5:

Name of Company _____ Fed ID # _____

Contact Person _____ Phone _____

Company Address _____ Fax _____

Trade _____ Email _____

PURCHASING AUTHORITY
TOWN OF FAIRFIELD
INSTRUCTIONS FOR BIDDERS
TERMS AND CONDITIONS OF BID

BID PROPOSALS

Bid proposals are to be submitted in a sealed envelope and clearly marked **"BID #2017-11"** on the outside of the envelope including all outer packaging (DHL, FedEx, UPS, etc). All prices and notations must be printed in ink or typewritten. No erasures are permitted. Bid proposals are to be in the office of the Purchasing Authority, First Floor, Sullivan Independence Hall, 725 Old Post Road, Fairfield, Connecticut, 06824 prior to the date and time specified at which time they will be publicly opened.

RIGHT TO ACCEPT / REJECT

AFTER REVIEW OF ALL FACTORS, TERMS AND CONDITIONS, INCLUDING PRICE, THE PURCHASING AUTHORITY OF THE TOWN OF FAIRFIELD RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS, OR ANY PART THEREOF, OR WAIVE DEFECTS IN SAME, OR ACCEPT ANY PROPOSAL DEEMED TO BE IN THE BEST INTEREST OF THE TOWN OF FAIRFIELD.

QUESTIONS

Questions concerning conditions and specifications should be directed in writing (no verbal communication will be accepted) to:

Phillip Ryan, Buyer: PRyan@fairfieldct.org

Inquires must reference date of bid opening, requisition or bid number, and must be received no later than the time and date as indicated in the bid document. Failure to comply with these conditions will result in the bidder waiving the right to dispute the bid specifications and conditions.

PRICES

Prices quoted must be firm for acceptance by the Town of Fairfield for a minimum period of (120) days. Prices shall include all applicable duties. Bidders shall be required to deliver awarded items at prices quoted in their original bid.

F.O.B. DESTINATION

Prices quoted shall be NET-DELIVERED TO DESTINATION. Bids quoting other than F.O.B. Destination may be rejected.

BID BOND

The Bid Bond furnished as bid security, must be duly executed by the bidder as principal. It must be in the amount equal to five percent (5%) of the total estimated bid, as guarantee that, in case the contract is awarded to the bidder, the bidder will, within ten days thereafter, execute such contract and furnish a Performance Bond and Payment Bond. Small businesses may elect to obtain an irrevocable letter of credit or cashier's check in lieu of the Bid Bond. Such surety must also be in an amount equal to at least five percent (5%) of the total estimated bid. Failure to provide a Bid Bond or equivalent security is not cause for a waiver defect. Any bid not accompanied by a Bid Bond will be excluded from consideration.

PERMITS

The contractor will be responsible for securing all necessary permits, state and local, as required by the Town of Fairfield. The Town will waive its application and permit fees for Town of Fairfield projects.

PAYMENT PROCEDURES

No voucher, claim or charge against the Town shall be paid without the approval of the Fiscal Officer for correctness and legality. Appropriate checks shall be drawn by the Fiscal Officer for approved claims or charges and they shall be valid without countersignature unless the Board of Selectmen otherwise prescribed.

PAYMENT PERIOD

The Town of Fairfield shall put forth its best effort to make payment within thirty days (30) after delivery of the item acceptance of the work, or receipt of a properly completed invoice, whichever is later. Payment period shall be net thirty days (30) unless otherwise specified.

PURCHASING AUTHORITY
TOWN OF FAIRFIELD
INSTRUCTIONS FOR BIDDERS
TERMS AND CONDITIONS OF BID

THE CONTRACTOR

The Contractor for the work described shall be thoroughly familiar with the requirements of all specifications**.** The submission of a proposal shall be construed as evidence that the Contractor has examined the actual job conditions, requirements, and specifications. Any claim for labor, equipment or materials required, or difficulties encountered, which could have been foreseen had such an examination been carefully made, will not be recognized.

ASSIGNMENT OF CONTRACT

No contract may be assigned or transferred without the consent of the Purchasing Authority.

AWARD OF BIDS

Contracts and purchases will be made or entered into with the lowest responsible bidder meeting specifications, except as otherwise specified in the invitation. If more than one item is specified in the invitation, the Town of Fairfield reserves the right to determine the low bidder on an individual basis or on the basis of all items included in the Invitation for Bids, unless otherwise expressed by the Town.

PERFORMANCE AND LABOR AND MATERIAL BOND

The successful bidder, within seven (7) business days after notification of award, will be required to furnish Performance and Labor and Material Bond provided by a company authorized to issue such bonds in the State of Connecticut, or Certified Check or properly executed Irrevocable Letter of Credit equal to a hundred per cent (100%) of the award.

In the event that a supplier is required to provide evidence of insurance and a performance bond and does not do so before beginning work, the Town of Fairfield reserves the right to withhold payment from such supplier until the evidence of insurance and performance bond has been received by the Town.

GUARANTEE

Equipment, materials and/or work executed shall be guaranteed for a minimum period of five (5) years (unless otherwise stated in the specifications and/or the scope of work) against defective materials and workmanship. The cost of all labor, materials, shipping charges and other expenses in conjunction with the replacement of defective equipment, and/or unsatisfactory work, shall be borne by the Contractor.

CATALOGUE REFERENCE

Unless expressly stated otherwise, any and all reference to commercial types, sales, trade names and catalogues are intended to be descriptive only and not restrictive; the intent is to indicate the kind and quality of the articles that will be acceptable. Bids on other equivalent makes, or with reference to other catalogue items will be considered. The bidder is to clearly state exactly what will be furnished. Where possible and feasible, submit an illustration, descriptive material, and/or product sample.

OSHA

The bidder will certify all equipment complies with all regulations and conditions stipulated under the Williams-Steiger Occupational Safety and Health Act of 1971, as amended. The successful bidder will further certify that all items furnished under this project will conform and comply with Federal and State of Connecticut OSHA standards. The successful bidder will agree to indemnify and hold harmless the Town of Fairfield for any and all damages that may be assessed against the Town.

LIFE CYCLE COSTING

Where applicable, Life Cycle Costing will be used as a criterion for awarding bids. This is a method of calculating total cost of ownership of an item, which may include operation and maintenance expenses, transportation, salvage value, and/or disposal costs.

PURCHASING AUTHORITY
TOWN OF FAIRFIELD
INSTRUCTIONS FOR BIDDERS
TERMS AND CONDITIONS OF BID

INSURANCE COVERAGE

The successful bidder will be required to furnish a Certificate of Insurance naming the Town of Fairfield as the additional insured. The insurance is to include Contractor's Liability and Worker's Compensation, thereby holding the Town of Fairfield harmless from all eventualities that may occur relative to this Bid and the resulting purchase order or contract.

The Certificates of Insurance will be provided by companies licensed in the State of Connecticut and will be in amounts of $1,000,000 General Aggregate, $1,000,000 Automobile Liability and Worker's Compensation, and Employer's Liability $100,000 (each accident) to the Town of Fairfield.

The successful bidder shall also provide Product Liability insurance which shall not be less than $5,000,000 total aggregate coverage. The bidder shall maintain full casualty insurance coverage on the cab and chassis from the time of first possession until title to apparatus is accepted by the Town of Fairfield. The Town of Fairfield reserves the right to request proof of insurance from the Bidder's insurance carrier prior to entering into contract with the Bidder.

INDEMNIFICATION

In addition to providing insurance, the successful bidder shall indemnify and hold the Town, its employees, officers and agents harmless from all claims and demands of any nature for any loss, damage or injury which any person may suffer by reason of or in any way arising out of work required by this Bid and any resulting contract or purchase order issued pursuant to it.

FEDERAL, STATE, AND LOCAL LAWS

All applicable Federal, State and local laws, rules and regulations of all authorities having jurisdiction over the locality of the project shall apply to the contract and are deemed to be included herein.

CONFLICT OF INTEREST

No officer or employee or member of any elective or appointive board, commission or committee of the Town, whether temporary or permanent, shall have or acquire any financial interest gained from a successful bid, direct or indirect, aggregating more than one hundred dollars ($100.00) in any project, matter, contract or business within his/her jurisdiction or the jurisdiction of the board, commission, or committee of which he/she is a member. Nor shall the officer/employee/member have any financial interest, direct or indirect, aggregating more than one hundred dollars ($100.00) in any contract or proposed contract for materials or services to be furnished or used in connection with any project, matter or thing which comes under his/her jurisdiction or the jurisdiction of the board, commission, committee of which he/she is a member.

SCOPE OF WORK/SITE INSPECTIONS

The bidder declares that the scope of the work has been thoroughly reviewed and any questions resolved (see above for name and number of individual to contact for questions). If applicable, the bidder further declares that the site has been inspected as called for in the specification (q.v.).

EXCEPTION TO SPECIFICATIONS

No protest regarding the validity or appropriateness of the specifications or of the Invitation for Bids will be considered, unless the protest is filed in writing with the Purchasing Authority, prior to the closing date for the bids. All bid proposals rendered shall be considered meeting the attached specifications unless exceptions are noted on a separate page dated and signed by the bidder. All exceptions must be labeled with each chapter number and title description per the Table of Contents.

UNLESS OTHERWISE NOTED

It will be assumed that all terms and conditions and specifications will be complied with and will be considered as part of the Bid Proposal.

TAX EXEMPT

Federal Tax Exemption 06-75-0063-K
Exempt from State Sales Tax under State General Statues Chapter 219-Section 12-412 Subsection A.
No exemption certificates are required and none will be issued.

Town of Fairfield
Fire Pumper Quint Type Specifications

Contents

WARRANTIES

The following warranties and warranty periods shall be considered as the minimum acceptable to the Town of Fairfield (Town). Warranties shall begin on the in-service date.

Warranty	Time Limit
A. Chassis Frame Rails	Lifetime parts and labor.
B. Engine and Transmission	Five (5) years parts and labor.
C. Front and Rear Axles and Suspension	Five (5) years parts and labor.
D. Fire Pump	Five (5) years parts and labor.
E. Structural	Ten (10) years on the cab and body
F. Corrosion Perforation	Ten (10) years on the cab and body
G. Paint	Seven (7) years on the cab and body
H. Aerial Structural	Twenty (20) years
I. Aerial Mechanical	Five (5) years

Additional manufacturer or component warranties may be cited in specification or provided by manufacturers directly. Detailed warranty documents shall be included for complete coverage on each of these warranties.

BUMPER TO BUMPER 5 YEAR WARRANTY

This vehicle shall incorporate a minimum five-year bumper-to-bumper warranty. The fire apparatus manufactured shall be free from defects in material and workmanship under normal use and service for a period of five (5) years from the in service date at the Fairfield Fire Department (FFD). Routine maintenance shall be the responsibility of the Fairfield Fire Department. Any warranty deductibles from component manufacturers shall be the responsibility of the apparatus bidder/builder during the warranty term.

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the purchaser a complete apparatus equipped as hereinafter specified. With a view of obtaining the best results and the most acceptable apparatus for service in the fire department, these specifications cover only the general requirements as to the type of construction and tests to which the apparatus must conform, together with certain details as to finish, equipment and appliances with which the successful bidder must conform. Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features. The apparatus shall conform to the requirements of the current (at the time of bid) National Fire Protection Association Pamphlet #1901 for Motor Fire Apparatus unless otherwise specified in these specifications.

Bids shall only be considered from companies which have an established reputation in the field of fire apparatus construction and have been in business for a minimum of ten (10) years.

Each bid shall be accompanied by a set of "Contractor's Specifications" consisting of a detailed description of the apparatus and equipment proposed and to which the apparatus furnished under contract must conform. Computer run-off sheets are not acceptable as descriptive literature.

The specifications shall indicate size, type, model and make of all component parts and equipment.

STATEMENT OF EXCEPTIONS TO NFPA 1901

If, at the time of delivery, the apparatus manufacturer is not in compliance, a statement of exceptions must be provided as follows:

- The specific standard affected.
- A statement describing why the manufacturer is not in compliance.
- A description of the remedy, and who the responsible party is.

The document must be signed by an officer of the company, and an authorized agent of the purchaser. NO EXCEPTIONS.

QUALITY AND WORKMANSHIP

The design of the apparatus must embody the latest approved automotive engineering practices.

The workmanship must be the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility to various areas requiring periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions.

Construction must be rugged and ample safety factors must be provided to carry loads as specified and to meet both on and off road requirements and speed as set forth under "Performance Test and Requirements."

PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be documented with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and free from abnormal vibration or noise throughout the operating range of the apparatus. The apparatus, when loaded, shall be approximately 66% on the rear axle. The successful bidder shall furnish a weight certification showing weight on the front and rear axle, and the total weight of the completed apparatus at the time of delivery.

a. The apparatus must be capable of accelerating to 30 MPH from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed engine RPM.

b. The service brakes shall be capable of stopping the fully loaded vehicle within 35 feet from a speed of 25 MPH on a level concrete highway.

c. The apparatus, fully loaded, shall be capable of obtaining a speed of 50 MPH on a level highway with the engine not exceeding 95% of its governed RPM (full load) and transmission “mode” selector off. Note: This is not the vehicles top speed.

d. The apparatus shall be tested and approved by a qualified testing agency in accordance with their standard practices for pumping engines.

e. The contractor shall furnish copies of the Pump Manufacturer's Certification of Hydrostatic Test, Aerial manufacturers certification, the Engine Manufacturer's current Certified Brake Horsepower Curve and the Manufacturer's Record of Construction Details.

f. In accordance with NFPA 1901, the Town of Fairfield reserves the right to perform an acceptance test on the apparatus upon delivery.

FAILURE TO MEET TESTS

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, a second trial may be made at the option of the bidder within thirty (30) days of the date of the first trials. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Permission to keep and/or store the apparatus in any building owned or occupied by the purchaser shall not constitute acceptance of same.

EXCEPTIONS TO SPECIFICATIONS

The following specifications shall be strictly adhered to. Exceptions shall be considered if they are deemed equal to or superior to the specifications, provided they are fully explained on a separate page entitled "EXCEPTIONS TO SPECIFICATIONS." Exceptions shall be listed by page and paragraph.

Failure to denote exceptions in the above manner shall result in immediate rejection of the proposal. In addition a general statement taking "TOTAL EXCEPTION" to the specifications shall result in immediate rejection of bid.

GENERAL CONSTRUCTION

The apparatus shall be designed and the equipment mounted with due consideration to distribution of load between the front and rear axles so that all specified equipment, including filled water tank, a full complement of personnel and fire hose shall be carried without injury to the apparatus. Weight balance and distribution shall be in accordance with the recommendations of the International Association of Fire Chiefs and National Fire Association (or American Insurance Association). Certified Laboratories certificate shall be submitted by the manufacturer. Weight of apparatus shall meet all federal axle load laws.

DELIVERY REQUIREMENTS

The apparatus shall be completely equipped as per these specifications upon arrival and on completion of the required tests shall be ready for immediate service in the fire department of the purchaser. Any and all alterations required at the scene of delivery to comply with these specifications must be done at the contractor's expense.

PURCHASER RIGHTS

The Purchaser reserves the right to accept or reject any bid. The purchaser also reserves the right to award in their best interest and reserves the right to waive any formalities.

U.S.A. MANUFACTURER

The entire apparatus shall be assembled within the borders of the Continental United States to insure more readily available parts (without added costs and delays caused by tariffs and customs) and service, as well as protecting the purchaser should legal action ever be required.

MANUFACTURER'S EXPERIENCE

Each manufacturer shall have been in business making similar apparatus for a minimum of (10) years and must have had single ownership for more than ten (10) years.

ELIMINATION OF DIVIDED RESPONSIBILITY

It is required that each bidder produce both the chassis and complete apparatus. To eliminate divided responsibility and service, the chassis and body must be manufactured by the same Company. Manufacturer shall state the number of years the Company has been producing their own chassis and body. Manufacturer shall state compliance with the paragraph. NO EXCEPTIONS.

FAMA COMPLIANCE

Manufacturer must be a current member of the Fire Apparatus Manufacturer's Association.

FUTURE PURCHASES AND "TAG ON" ORDERS

The successful bidder shall accept "tag on" orders to this bid proposal for a period not to exceed three (3) years from the bid opening date. The successful bidder shall honor the priced quoted for a period of 90 days from the date of the bid opening. For the remainder of the year (275 days), the bidder shall agree to an economic price escalation of 1.5%. Future years beyond the initial first year shall have an economic price escalation of 3% as a normal course of business. Items outside the normal course shall include changes legislated by Federal, State or Local Governments that impact the cost to manufacture the truck. In addition, changes to NFPA 1901 that require additional cost shall be borne by the purchaser. These may include, but are not limited to changes that affect the major vendors of the fire apparatus industry such as pump manufacturer, seat manufacturer, electrical power supplies (generators) and power-train (engine & transmission).

The bidder shall honor the "tag on" order from any municipality within the United States or Canada.

CONFIGURATION OF "TAG ON" ORDERS

In many cases the entity wishing to "tag on" to an existing order may require their apparatus to be configured differently from the original proposed apparatus. The bidder shall allow changes to the configuration within good engineering guidelines. The changes will be subject to current pricing in effect at the time of order. For example, a different engine may be required. This shall be considered a "change order" and the purchase price shall be adjusted up or down depending on the current option price.

BID SEQUENCE

For ease of evaluation, all bid proposals shall be submitted in the same order as the specification.

PROPOSAL DRAWING

A general layout drawing depicting the apparatus layout and appearance shall be provided with the bid. The drawing shall consist of left side, right side, frontal and rear elevation views. Apparatus equipped with a fire pump, shall have a general layout view of the pump operators panel scaled the same as the elevation views. The drawing shall be a depiction of the actual apparatus proposed and not of a generic similar product.

APPROVAL DRAWING

After the award of bid and pre-construction conference, a detailed layout drawing depicting the apparatus layout and appearance including any changes agreed upon shall be provided for customer review and signature. The drawing will become part of the contract documents. The drawing shall consist of left side, right side, frontal and rear elevation views. Apparatus equipped with a fire pump, shall have a general layout view of the pump operators panel scaled the same as the elevation views.

PRE-CONSTRUCTION CONFERENCE

After award of the contract, and prior to construction of the apparatus, a pre-construction conference shall be held at the Fairfield Fire Department.

MID INSPECTION TRIP

A mid inspection trip shall be provided at the manufacturer's facility, at a point to be determined by the Fire Department. A voucher shall be provided in the bid price for all travel, food and lodging for up to three (3) Fire Department personnel for a three 3 day inspection. The schedule as follows: Day 1 outbound travel and inspection, day 2 inspection, day 3 final inspection if needed and return travel. Price to be included in Base Bid. Enter amount as "Deduct A" in proposal.

FINAL INSPECTION TRIP

A final inspection trip shall be provided at the manufacturer's facility, prior to delivery of the completed apparatus. A voucher shall be provided in the bid price for all travel, food and lodging for up to two (2) Fire Department personnel for a three 3 day inspection. The schedule as follows: Day 1 outbound travel and inspection, day 2 inspection, day 3 final inspection if needed and return travel. Price to be included in Base Bid. Enter amount as "Deduct B" in proposal.

PROPOSAL GUARANTEE

A certified check or bid bond in the sum of ten percent (5%) of the total bid price shall be submitted with the "Bid Proposal" at the time of the bid. The full amount of the bid surety shall be returned to the unsuccessful bidders following the award of the contract to the successful bidder.

PERFORMANCE BOND

Within twenty (20) days of notification to the successful bidder by the purchaser, prior to any work commencing on the proposed apparatus, the successful bidder shall, at their own expense, obtain and submit to the purchasing entity a performance bond in the amount of 100% equal to the total contract price.

Additionally, each bidder must disclose the price/amount it pays for bonding, per $1,000. This is to demonstrate the economic stability and creditworthiness of the bidder. NO EXCEPTIONS.

SEVERE DUTYCAB AND CHASSIS

A Severe Duty Cab and Chassis system shall be provided. The chassis shall be manufactured in the factory of the bidder. The chassis shall be designed and manufactured for heavy duty service with adequate strength and capacity of all components for the intended load to be sustained and the type of service required. The cab and chassis system shall be considered the bidders "Top of the Line".

There shall be no divided responsibility in the production of the apparatus.

MAXIMUM ALLOWABLE DIMENSIONS

Within these categories the following specific items must be included:

- Wheelbase Shall be a maximum of 232"
- Maximum overall length must not exceed 486".
- Maximum overall pumper body height including aerial device 121"
- Entire cab must tilt.
- Seating capacity must be provided for five (5) personnel (including driver and one (1) fold down seat).
- Use of self-tapping fasteners or any type of rivet will not be allowed or accepted on any door panels, headliner, or wheel well liners. (Extruded U-nuts or nutserts are acceptable).

The following requirements must be strictly adhered to:

A. Exceptions will be allowed if they are equal to or superior to that specified. Exceptions will also be allowed provided they are listed and fully documented and explained on a separate page entitled "Exceptions to Specifications". The exception list must refer to the specification page number and paragraph.

B. The Town of Fairfield must approve all exceptions or deviations in writing.

C. Proposals must list all exceptions to the specification.

D. The apparatus shall be inspected upon delivery for compliance with specifications.

E. Deviations will not be allowed and may be cause for rejection of the apparatus unless they were originally listed in bidder's proposal.

CLARIFICATION OF TERMS REGARDING TRUCK SIDES

For the purposes of this document, the terms “Left side”, “Driver’s side”, and “Road side” shall refer to the entire side of the vehicle in which the driver’s door opens on and will be used interchangeably. The terms “Right side”, “Officer side”, “Passenger side” and “Curb side” refer to the entire side of the vehicle in which the front passenger door opens and will be used interchangeably. The terms front, rear, top and bottom are self-explanatory and used exclusively.

DOUBLE FRAME RAILS/SINGLE AXLE

The chassis frame shall be of a ladder type design utilizing industry accepted engineering best practices. The frame shall be specifically designed for fire apparatus use.

High strength, low alloy steel shall be used for frame rails. Each frame rail shall be constructed of two .375" thick-formed channels. The outer channel shall be 10.188" x 3.50” x .375” and the inner channel (liner) shall be 9.31” x 3.13” x .375”.

Over the entire length of the frame rail, the section modulus shall be 31.8 $in.^3$. The resistance to bending moment (RBM) shall be 3,498,000 in./lbs.

Each rail is media blasted to remove scale, oil, and contaminants. This blasting also ensures paint adhesion. Each rail will be primed with Cathacoat 302HB, a high performance, two component, reinforced inorganic zinc-rich primer with proven cathodic protection of steel structures, prior to assembly.

The cross-members shall be constructed of minimum .375" formed channels and have formed gusseted ends at the frame rail attachment. Single axle rear suspensions will utilize 3 piece bolt assembled cross-members at each suspension hanger

.625 inch, grade 8 flange, Huck bolt fasteners shall be used on all permanently attached brackets to the frame to eliminate the need for bolt re-tightening. Additional hardware will be Grade 8 Zinc coated flange head locking fasteners.

The chassis and all related driveline components shall be painted job color red.

A lifetime warranty shall be provided, per manufacturer's written statement.

FRONT TOW EYES, TOP OF BUMPER

There shall be two (2) sets of two (2) front tow eyes with 3” diameter holes attached directly to the chassis frame. Two (2) shall be forward facing and accessible above the front bumper. Two (2) shall be rear facing and accessible below the front bumper. The eyes must be fabricated of a minimum of 3/4" thick steel plate with a 3" diameter opening. All edges shall be beveled.

FRONT TOW EYES, PAINTED FINISH

The front tow eyes shall be chromate acid etched for superior corrosion resistance and painted to match the color of the chassis frame.

REAR TOW EYES

There shall be two (2) tow eyes attached directly to the chassis frame rail under the rear step and shall be chromate acid etched for superior corrosion resistance and painted to match the chassis. The eyes must be fabricated of a minimum of 3/4" thick steel plate with a 3" diameter opening. All edges shall be beveled.

STEERING

The steering system shall be a TRW wheel to wheel steering system that is tested and certified by TRW, consisting of a heavy duty TRW/Ross Model TAS-85 power steering gear, TRW PS36 steering pump, miter box, drag links, and a thermostatic controlled fan cooled system (set point 185 deg. F to 170 deg. F). The steering gear shall be bolted to the frame at the cross-member for steering linkage rigidity. Four (4) turns from lock to lock with an 18" diameter slip resistant rubber covered steering wheel. Steering column shall have six-position tilt and 2" telescopic adjustment. The cramp angle shall be 45 degrees with 315mm tires or 43 degrees with 425mm tires providing very tight turning ability.

DRIVE LINE

The driveline shall consist of Spicer 1810 series dual grease fitting universal joints with "half-round" end yokes. The drive shaft shall be built with a heavy-duty steel tube 4.095" outside diameter x .180 wall thickness. The shafts shall be dynamically balanced prior to installation into the chassis. A splined slip joint shall be provided in each shaft assembly. Universal joints shall be extended life. There shall be two (2) Zerk fittings in each universal joint assembly so the joint can be greased without turning the shaft.

ENGINE

The apparatus shall be powered by a Cummins Diesel ISX 12 500HP @ 1800 R.P.M., 1645 ft. lb. torque @ 1100 R.P.M.

ENGINE WARRANTY

The engine shall have a five year or 100,000 mile warranty and approval by Cummins for installation in the chassis. There shall be no deductible for the first two years. A one hundred dollar deductible shall apply for service during the next three years.

AIR COMPRESSOR

The air compressor shall be an 18.7 CFM engine driven Wabco.

STARTER

A 12-volt starter shall be provided, controlled by a switch on the left lower cab dash.

FUEL FILTERS

The engine fuel filters shall be mounted in a manner that is easily accessible for service or replacement. A Cummins approved primary FleetGuard Fuel Pro filter will be remote mounted to the Chassis frame rail. A secondary FleetGuard FF2200 spin on filter will be mounted on the engine.

EXHAUST SYSTEM

The engine exhaust system shall include the following components:
Diesel Particulate Filter (DPF)
Diesel Oxidation Catalyst (DOC)
Diesel Exhaust Fluid (DEF)
Selective Catalytic Reduction Filter (SCR)

The SCR catalyst utilizes the DEF fluid, which consists of urea and purified water, to convert NOx into nitrogen and water. This shall meet or exceed 2013 EPA emissions requirements.

The engine exhaust system shall be horizontal design constructed from heavy-duty truck components. The exhaust tubing shall be stainless steel to the DPF through to the SCR, aluminized steel from the SCR to the exhaust tip. A heavy duty stainless steel bellows tube shall be used to isolate the exhaust system from the engine. The system shall be equipped with single canister consisting of a Diesel Oxidation Catalyst (DOC) and a Diesel Particulate Filter (DPF), and shall be mounted under the right side frame rail, meeting the specific engine manufacturer's specifications and current emission level requirements. The outlet shall be directed to the forward side of the rear wheels, exiting the right side with a heavy duty heat diffuser. The heat diffuser shall prevent the exhaust temperature from exceeding 851 deg. F during a regeneration cycle. A heat-absorbing sleeve shall be provided on the exhaust pipe in the engine compartment area to reduce the heat, protect the alternator, and also to protect personnel while servicing the engine compartment.

AFTER TREATMENT SYSTEM

To meet EPA requirements of Particulate output, a DPF (Diesel Particulate Filter) is used. To meet EPA requirements of Nitrous Oxide output an SCR (Selective Catalytic Reduction) system utilizing DEF (Diesel Exhaust Fluid) is used.

ON-BOARD DIAGNOSTIC (OBD) SYSTEM

The engine shall be equipped with an on-board diagnostic (OBD) system which shall monitor emissions-related engine systems and components and alert the operator of any malfunctions. The OBD system is designed to further enhance the engine and operating system by providing early detection of emission-related faults. The engine control unit (ECU) will manage smart sensors located throughout the engine and after-treatment system. The system shall monitor component verification and sensor operation. There shall be warning lights located in the dash instrument panel to alert the operator of a malfunction. A data port shall be provided under the driver’s side dash for the purpose of code reading and troubleshooting. All communication shall be provided through the J1939 data link.

AIR CLEANER/INTAKE

The engine air intake and filter shall be designed in accordance with the engine manufacturer’s recommendations. It shall be 99.9% effective in removing airborne contaminants when tested per the industry standard SAE J726 procedure and offer a dirt holding capacity of at least 3.0 gm/cfm of fine dust (tested per SAE J726) offering superior engine protection.

The air filter shall be located at the front of the apparatus and shall be at least 66” above the ground, to allow fording deep water in an emergency situation.

An ember separator shall be provided in the engine air intake meeting, the requirements of NFPA 1901.

An Air Restriction warning light shall be provided and located on the cab dash.

TRANSMISSION

The chassis shall be equipped with a Generation 5 Allison EVS4000R six (6) speed automatic transmission. It shall be programmed with five (5) forward speeds, for fire apparatus vocation, in concert with the specified engine.

The transmission, upon start-up, shall automatically select a four (4) speed operation. The fifth speed over drive shall be available with the activation of the mode button on the shifting pad and permitting the vehicle to reach its top speed (65 mph) at the engine's governed speed. The sixth gear will be locked out of normal usage. A single reverse gear will be provided.

The dipstick is dipped in a rubber coating for ease in checking oil level when hot.

Ratings: Max Input (HP) 600
Max Input (Torque) 1850 (lb. ft.)
Max Turbine (Torque) 2600 (lb. ft.)

Mechanical Ratios: 1st - 3.51:1
2nd - 1.91:1
3rd - 1.43:1
4th - 1.00:1
5th - 0.74:1
6th – not specified/used
Reverse - -5.00:1

ENGINE BRAKE

The engine shall be equipped with a Jacobs compression engine brake. An “On/Off” switch and a control for “Low/High” shall be provided on the instrument panel within easy reach of the driver.

The engine brake shall interface with the Wabco ABS brake controller to prevent engine brake operations during adverse braking conditions.

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

The brake light shall activate when the engine brake is engaged.

TRANSMISSION COOLER

The apparatus transmission shall be equipped with a Liquid-To-Liquid remote mounted cooler with aluminum internal components. The cooler shall be encased in aluminum housing and mounted to the outside of the officer’s side frame rail for accessibility and ease of service.

TRANSMISSION FLUID

The transmission shall come filled with Castrol TranSynd™ Synthetic Transmission Fluid or approved equal meeting the Allison TES-295 specification. NO EXCEPTION.

TRANSMISSION SHIFTER

An Allison "Touch Pad" shift selector shall be mounted to the right of the driver on the engine cover accessible to the driver. The shift position indicator shall be indirectly lit for nighttime operation.

COOLING SYSTEM

The cooling system shall be designed to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the engine and transmission manufacturer's requirements, and EPA regulations.

The complete cooling system shall be mounted in a manner to isolate the system from vibration and stress. The individual cores shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress to the adjoining core(s).

The cooling system shall be comprised of a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, a charge air cooler, bolted to the top of the radiator to maximize cooling, recirculation shields, a shroud, a fan, and required tubing. All components shall consist of an individually sealed system. As separate fuel cooling system will be provided and detailed under fuel cooler.

RADIATOR

The radiator shall be a cross-flow design constructed completely of aluminum with welded side tanks. The radiator shall be bolted to the bottom of the charge air cooler to allow a single depth core, thus allowing a more efficient and serviceable cooling system.

The radiator shall be equipped with a drain cock to drain the coolant for serviceability. The drain cock shall be located at the lowest point of the aluminum cooling system to maximize draining of the system.

CHARGE AIR COOLER

The charge air cooler shall be of a cross-flow design and constructed completely of aluminum with extruded tanks. The charge air cooler shall be bolted to the top of the radiator to allow a single depth core.

COOLANT

The cooling system shall be filled with a 50/50 mix. The coolant makeup shall contain ethylene glycol and de-ionized water to prevent the coolant from freezing to a temperature of –34 degrees F. Engine shall be supplied with a coolant filter, and mounted in an easily accessible manner for service purposes. The preferred coolant is Mobil Delvac Extended Life Coolant for standardization.

HOSES & CLAMPS

Silicone hoses shall be provided for all engine coolant lines.

All radiator hose clamps shall be spring loaded stainless steel constant torque hose clamps for all main hose connections to prevent leaks. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance.

FAN

The engine cooling system shall incorporate a heavy-duty composite 11- blade Z-series fan. It shall provide the highest cooling efficiently while producing the lowest amount of noise. This robust yet light-weight fan results in less wear and stress on motors and bearings.

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

The fan tip to radiator core clearance shall be kept at a minimal distance to increase the efficiency of the fan and reduce fan blast noise.

FAN CLUTCH

A thermostatically controlled Horton fan clutch shall be provided that shall allow the cooling fan to operate only when needed. The fan shall remain continuously activated when the truck is placed in pump gear or PTO engaged.

ENGINE HEATER

A 110-volt, 1000-Watt Kim Hot start, direct immersion block heater with thermostat control shall be provided with AC electrical inlet (shoreline) connection.

The block heater must be hard wired to the auto eject.

SURGE TANK

The cooling system shall be equipped with an aluminum surge tank mounted to the officer's side of the cooling system core. The surge tank shall house a low coolant probe and sight glass to monitor the coolant level. Low coolant shall be alarmed with the check engine light. The surge tank shall be equipped with a dual seal cap that meets the engine manufacturer's pressure requirements, and system design requirements.

The tank shall allow for expansion and to remove entrained air from the system. There shall also be an extended fill neck to prevent system overfill and encroachment of expansion air space. Baffling shall be installed in the tank to prevent agitated coolant from being drawn into the engine cooling system.

FUEL TANK

The chassis shall be equipped with a 65-gallon stainless steel rectangular fuel tank. The fuel tank shall be certified to meet FMVSS 393.67 tests. It shall also maintain engine manufacturer's recommended expansion room of 5%.

The Fuel sender unit shall be serviceable without removing the fuel tank

The tank shall be attached to the vehicle frame rails behind the rear axle and removable by means of six (6) bolted connections and dropped. One (1) tank baffle shall be used.

Dual pick-up and return ports with a single 3/4" tank drawtube shall be provided for diesel generators if required.

The fuel lines shall be nylon braid reinforced fuel hose with brass fittings. The lines shall be carefully routed along the inside of the frame rails. All fuel lines are covered in high temperature rated split plastic loom. Single suction and return fuel lines shall be provided.

The fuel tank shall be mounted in a saddle with a barrier between the tank and the saddle. The bottom of the fuel tank shall contain a 1/2" drain plug.

FUEL FILL

The fuel tank shall be equipped with a 2-1/4" filler neck assembly with a 3/4" vent located on the driver's side of the truck. A fuel fill cap attached with a lanyard shall be provided.

FUEL COOLER

Installed on the apparatus fuel system shall be an Air-To-Liquid aluminum fuel cooler. The fuel cooler shall be located in the lowest module of the cooling system.

DIESEL EXHAUST FLUID TANK

The exhaust system shall include a molded cross linked polyethylene tank. The tank shall have a capacity of 5 usable gallons and shall be mounted on the left side of the chassis frame.
The DEF tank fill neck shall accept only a 19mm dispensing nozzle versus the standard 22mm diesel fuel dispensing nozzle to prevent cross contamination. The DEF tank cap shall be blue in color to further prevent cross contamination.

A placard shall accompany fill location noting DEF specifications.

EXHAUST SHIELD

There shall be a heat deflector over the exhaust where it passes under the right side compartment.

EXHAUST ADAPTER

The exhaust shall terminate to the right side of the vehicle, forward of the rear axle to accept a station mounted Nederman / magnatrack exhaust system.

ALTERNATOR

A 300 ampere Niehoff alternator shall be provided. The alternator shall be serpentine belt driven.

A low voltage alarm, audible and visual, shall be provided.

BATTERIES

The battery system shall be a single system consisting of six (6) negative ground, 12 volt Interstate Group 31 MHD batteries, cranking performance of 950 CCA each with total of 5700 amps, 185 minute reserve capacity with 25 ampere draw at 80 degrees Fahrenheit. Each battery shall have 114 plates. Warranty shall be accepted nationwide and shall be for a minimum of 18 months form delivery date.

They shall be mounted three (3) each side of the cab in the rear entrance way. The batteries shall be installed in two (2) vented 304 stainless steel battery boxes located one (1) each side in the crew cab step wells with a removable aluminum cover to protect the batteries from road dirt and moisture. The battery cover shall be secured with four “T” handle rubber hold downs to provide easy access for maintenance and inspection. Stainless steel hardware will be used for installation. The batteries are to be placed on dri-deck and secured with a fiberglass hold down. The batteries shall be wired directly to starter motor and alternator.

The battery cables shall be 3/0 gauge. Battery cable terminals shall be soldering dipped, color-coded and labeled on heat shrink tubing with a color-coded rubber boot protecting the terminals from corrosion.

There shall be a 350-ampere fuse protecting the pump primer and a 250-ampere fuse protecting the electric cab tilt pump and other options as required.

BATTERY JUMPER TERMINAL

There shall be one set (two studs) of battery jumper terminals located by the battery box under the cab. The terminals shall have plastic color-coded covers. Each terminal shall be tagged to indicate positive/negative.

BATTERY CONDITIONER

There shall be one (1) Kussmaul Model # 091-165-12 Auto Charge 1200 battery charger system installed in the vehicle's electrical system. The charger shall be fully automatic and shall maintain the truck batteries at a full charge level when connected to a 110 VAC source. Remote voltage sensing shall be provided to compensate the charger output for the voltage drop in the charging wires. A remote mounted indicator Kussmaul Model # 091-165-016 shall be provided and mounted next to the Super auto eject.

AUTO EJECT PLUG

Kussmaul Model # 091-55-20-120, Super Auto Eject and Kussmaul Model # 091-55RD spring cover shall be installed on the left side of the cab between the front and rear cab doors and easily accessible for periodic removal and maintenance without removing the wheel well liner.

SHORELINE

A shoreline connection shall be provided and located on the driver’s side of the cab between the front and rear doors.

AUTO-EJECT

A Kussmaul Model 091-55-20-120 super electric auto-eject with weatherproof cover and power interrupt shall be provided. A thermostatically controlled engine block heater and battery charger shall be wired direct to the single auto eject

FRONT AXLE

The front axle shall be a Meritor™ MFS-20-133A 3.74” drop beam with a capacity of 23,000 pounds. The axle shall be hub piloted, 10 stud, furnished with oil seals and come complete with assist cylinder, hoses, and mounting brackets.

SUSPENSION (FRONT)

The front suspension shall be a variable rate taper-leaf design and shall include four (4) - 54" long and 4" wide leafs. Long life, maintenance free, urethane bushed spring shackles shall be utilized. All spring and suspension mounting shall be attached directly to frame with high strength Huck bolts and self-locking round collars. Spring shackles and pins that require grease shall not be acceptable. NO EXCEPTIONS.

ENHANCED FRONT SUSPENSION SYSTEM

The front suspension shall have the handling, stability, and ride quality enhanced by the use of a Ride Tech auxiliary spring system and Koni high performance shock absorbers.

This system shall utilize three stage, urethane auxiliary springs, and high performance gas filled shock absorbers to control the deflection of the leaf springs, and dampen vibration normally transmitted to the chassis. This maintenance free system will be custom tuned to the apparatus gross weight rating for maximum performance, while maintaining a soft compliant ride. NO EXCEPTIONS.

A five (5) year 100,000 mile warranty will be provided by the manufacturer.

FRONT TIRES

Front tires shall be Goodyear 425/65R22.5, load range L, G296 WHA (Waste Hauler), single tubeless type with a GAWR of 22,000 pounds. Wheels shall be disc type, hub piloted, 22.5 x 12.25 10 stud 11.25 bolt circle.

REAR AXLE

The rear axle shall be a Meritor™ RS-30-185 Single reduction drive axle with a capacity of 31,000 lbs. The axles shall be hub piloted, 10 studs, furnished with oil seals.

TOP SPEED

The top speed shall be approximately 65 MPH.

AUTOMATIC CHASSIS LUBRICATION

An SKF VOGAL model KFU2-40, with the electronic control unit mounted in an accessible and visible location.

The gear pump and reservoir shall be located in an accessible location; mounting location shall be approved by the Fire Department at pre construction.

SUSPENSION (REAR)

31,000 LB AIR RIDE
A Hendrickson FIREMAAX model FMX312 air ride rear suspension shall be provided. The suspension shall be a dual air spring design equipped with dual height control valves to maintain proper ride height. To reduce axle stress and maintain axle position and pinion angle the suspension design shall incorporate three torque rods. The ground rating of the suspension shall be 31,000 pounds.

A five (5) year 100,000 mile warranty will be provided by the manufacturer.

REAR TIRES

Rear tires shall be Goodyear 315/80R22.5, load range J, G289 WHA Load Range L (Waste Hauler), dual tubeless type with a GAWR up to 31,000 pounds. Wheels shall be disc type, hub piloted, 22.5 x 9 10 stud with 11.25" bolt circle.

TIRE PRESSURE MONITOR FRONT WHEELS

A Real Wheels LED tire pressure sensor shall be provided for each front wheel. The pressure sensor shall indicate if a particular tire is not properly inflated. Real Wheel LED pressure sensors shall be selected after the truck is loaded and weighed. A total of two (2) indicators shall be provided.

TIRE PRESSURE EQUALIZATION SYSTEM (REAR)

There shall be a voucher provided with the chassis for Crossfire dual tire equalization system provided on both sets of dual tires on the rear axle. This shall bolt easily to the drive axle end allowing air to flow freely from one (1) tire to the other, maintaining equal tire pressure and load distribution.

The Crossfire dual tire equalization system shall be redeemed upon the vehicle manufacture’s receipt of the voucher along with the vehicle in-service weight for each axle.

WHEELS

The front and rear wheels shall be ALCOA® brand aluminum. DURA-BRIGHT® finish shall be provided on front and outside-rear wheels.

HUB COVERS

Polished stainless steel hub covers shall be provided for the front and rear axle.

LUG NUT CAPS

Chrome plated lug nut caps shall be provided for the front and rear wheels.

FRONT MUD FLAPS

Hard rubber mud flaps shall be provided for front tires.

REAR MUD FLAPS

Hard rubber mud flaps shall be provided for rear tires.

BRAKES, Front

The front brakes shall be Arvin Meritor DiscPlus EX225 Air Disc Brakes. Each disc brake assembly shall include one (1) 17" vented rotor, one (1) lightweight hub, one (1) twin-piston caliper, and two (2) quick-change pads.

BRAKES, Rear

The rear brakes shall be Meritor S-cam drum style. They shall be 16.5" x 8.625" with heavy duty return springs, and a double anchor pin design. They shall also have quick change shoes for fast easy brake relining.

AIR BRAKE SYSTEM

The vehicle shall be equipped with air-operated brakes. The system shall meet or exceed the design and performance requirements of current FMVSS-121 and test requirements of current NFPA 1901 standards.

Each wheel shall have a separate brake chamber. A dual treadle valve shall split the braking power between the front and rear systems.

All main brake lines shall be color-coded nylon type protected in high temperature rated split plastic loom. The brake hoses from frame to axle shall have spring guards on both ends to prevent wear and crimping as they move with the suspension. All fittings for brake system plumbing shall be brass.

A Meritor Wabco System Saver 1200 air dryer shall be provided.

The air system shall be provided with a rapid build-up feature, designed to meet current NFPA 1901 requirements. The system shall be designed so the vehicle can be moved within 60 seconds of startup. The quick build up system shall provide sufficient air pressure so that the apparatus has no brake drag and is able to stop under the intended operating conditions following the 60-second buildup time. The vehicle shall not be required to have a separate on-board electrical air compressor or shoreline hookup to meet this requirement.

Four (4) supply tanks shall be provided. One air reservoir shall serve as a wet tank and a minimum of one tank shall be supplied for each the front and rear axles. A Schrader fill valve shall be mounted in the front of the driver's step well.

A spring actuated air release emergency/parking brake shall be provided on the rear axle. One (1) parking brake control shall be provided and located on the engine hood next to the transmission shifter within easy reach of the driver. The parking brake shall automatically apply at 35 ±10 PSI reservoir pressure. A Meritor WABCO IR-2 Inversion Relay Valve, supplied by both the Primary and Secondary air systems, shall be used to activate the parking brake and to provide parking brake modulation in the event of a primary air system failure.
Accessories plumbed from the air system shall go through a pressure protection valve and to a manifold so that if accessories fail they shall not interfere with the air brake system.

ELECTRONIC STABILITY CONTROL SYSTEM

An Arvin Meritor / Wabco Electronic Stability Control (ESC) system shall be provided and installed. The ESC system shall continually monitor the vertical acceleration, and yaw (horizontal plain rotation) of the vehicle and shall prevent vehicle rollover by reducing engine torque and engaging the engine retarder, while automatically applying both the steering and drive axle brakes as needed.

AIR BRAKING ABS SYSTEM

A Wabco ABS system shall be provided to improve vehicle stability and control by reducing wheel lock-up during braking. This braking system shall be fitted to axles and all electrical connections shall be environmentally sealed from water and weather and be vibration resistant.

The system shall constantly monitor wheel behavior during braking. Sensors on each wheel transmit wheel speed data to an electronic processor, which shall sense approaching wheel lock and instantly modulate brake pressure up to 5 times per second to prevent wheel lock-up. Each wheel shall be individually controlled. To improve field performance, the system shall be equipped with a dual circuit design. The system circuits shall be configured in a diagonal pattern. Should a malfunction occur, that circuit shall revert to normal braking action. A warning light at the driver's instrument panel shall indicate malfunction to the operator.

The system shall consist of a sensor clip, sensor, electronic control unit and solenoid control valve. The sensor clip shall hold the sensor in close proximity to the tooth wheel. An inductive sensor consisting of a permanent magnet with a round pole pin and coil shall produce an alternating current with a frequency proportional to wheel speed. The unit shall be sealed, corrosion-resistant and protected from electro-magnetic interference. The electronic control unit shall monitor the speed of each wheel sensor and a microcomputer shall evaluate wheel slip in milliseconds.

AUTOMATIC TIRE CHAIN SYSTEM

The apparatus shall be equipped with an On-Spot Brass Cap brand Automatic Tire Chain System.

There will be one driver's side and one passenger's side chain unit.

A continuous duty solenoid shall be provided and activated by the dashboard switch, which opens and allows compressed air to flow to the chain units. Compressed air will be delivered to the solenoid from the vehicle's air tank. The solenoid shall be mounted on the frame rail or cross member in close proximity of the chain units. This air/electric solenoid shall be 12-volts and draw no more than 1 ampere of current. Electrical wire shall be in accordance with NFPA 1901.

A 12-volt dashboard switch shall be provided so that the operator may engage the chains from the driver's seat. The switch shall be lighted to indicate when the chains are engaged. The switch shall come complete with a switch guard to avoid accidental engagement of the automatic chains. The switch guard shall be properly labeled. A dashboard sticker with operating instructions shall be provided.

MISCELLANEOUS CHASSIS EQUIPMENT

Fluid capacity plate affixed below driver's seat.
Chassis filter part number plate affixed below driver's seat.
Maximum rated tire speed plaque near driver.
Tire pressure label near each wheel location.
Cab occupancy capacity label affixed next to transmission shifter.
Do not wear helmet while riding plaque for each seating position.
NFPA compliant seat belt and standing warning plates provided.

ALUMINUM CAB

The cab shall be a full tilt 5-person 10" rear raised roof cab designed specifically for the fire service and manufactured by the chassis builder. Rear of the cab shall be slanted forward at the top rear for mid-ship aerial use. The outside of the rear cab wall shall be aluminum diamond plate.

Apparatus cabs that are not manufactured by the apparatus manufacturer shall not be acceptable.

CAB DESIGN

The apparatus chassis shall be of an engine forward, fully enclosed tilt cab design. There shall be four (4) side entry doors.

The cab shall be of a fully open design with no divider wall or window separating the front and rear cab sections. The cab shall be designed in a manner that allows for the optimum forward facing vision for crew. Cab designs that utilize roof mounted air conditioning units, are not desired.

The cab shall be constructed of high strength 5052H32 aluminum plate welded to 6061-T6 extruded aluminum framing.

The cab roof shall utilize 5” x 5” honeycomb re-enforced 6061 T6 aluminum extrusion, with fully radiused outer corner rails with integral drip channel and 6061 T6 ¾” x 2” x 3/16” aluminum box tubing type cross brace supports. Structures that do not include an integral drip channel will not be accepted. The box tubing type cross brace supports shall be installed in a curved fashion beginning from the midline of the apparatus cab and curving toward the exterior corner rails. This curvature will allow for increased strength in the event of a roll over while not allowing for rainwater buildup on the apparatus cab roof.

The cab sides shall be constructed from 1 ½” x 3” x 3/16” 6061 T6 extruded door pillars and posts that provide a finished door opening, extruded and formed wheel well openings supports, formed aluminum wheel well liners and box tubing type support braces.

The cab floor and rear cab wall shall utilize 1 ¾” x 4” x 3/16” 6061 T6 extruded box tubing type framing and support bracing.

The framework shall be of a welded construction that fully utilizes the structural frame of the cab.

The structural extrusion framework shall be overlaid with interlocked aluminum alloy sheet metal panels to form the exterior skin of the cab. The cab sides shall be constructed of 3/16” thick 5052H32 aluminum plate that slides into an integral channel of the extrusion framework. The plate is then skip welded into that channel to allow for tolerable flex while the apparatus travels down the roadway. Cab designs that utilize 1/8” thick aluminum for the cab sides shall not be acceptable.

The structural extrusion framework shall support and distribute the forces and stresses imposed by the chassis and cab loads and shall not rely on the sheet metal skin for any structural integrity.

The cab face extrusion framework shall be overlaid with 1/8” thick 5052H32 aluminum plate to allow for an aesthetically pleasing radiused cab face.

CAB SUB-FRAME

The cab shall be mounted to a 4” x 4” x 3/8” steel box tube sub-frame, and shall be isolated from the chassis, through the use of no less than six (6) elastomeric bushings. This substructure shall be completely independent of the apparatus cab. The sub frame shall be painted to match the primary chassis color.

The sub-frame shall be mounted to the chassis through the use of lubricated Kaiser Bushings for the front pivot point, and two (2) hydraulically activated cab latches, to secure the rear. The bushings will be lubricated by the automatic lubrication system.

Cab mounting that does not include a sub-frame shall not be considered. NO EXCEPTIONS.

CAB DIMENSIONS
The cab shall be designed to satisfy the following minimum width and length dimensions:

Cab Width (excluding mirrors) 98"
Cab Length (from C/L of front axle)
To front of cab (excluding bumper) 68"
To rear of cab 62"
Total Cab Length (excluding bumper) 130"

ROOF DESIGN

The cab shall be of a 10” raised roof design with side drip rails and shall satisfy the following minimum height dimensions:

Cab Dimensions Interior
Front 59"
Rear 65"
Cab Dimensions Exterior:
Front 65"
Rear 75"

FENDER CROWNS

Polished stainless steel front axle fenderettes with full depth radiused wheel well liners shall be provided.

CAB INSULATION

The exterior walls, doors, and ceiling of the cab shall be insulated from the heat and cold, and to further reduce noise levels inside the cab. The cab interior sound levels shall not exceed 90 decibels at 45 mph in all cab seat positions. NO EXCEPTIONS

EXTERIOR GLASS

The cab windshield shall be of a two piece curved design utilizing tinted, laminated, automotive approved safety glass and shall have a minimum area of 2,700 square inches. The window shall be held in place by an extruded rubber molding. The cab shall be finished painted prior to the window installation.

SUN VISORS

The sun visors shall be made of dark smoke colored transparent polycarbonate. There shall be a visor located at both the driver and officer positions, recessed in a molded form for a flush finish.

CAB STEPS

The lower cab steps shall be no more than 22" from the ground. An intermediate step shall be provided, mid-way between the lower cab step, and the cab floor.

The intermediate step shall be slightly inset to provide for safer ingress and egress. All steps shall be covered with material that meets or exceeds the NFPA requirements for stepping surfaces.

STEP LIGHTS

A white LED strip light shall illuminate each interior cab step. These lights shall illuminate whenever the battery switch is on and the cab door is opened.

CAB STRUCTURAL INTEGRITY

The cab of the apparatus shall be designed and so attached to the vehicle as to eliminate, to the greatest possible extent, the risk of injury to the occupants in the event of an accident.

The apparatus cab shall be tested to specific load and impact tests with regard to the protection of occupants of a commercial vehicle.

A test shall be conducted to evaluate the frontal impact strength of the apparatus cab to conform to the test J2420 and the "United Nations Regulation 29, Annex 3, paragraph 4, (Test A). A second test shall be conducted to evaluate the roof strength of the apparatus cab to conform to the Society of Automotive Engineers (SAE) SAE J2422/SAE J2420 and "United Nations Regulation 29, Annex 3, paragraph 5, (Test B) and SAE J2420. The evaluation shall consist of the requirements imposed by ECE Regulation 29, Paragraph 5.

The test shall be conducted by a certified independent third party testing institution.

A letter stating successful completion of the above test on the brand of cab being supplied shall be included in the bid. There shall be "no exception" to this requirement.

SEAT BELT TESTING

The seat belt anchorage system shall be tested to meet FMVSS 207 Section 4.2a and FMVSS 210 section 4.2. Testing shall be conducted by an independent third party product evaluation company.

A copy of the certification letter shall be supplied with the bid documents.

CAB TILT SYSTEM

An electrically powered hydraulic cab tilt system shall be provided, and shall lift the cab to an angle of 45 degrees, exposing the engine and accessories for fluid checks and service work. The system shall be interlocked to only operate when the parking brake is set.

The lift system shall be comprised of two (2) hydraulic lift cylinders, an electrically driven hydraulic pump, and a control switch. The hydraulic pump shall be located on the exterior of the frame rail on the driver's side of the chassis that can be easily accessible when the cab is tilted. A mechanical locking system consisting of an air operated actuator and a heavy radiused wall 3" x 3" aluminum extrusion will be provided to ensure the cab remains in the raised position in the event of a hydraulic failure. Additionally, each of the hydraulic lift cylinders shall incorporate a check valve, and velocity fuses that will activate should a sudden drop in pressure by detected. The cab tilt controls shall be interlocked to the parking brake to ensure the cab will not move, unless the parking brake is set. The cab tilt controls will consist of a momentary raise/lower switch and a two position cab safety lock switch.

The hydraulic lift cylinders will be connected to a steel cab sub-frame, and not directly to the cab. NO EXCEPTIONS

MANUAL CAB LIFT

There shall be a manually operated hydraulic pump for tilting the cab in case the main pump should fail. Access to the pump shall be located under the left corner of the front bumper.

CAB TILT REMOTE

The cab tilt system shall be remotely controlled utilizing a ten-foot cable with a hand-held push button device, which shall plug into a receptacle in the front right step well. The receptacle shall have a spring-loaded weatherproof cover.
The remote control shall allow the operator to safely stand away from the apparatus and view the surrounding cab area while it is being tilted.

BARRIER STYLE CAB DOORS

Barrier style cab doors shall be provided. The lower part of the door shall be removed to expose the cab entry step well. The step well shall be lined with aluminum tread plate.
The cab doorframes shall be constructed from 6061 T6 aluminum extrusions fitted with a 5052 H32 aluminum sheet metal skin and shall be equipped with dual weather seals. The outside cab door window opening shall be framed by a black anodized aluminum trim, to provide a clean appearance. The cab doors shall be equipped with heavy-duty door latching hardware, which complies with FMVSS 206. The door latch mechanism shall utilize control cable linkage for positive operation. A rubber coated nylon web doorstop shall be provided.

The doors shall be lap type with a 10 gauge full-length stainless steel flange and 3/8" diameter hinge pin and shall be fully adjustable.

All openings in the cab shall be grommeted or equipped with rubber boots to seal the cab from extraneous noise and moisture.

All cab entry doors shall be barrier clear design resulting in exposed lower cab steps. The doors shall provide approximately 32.00 inches of clearance from the ground to the bottom of the door so cab doors may be opened un-hindered.

POWER WINDOWS

All four cab entry doors shall have power windows. Each door shall be individually operated and the driver's position shall have master control over all windows. All four windows shall roll down completely.

SIDE WINDOWS

Fixed position side window shall be provided on each side of the cab between the forward cab area and the crew cab area. The widows shall be approximately 20.5" high x 16.50" wide to provide maximum visibility. The side windows shall be held in place by an extruded rubber molding with chrome plated decorative locking bead.

REAR CAB WINDOWS

Two sliding windows approximately 16.25" wide x 14.25" high shall be provided in the back wall of the cab.

WINDSHIELD WIPERS

Two (2) black anodized finish two speed synchronized electric windshield wiper system. Dual motors with positive parking. System includes large dual arm wipers with built in washer system. One (1) master control works the wiper, washer and intermittent wipe features. Washer bottle is a remote fill with a 4 quart capacity. Washer fill is located just inside of officer cab door.

CAB HANDRAILS

There shall be a 24" long, handrail provided and installed, at each cab entrance. The handrails shall be constructed of type 304 stainless steel 1.25 inch diameter tubing with bright finish and knurled gripping surface. Mounting flanges shall be constructed from 7 gauge, .180 thick, stainless sheets. Each grab rail shall have 90 degree returns to flanges. The ends of grab rail shall pass through the flanges and be welded to form one structural unit. The handrails shall be mounted using 1.25" SS Hex bolts, with a barrier rubber gasket at each flange.

Sufficient space shall allow for a gloved hand to firmly grip the rail.

There shall be two (2) rubber coated grab handles provided and mounted on the interior of the cab, one each side, on the windshield post for ingress assistance. The handrail on the driver's side shall be approximately 11" long and the handrail on the officer's side shall be approximately 18" long.

HANDRAIL SCUFF PLATES

A 4" wide mirrored stainless steel scuff plate shall be provided behind each of the exterior grab handles.

CAB DOOR HANDRAILS

Two (2) 1.25" diameter knurled stainless steel handrails shall be provided on the inside of the rear crew doors just above the windowsill.

MIRRORS

Two (2) Ramco model CRM-310-1750-PCHR mirrors shall be provided and installed on the driver's and officer's doors. The mirrors shall be mounted to the cab doors. The main mirror shall be on top and convex portion on the bottom. The mirrors shall be heated and remote controlled with horizontal actuation. The mirror control switches shall be located within easy reach of the driver.

FORWARD CAB ROUND CONVEX MIRROR

A Stainless Steel adjustable 10" round convex mirror shall be mounted on the upper right hand side of the cab. The mirror shall be mounted in a manner to give the driver full view of the forward cab and bumper area.

GRILL

The front of the cab shall be equipped with a polished stainless steel grille with sufficient area to allow proper airflow into the cooling system and engine compartment. Plastic chrome plated grilles shall not be acceptable.

PAINTED STEEL BUMPER

There shall be a 12" high painted formed steel wrap-around (45 degree) bumper provided at the front of the apparatus. The bumper shall be mounted to a reinforcement plate constructed of 1/4" x 12" x 70" carbon steel. The frame rail extension shall be a reinforced four-sided boxed frame rail for superior safety protection. A gravel shield shall be provided, constructed of .188" aluminum diamond plate. The bumper extension shall be approximately 18". The bumper shall be primed and painted Job color. Reflective reflexite diamond cut yellow/red chevrons will be applied over the paint on front bumper of truck. The chevron should be the same material and design as on the rear of truck and in the same orientation/ split in middle pushing outward "////\\\\\".

STORAGE WELL COMPARTMENT

There shall be a hose well compartment located in the center of the front bumper. The compartment shall run the full width of the bumper and measure approximately 75" wide x 10" long x 5" deep at the ends and 12" deep in the center. The compartment shall be constructed of .125" smooth aluminum plate.

DIAMOND PLATE BUMPER LID

There shall be a 1/8” diamond plate cover with latches provided for the front bumper trough. The cover shall have a 2” rise to accommodate the storage well requirements.

AIR HORNS

Two (2) Grover 1510 Stuttertone, chrome plated, air horns shall be recess mounted, one each side behind the perforated grille of the bumper.

ELECTRONIC SIREN

One (1) Whelen electronic siren (Whelen 295SLSA1 remote head) shall be installed at the cab instrument panel complete with noise canceling microphone. The remote control head shall be mounted in a location specified by the fire department.

SIREN SPEAKER

A weatherproof siren speaker (Whelen SP123BM Series) shall be provided and mounted in the front bumper

FEDERAL Q2B SIREN

There shall be a Federal Q2B-NN siren installed in the center of the cab grille. The siren shall be securely mounted and activated by means of a solenoid and shall include a brake. Separate foot pedals for the Q2B Siren should be mounted on the officer's side floor and the driver's side floor.

AIR HORN WIRED TO STEERING WHEEL BUTTON

The steering wheel button shall be used for air/electric horn operation only. A selector switch shall be provided on the instrument panel to switch between functions. A foot pedal switch shall be provided on the officer’s side.

LIGHTING CAB EXTERIOR

Exterior lighting and reflectors shall meet or exceed Federal Motor Vehicle Safety Standards and National Fire Protection Association requirements in effect at this time. Note: All lighting shall be either Whelen or Trucklite brand unless approved by department.

LED HEADLIGHTS

There shall be dual, sealed-beam LED, JW Speaker brand rectangular headlights in custom housings on each side of the front of the cab. The lenses shall be hardened glass. The LEDs shall be long-lasting and able to withstand shock and vibration.
These headlights shall provide 850 effective lumens in high beam and 750 effective lumens in low beam.
This installation shall be a 12V DC configuration and draw 3.6 Amps.
Headlight alignment shall conform to SAE J599 AUG. 1997

- DOT Approved FMVSS 108
- SAE J96 ECE Reg. 112
- Sealed to IP67

FRONT TURN SIGNALS

There shall be two Whelen 400 Series LED rectangular amber turn signal lights mounted one each side in the front of the headlight housing and one mounted on each side of the warning light housing.

SCUFF PLATES

Stainless steel scuff plates shall be provided on the outside of four cab doors. They shall be approximately 9" tall where the top of the scuff plate shall be flush with the top of the front bumper. The scuff plates shall be cut to the width of each cab door that it is to be applied to.

CAB REAR WALL COVERING

The rear outside wall of the cab shall be covered with 1/8" aluminum diamond plate.

DIAMOND PLATE, CAB ROOF

The rear exterior section roof of the cab shall have a diamond plate overlay. The overlay shall be constructed of .125" aluminum serrated diamond plate and measure 36" x 59".

CAB INTERIOR

The metal surfaces of the cab interior shall be coated and sealed with MultiSpec dark red speckle, urethane modified, and mar resistant paint. The textured coating shall provide paramount durability and wear resistance against foreign objects and normal wear and tear.

The front and rear headliners, as well as the rear cab wall, shall be finished in Gray-Black Durawear covered padded panels.

INTERIOR DOOR PANELS

The interior of the cab entry doors shall have a 304 brushed stainless steel scuff plate, contoured to the door, from the door window sill down.

REFLECTIVE MATERIAL, CHEVRON STRIPING, INTERIOR CAB DOORS, 3M SCOTCHLITE

The apparatus shall have reflective 3M Scotchlite Chevron striping affixed to the inside of each cab door. The striping shall be plainly visible to oncoming traffic when the doors are in the open position.

DIAMOND PLATE CAB FLOOR

The cab interior floor shall be covered with ⅛" embossed diamond plate installed on top of a 5/16" thick, gray rubberized material covering to provide a rugged but cosmetically pleasing stepping surface throughout the cab. The floor covering shall provide superior durability and resistance against foreign objects as well as normal wear and tear.

ENGINE ENCLOSURE

An integral, formed aluminum and composite engine enclosure shall be provided. The engine enclosure shall be contoured and blended in an aesthetically pleasing manner with the interior dash and flooring of the cab. The enclosure shall be kept as low as possible, to maximize space and increase crew comfort.

The enclosure shall be constructed from 5052 H2 aluminum plate and GRP composite materials, providing high strength, low weight, and superior heat and sound deadening qualities.

Additionally, the underside of the engine enclosure shall be coated in with a ceramic spray on insulation and sound control. This coating is an environmentally-friendly coating that is applied seamlessly and rapidly while providing superior thermal insulation and protection against vibration and noise, and will prevent future corrosion from forming by sealing the substrate. NO EXCEPTIONS

ENGINE ENCLOSURE COVERING

The top of the engine enclosure shall be covered with Scorpion heavy duty, grey polyurethane blended coating. The textured coating shall provide paramount durability and wear resistance against foreign objects and normal wear and tear as well as sound deadening and insulation. The rubberized cab floor covering shall extend up the lower exterior sides of the engine enclosure to aid in sound deadening and heat resistance.

CENTER CONSOLE

There shall be a storage console installed on the engine enclosure between the driver and officer. The console shall be constructed from smooth aluminum and shall be coated with the same finish as the engine enclosure. The console shall measure approximately 23” long X 11.375” wide X 8.125” high. The console shall have a 13” long storage area in the center that shall be divided into five (5) separate areas with four (4) fixed vertical dividers. The dividers shall be spaced 2.125” apart for map book storage. A Velcro strap shall be installed front to rear to secure the map books. Each outboard area of the console shall have one (1) stainless steel cup holder and one (1) approximately 5.5” long X 4.75” wide X 3.5” high open storage area.

ENGINE HOOD LIGHTS

An LED work light shall be installed in the engine enclosure with an individual switch located on the base of the light.

INSTRUMENT PANEL

The main dash shroud, which covers the area directly in front of the driver from the doorpost to the engine hood, shall be custom molded and covered with a non-glare black vinyl. The dash shall be a one-piece hinged panel that tilts outward for easy access to service the internal components. The gauge panel shall be constructed of durable aesthetically pleasing light gray polymer material, placed over a heavy duty steel backing plate, for added strength and durability.

The gauges shall be Beede Instruments, NexSys Link gauges with built-in self-diagnostics and red warning lights to alert the driver of any problems. All gauges and controls shall be backlit for night vision and identified for function. All main gauges and warning lights shall be visible to the driver through the steering wheel.

MASTER BATTERY & IGNITION SWITCH

The vehicle shall be equipped with a keyless ignition, with a three (3)-position Master Battery rocker switch, "Off/ACC/On" and a two (2)-position Engine Start rocker switch, "Off/Start".

DIESEL PARTICULATE FILTER CONTROLS

There shall be two (2) controls for the diesel particulate filter. One control shall be for regeneration and one control shall be to inhibit engine regeneration. These shall be located below the steering wheel in the kick panel.

INSTRUMENTATION & CONTROLS

Instrumentation on dash panel:

- Tachometer/hour meter with built in high exhaust system regeneration temperature, and instrument malfunction indicators
- Speedometer/odometer with built in turn signal, high beam and re-settable trip odometer
- Voltmeter
- Diesel fuel gauge
- DEF (Diesel Exhaust Fluid) gauge
- Engine oil pressure
- Transmission temperature
- Engine temperature
- Primary air pressure
- Secondary air pressure

Indicators and warning lights in front of the driver:

- Parking brake engaged
- Low air with buzzer
- Antilock brake warning
- Check transmission
- Transmission temperature
- Upper power indicator
- Seat belt
- Engine temperature
- Low oil indicator
- Low voltage indicator
- Air filter restriction light
- Low coolant indicator
- High idle indicator
- Power on indicator
- Check engine
- Stop engine
- Check engine MIL lamp
- DPF indicator
- High exhaust temperature
- Wait to start

Other indicator and warning lights (if applicable):

- Differential locked
- Tire Chains Engaged
- PTO (s) engaged
- Auto-slip response
- Retarder engaged
- Retarder temperature
- ESC indicator
- Jacks out
- Jacks down

Controls located on main dash panel:

- Master power disconnect with ignition switch
- Engine start switch
- Headlight switch
- Windshield wiper/washer switch
- Differential lock switch (if applicable)
- Dimmer switch for backlighting

Controls included in steering column:

- Horn button (in steering wheel)
- Turn signal switch
- Hi-beam low-beam switch
- 4-way flasher switch
- Tilt-telescopic steering wheel controls

CENTER CONTROL CONSOLE

There shall be an ergonomically designed center control console. The console shall be constructed of 1/8" smooth aluminum and shall be mounted on the engine hood between the driver and officer. The console shall have a durable coating to match the color of the engine hood covering and shall feature surfaces on each side that are contoured to face the driver and the officer for easy viewing and accessibility. The switches and other specified electrical items determined at preconstruction conference shall be mounted in removable 1/8" smooth aluminum panels with a black wrinkle finish. The console shall have an aluminum lift-up lid with quick release latch. The lid shall be held in the open position with a gas strut to allow for easy access and serviceability.

Controls located in the console conveniently accessible to the driver:

- Transmission shifter
- Pump shift control with OK TO PUMP and PUMP ENGAGED lights
- Remote mirror control
- Illuminated rocker switches to control high idle, Jacob's brake, siren/horn, siren brake, master emergency, and other customer specified components
- 12V power point (if applicable)

Controls located in the console conveniently accessible to the driver and the officer (center):

- Parking brake control with a guard to prevent accidental engagement

Controls located in the console conveniently accessible to the officer:

- Illuminated rocker switches to control customer specified components (determined at preconstruction) that are easily reachable to the officer and do not allow for compromise of the driver's view, and eliminate the need for foot switches
- Surface to recess siren head, radio head, or other desired items as space permits
- 12V power point (if applicable)

Driving compartment warning labels shall include:

- HEIGHT OF VEHICLE
- OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION
- DO NOT USE AUXILIARY BRAKING SYSTEMS ON WET OR SLIPPERY ROADS
- EXIT WARNINGS

Additional labels included:

- COMPUTER CODE SWITCH
- ABS CODE SWITCH
- FLUID DATA TAG
- CHASSIS DATA TAG

OVERHEAD CONTROL CONSOLE

An ergonomically designed overhead console shall be provided above the driver and officer, running the full width of the cab. The overhead console shall be constructed from 1/8" aluminum plate and shall be painted with a durable finish to match the inside of the cab. There shall be seven (7) removable 1/8" smooth aluminum plates with a black wrinkle finish to house switches and other electrical items.

Directly above the driver there shall be two (2) panels with no cutouts.

The center overhead panel shall be designated for up to seven (7) door ajar indicators. Upon releasing the apparatus parking brake, one or more of these lights shall automatically illuminate (flash) when any of the following conditions occur that may cause damage if the apparatus is moved: cab or compartment door is open; ladder or equipment rack is not stowed; stabilizer system deployed; any other device has not been properly stowed.

There shall be a panel to the left of the officer as well as two (2) directly above the officer. An additional speedometer shall be provided on the right hand side of the dash or overhead console so that the officer can monitor vehicle speed.

ENGINE WARNING SYSTEM

An engine warning system shall be provided to monitor engine conditions such as low oil pressure, high engine temperature and low coolant level. Warning indication shall include a STOP ENGINE (red) light with audible buzzer activation and a CHECK ENGINE (amber) light

There shall be a master information light bar with 24 lights located across the center of the dash panel that covers up to 24 functions. These are defined under Indicators and Warning Lights above.

CHASSIS WIRING

All chassis wiring shall have XL high temperature crosslink insulation. All wiring shall be color-coded, and the function and number stamped at 3" intervals on each wire. All wiring shall be covered with high temperature rated split loom for easy access to wires when trouble shooting. All electrical connectors and main connectors throughout the chassis shall be treated to prevent corrosion.

MASTER ELECTRICAL PANEL

The apparatus shall have the ability to function in an electromagnetic environment most common to fire ground operations. The electrical system shall be designed for full compatibility with low-level control frequencies and any high-powered two-way radio systems.

Circuit breakers or fuses shall protect all wiring. Circuit breakers shall be the automatic reset type unless operational requirements and/or safety concerns dictate manual reset type. Automotive type fuses shall be used when required to protect delicate electronic equipment. All circuit protection devices shall conform to the Society of Automotive Engineers (SAE) standards. All circuit protection devices shall be sized according to 125% of the anticipated load to prevent any wire and/or component damage when subjected to extreme current overload.

All apparatus builder supplied wiring (excluding battery cables) shall be GXL high temperature (250 degrees minimum) type, color and number coded and imprinted with circuit function every three (3) inches (no exception). Wiring connectors shall be the crimp type with plastic sleeve or shrink tube insulation covering the crimped area to prevent accidental grounding. In-line connectors shall also utilize shrink tubing for a weatherproof connection.

All externally exposed, non-plug type, electrical connections shall be given a hand applied or sprayed application of an industrial standard insulation coating with a minimum rating of 2100 volts per mil thickness.
Insulation shall protect the connection from water induced electrical corrosion and accidental short-circuiting. Should the connection be loosened or removed during the manufacturing process another coating shall be applied after it has been refastened or replaced.

Any electrical component or device installed in an exposed area on the outside of the cab or body shall be mounted in such a manner, or protected by a gasket, caulking or other means, so that moisture will not accumulate in it.

All exposed electrical wiring shall be run in an automotive type split plastic conduit or woven fabric type loom and shall have rubber grommets installed wherever the harness passes through any sheet metal panels.

An operational test shall be conducted to ensure that all installed electrical equipment is properly connected and is in working order. Additionally all warning lights shall be run continuously during the three (3) hour NFPA pump certification test (or at another time for not less than three (3) hours).

PUMP SHIFT MODULE

An air operated pump shift module (Hale VPS Control Valve) with indicating lights shall be located within easy reach of the driver.

LOAD MANAGER

Load manager shall have the ability to sequence loads on and off. It shall also be able to shed 8 loads when the vehicle is stationary, starting at 12.7 volts lowest priority load to be shed, then respectively at 12.6, 12.4, 12.2, 12.0, 11.8, 11.4 and 11.0 volts DC. Any load that has been shed shall be off for a minimum of five minutes, and then if voltage has rebounded above shed voltage, the shed load shall automatically come on. There shall also be an indicator panel alongside the rocker switches, which indicate power is on, battery warning and fast idle. Battery warning indicator shall flash at a rate proportional to the voltage discharge rate.

AUTOMATIC HIGH IDLE ACTIVATION

The load management system shall be capable of activating the apparatus high idle system when the system voltage drops below 12.3 volts DC. The system shall raise engine speed for a minimum of five minutes until voltage exceeds 13.0 volt DC. The load management system shall activate the high idle feature before any devices are automatically shed OFF. The high idle function request from the load management device shall function only if the appropriate interlocks are present; that is, control of the high idle system is monitored and shall be superseded by the state of the interlock control module. The automatic high idle system shall be deactivated whenever the brake pedal is pressed, and shall remain inactive for two minutes thereafter to allow an operator to override the high idle function and return the engine to idle before PTO engagement.

HIGH IDLE

The engine shall have a "high idle" switch on the dash that shall maintain an engine RPM of 1,000. The switch shall be installed at the cab instrument panel for activation/deactivation. The "high idle" mode shall become operational only when the parking brake is on and the truck transmission is in neutral.

AUXILIARY POWER POINTS

Four (4) 12-volt 20-ampere USB power points either Blue Sea or Kussmaul, shall be provided in the cab, one near the driver and one near the officer and two in the rear of the cab. Locations to be approved by department during preconstruction.

CAB ACCESSORY FUSE PANEL

A fuse panel shall be located behind the driver's seat. The fuse panel shall consist of six (6) battery hot and six (6) ignition switch circuits. Each circuit shall be capable of 10-ampere 12-volt power and total output of 75-amps. The fuse panel shall be capable of powering accessories such as hand held spotlights, radio chargers, hand lantern chargers and other miscellaneous 12-volt electrical components.

POWER & GROUND STUDS, OVERHEAD COMMAND CONSOLE

There shall be a set three (3) threaded power studs provided in the cab's overhead Command Console for future installation of two-way radios.
The studs shall be wired as follows:

- One (1) 12-volt 60-amp, direct to the battery
- One (1) 12-volt 30-amp controlled by the ignition switch
- One (1) 12-volt 125-amp ground

POWER GROUND STUDS

There shall be a minimum of four (4) threaded power studs provided in the chassis electrical compartment to accommodate the future installation of two-way radios. The studs shall be wired as follows:

One (1) 12-volt 40-amp controlled by the battery switch
One (1) 12-volt 100-amp ground
One (1) 12-volt 60-amp controlled by the ignition switch
One (1) 12-volt 60-amp, direct to the battery

VEHICLE DATA RECORDER

An Akron / Weldon vehicle data recorder as required by the 2009 edition of NFPA 1901 shall be installed. Vehicle data shall be sampled at the rate of 1 second per 48 hours, and 1 minute per 100 engine hours.

LIGHTING CAB INTERIOR

Interior lighting shall be provided inside the front of the cab for passenger safety. Two Whelen 700 Series lights #70CREGCS (2) ceiling mounted combination red/clear LED dome lights with a push button on/off switch in the light lens. One light shall be located over each the officer and driver's position. The lights shall also activate from the open door switch located in each cab doorjamb.

LIGHTING CREW CAB INTERIOR

Interior lighting shall be provided inside the crew cab for passenger safety. Two Whelen 700 Series lights #70CREGC (2) ceiling mounted combination red/clear LED dome lights with a push button on/off switch in the light lens shall be provided. The lights shall also activate from the open door switch located in each cab doorjamb.

DOOR LIGHTS

The interior panels of each door shall include one (1) red Whelen 500 V Series Super LED Combination light model #5V3R which shall be provided on the inner surface of each cab door, mounted horizontally. Each light shall activate with a flashing pattern and also the puddle light function when the door is in the open position to serve as an indicator to oncoming traffic, and to act as an additional ground light for crews.

REMOTE CONTROLLED SPOTLIGHT

One LED GO-LIGHT Model #30004 will be mounted on the cab roof; the light shall be mounted on a pedestal center rear of the light bar. The light shall be free of obstructions for the full 360 operation of the light.
(2) Wireless handheld remote controls shall be supplied; a mounting location for the handheld remotes will be discussed during the pre-construction conference.

HEATER/DEFROSTER/AIR CONDITIONER

There shall be a minimum 65,000 cool BTU and 65,000 heat BTU single unit, heater/air conditioner mounted over the engine cover. The unit shall have a shutoff valve at the right side of the frame, next to the engine. Airflow of the heater/air conditioner shall be a minimum 1200 CFM. To achieve maximum cooling, a TM-21 Compressor (10 cu. in.) will be used.
The defroster/heater shall be a minimum of 35,000 BTU and shall be a separate unit mounted over the windshield. There shall be eight (8) louvers/diffusers to direct to windshield and door glass. Airflow of the defroster/heater shall be a minimum 350 CFM. The unit shall be painted to match the cab ceiling.

The condenser shall be roof mounted and have 65,000 BTU rating. The unit shall include three fan motors.
Airflow of the condenser shall be a minimum 2250 CFM. (This roof-mounted condenser shall work at full rated capacity at an idle with no engine heat problems.)

HEATER/DEFROSTER/AIR CONDITIONING CONTROLS

The heater/defroster/air conditioning controls shall be located in the overhead console in the center of the apparatus cab within reach of the driver and officer. The controls shall be illuminated for easy locating in dark conditions. The controls shall be located in such a way that the driver will not be forced to turn away from the road to make climate control adjustments. Control of all heater/defroster/air conditioning functions for the entire apparatus cab shall be achieved through these controls.

FLOORBOARD HEATING DUCT

There shall be ductwork to the floor of the cab, facing forward to provide heat for the front of cab floor area.

DEFROSTER DIFFUSER

A molded diffuser made of durable ABS plastic ductwork system shall be provided. It shall be form fitted and shall attach to the cab's overhead defroster unit to provide temperature controlled air to the windshields. Air flow of up to 280 cfm is balanced and directed across the entire windshield for optimum defrosting capability in all types of weather.

TOOL MOUNTING PLATE

There shall be a 3/16" smooth aluminum plate installed on top of the heat/ air conditioning unit for use in mounting of equipment. The plate shall measure approximately 25" wide x 19.5" long and shall be spaced up 1". The mounting plate shall feature beveled edges on the front and rear for a finished appearance. The plate shall be coated with the same finish as the heat/air conditioning unit and shall be secured with screws for easy replacement.

AUXILIARY DEFROSTER FAN

There shall be a Red Dot model RD-5-5786-OP 12-volt fan mounted in the cab ceiling, directed at the driver's side windshield. The fan shall be activated by a 3-position toggle switch located at the base of the fan. The switch positions shall be High, Low and Off.

AUXILIARY DEFROSTER FAN

There shall be a Red Dot model RD-5-5786-OP 12-volt fan mounted in the cab ceiling, directed at the Officer's side windshield. The fan shall be activated by a 3-position toggle switch located at the base of the fan. The switch positions shall be High, Low and Off. The fan shall be silver.

POSITION #1 - DRIVER'S SEAT

An H.O. Bostrom Sierra high back seat with air suspension shall be provided for the driver. The seat shall be equipped with a red 3-point shoulder harness with lap belt. The seat shall have fore/aft adjustment and shall be upholstered with heavy duty Durawear material.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

POSITION #2 - OFFICER'S SEAT

An H.O. Bostrom Tanker 450 air ride ABTS SCBA seat shall be provided for the officer. The seat back shall have a SCBA cavity and auto-pivot-and-return padded headrest. The seat shall be equipped with a red 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The seat shall be upholstered with heavy duty Durawear material on the main contact surfaces. The sides shall be upholstered with heavy duty vinyl.

UNDER SEAT STORAGE COMPARTMENT

There shall be a storage area under the officer's seat, accessible from the front through a hinged door with a compression lever latch. The door shall be shall be painted with a durable finish to match the inside of the cab and shall be vertically hinged near the engine enclosure.

The storage area shall be approximately 19.5" wide x 14.375" high x 21.75" deep. The lower rear portion of the compartment shall be tapered to accommodate the wheel well and wiring chase. The opening shall be approximately 15.5" wide x 10.5" high.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

EMS CABINET, REAR INTERIOR WALL

There shall be a cabinet constructed of .125 aluminum plate and painted to match the interior of the cab. The location of the cabinet shall be mounted to the rear wall of the cab. The cabinet shall have a forward facing opening for the placement and removal of equipment and shall have a rated door or netting closure rated to prevent equipment from becoming airborne in the event of a collision. The cabinet dimensions shall be approximately 36"W x 18"D and will be full interior height from floor to ceiling. The cabinet shall come two adjustable shelves.

POSITION #3 and #4 - CREW SEATS – DRIVER'S AND OFFICER'S SIDE, REAR FACING

Two (2) H.O. Bostrom Tanker 400CT ABTS SCBA fixed base seat shall be installed in the driver's side rear-facing and Officer's side rear facing positions. The seat backs shall have a SCBA cavity and auto-pivot-and-return padded headrest. The seats shall be equipped with a red 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The seats shall be upholstered with heavy duty Durawear material.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

POSITION #5 - CREW SEAT – OFFICER'S SIDE, FORWARD FACING, OUTBOARD

One (1) jump seat shall be installed in the officer's side forward-facing outboard position. The seat shall have a spring-loaded flip-up padded base that measures approximately 17" wide x 12" deep x 3" high. A padded seat back shall be affixed to the back wall of the cab. The seat shall be equipped with a red 3-point shoulder harness with lap belt. The seat base and back shall be upholstered with heavy duty Durawear material.

SEAT UPHOLSTERY COLOR

The cab seat upholstery shall be black in color.

SCBA BRACKETS

Each SCBA seat in the cab shall feature an IMMI SmartDock hands-free self-contained breathing apparatus (SCBA) storage bracket within the seat back.
The bracket shall consist of a main vertical support bracket, lower guide plate with valve retaining tabs, top claw assembly with wings, and an integral height adjustment knob. The top claw shall be adjustable for different diameters of SCBA cylinders. The head height shall be adjustable with the integrated adjustment knob for different heights of SCBA cylinders.
The bracket shall feature single-motion SCBA insertion and hands-free release when the fire fighter stands up to exit the seat. In the event of a collision, the top claws lock from inertial forces for a secure hold.

SEAT BELT WARNING SYSTEM

An Akron / Weldon seat belt warning system shall be provided, and shall monitor each seating position. Each seat shall be supplied with a sensor that, in conjunction with the display module located on the dash, shall determine when the seatbelt was fastened and if the seat is occupied. An icon shall represent that the seat is properly occupied. An audible and visual alarm shall be activated if the seat is occupied and/or the belt is not fastened in the proper sequence.

ANTENNA MOUNTING

Four (4) radio antennas bases shall be supplied and mounted on the roof directly behind the light bar. Wiring for the antennas shall be as follows; (1) one of the antenna wires shall terminate under the right front seat area and Three (3) shall terminate to the front center dash area. All 4 antenna mounts shall be installed by the chassis manufacturer's facility; Antennas to be supplied shall be Andrews model # K-794, low profile mounts for thick roofs. The Town of Fairfield will supply antenna mast. The radio location shall be determined at the pre-construction meeting.

ELECTRICAL PROVISION

Wiring shall be provided in the cab for the future installation of electrical chargers. The location shall be determined during the pre-construction conference.

SIDE ROLLOVER OCCUPANT PROTECTION SYSTEM

The IMMI RollTek supplemental side rollover occupant protection system shall be installed in the cab to provide protection to all five (5) seated occupant positions in the event of a vehicle roll over.

The system shall consist of the following major components:

- Roll Sensor
- Air Bag Module
- Seat Buckle Pre-Tensioner
- Event Recorder

FIRE PUMP HALE QTWO-150

Fire pump shall be midship mounted. The fire pump shall have two impellers and be of the series-parallel, two-stage design. The pump shall be equipped with an all bronze waterway transfer valve, capable of switching from one pump mode to the other with two and one-half turns of the transfer valve control hand wheel. The transfer valve shall be equipped with a positive mechanical indicator to register the position of the transfer valve at all times. The transfer valve shall not be electrically operated.

The pump shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI.

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

All moving parts in contact with water shall be of high quality bronze or stainless steel. Easily replaceable bronze labyrinth wear rings shall be provided. Discharge passage shall be designed to accomplish uniform pressure readings as the actual pump pressure. The rated capacity of the fire pump shall be of 1500 gallons per minute in accordance with NFPA #1901.

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

PUMP TRANSFER CASE – G SERIES

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

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

The engagement of the pump transmission shall be of such design so as to permit transfer of power from road to pump operation only after vehicle is completely stopped. The pump shift shall be air actuated from the cab and have both a green "Pump Engaged" light, and a green "O.K.-To-Pump" light. A third green light shall be provided on the pump operator's panel for "Throttle Ready".

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

PUMP SEAL

There shall be a mechanical seal in place of pump packing. The mechanical seal must be two (2) inches in diameter and shall be spring loaded, maintenance free and self-adjusting. Mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton rubber cup, and a tungsten carbide seat with Teflon backup seal.

MANUAL PUMP SHIFT OVERRIDE

Not Required.

PUMP ANODE

A Hale pump anode kit assembly # 529-0050-00-0 shall be provided and installed in the pump body. A minimum of two (2) anodes shall be installed one (1) in the suction side and one (1) in the discharge side of the pump.

PUMP TEST & CERTIFICATION

The pump shall be tested and certified by a third party independent testing agency, in accordance with NFPA 1901. A three (3) hour pumping test from draft shall be conducted consisting of two (2) hours of continuous pumping at 100% of rated capacity at 150PSI net pump pressure, followed by ½ hour of continuous pumping at 70% of rated capacity at 200PSI net pump pressure, and ½ hour of continuous pumping at 50% of rated capacity at 250PSI net pump pressure). The testing shall also include a pressure control system test, priming system test, vacuum test, a gauge/flowmeter test, the water tank to pump test and a pumping engine overload test. Successful pump certification is a requirement of acceptance by the Town of Fairfield.

AUXILIARY COOLER

An auxiliary cooler shall be furnished and installed to provide additional cooling to the engine under extreme pumping conditions. Water from the pump is to be piped to the coils of the heat exchanger allowing the engine fluid to be cooled as required.

PUMP CONNECTIONS

All suction and discharge lines (except pump manifolds) 1" and larger shall be heavy-duty stainless steel pipe. Where vibration or chassis flexing may damage or loosen piping or where a coupling is necessary for servicing, a flexible connection shall be furnished. Any flexible connections shall be class 1 rubber hose with stainless fittings. All lines shall be drained by a master drain valve or a separate drain provided at the connection. All individual drain lines for discharges shall be extended with a 90 degree fitting in order to drain below the chassis frame. All water carrying gauge lines shall utilize nylon tubing.

TANK TO PUMP

The booster tank shall be connected to the intake side of the pump with a check valve. The 4" tank to pump line shall run from a bottom sump into the 4" valve. To prevent damage due to chassis flexing or vibration, a short 4" flexible rubber hose coupling shall be used to connect the tank to the intake valve.

VALVE

The valve shall be Elkhart uni-body electric ball valves. Each valve shall be controlled by Elkhart electronic controls with pressure and flow meters. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart UBEC-3 electric actuator located at the operator's panel. The actuator shall display the valve position.

TANK FILL

A 1.5" tank fill shall be provided, using a quarter turn full flow ball valve controlled from the pump operator's panel.

VALVE

The valve shall be Elkhart uni-body electric ball valves. Each valve shall be controlled by Elkhart electronic controls. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart UBEC-1 electric actuator located at the operator's panel. The actuator shall display the valve position.

PRESSURE GOVERNOR, MONITORING, and MASTER PRESSURE DISPLAY

Fire Research InControl series TGA401 pressure governor and monitoring display kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 5 1/2" high by 10 1/2" wide by 2" deep. The control knob shall be 2" in diameter with no mechanical stops, have a serrated grip, and a red idle push button in the center. It shall not extend more than 1 3/4" from the front of the control module. Inputs for monitored information shall be from a J1939 databus or independent sensors. Outputs for engine control shall be on the J1939 databus or engine specific wiring.

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

The dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. All LED intensity shall be automatically adjusted for day and night time operation.

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

High Battery Voltage
Low Battery Voltage (Engine Off)
Low Battery Voltage (Engine Running)

High Transmission Temperature
Low Engine Oil Pressure
High Engine Coolant Temperature
Out of Water (visual alarm only)
No Engine Response (visual alarm only)

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

Inputs to the control panel from the pump discharge and intake pressure sensors shall be electrical. The discharge pressure display shall show pressures from 0 to 600 psi. The intake pressure display shall show pressures from -30 in. Hg to 600 psi.

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

The pressure governor, monitoring and master pressure display shall be programmed to interface with a Cummins engine.

DRIVERS SIDE 6" PUMP INLET

A 6" diameter suction port with 6" NST male threads shall be provided, on the driver's side of vehicle. The inlet shall extend through the side pump panels and come complete with removable strainer and long handle chrome-plated cap.

INTAKE VALVE

A Hale Master Intake valve shall be installed on the above specified intake. It shall be electrically actuated from the pump panel and include a manual override hand wheel on the pump panel. The valve shall include a pressure relief valve to guard against incoming pressure surges.

INLET ADAPTER

One (1) Task Force Tips #AH3ST-NX 6" NST female x 5" Storz 30-degree adapter with #A01ST 5" Storz cap and chain shall be provided for the above inlet.

PASSENGER SIDE 6" PUMP INLET

A 6" diameter suction port with 6" NST male threads shall be provided, on the passenger side of vehicle. The inlet shall extend through the side pump panels and come complete with removable strainer and long handle chrome-plated cap.

INTAKE VALVE

A Hale Master Intake valve shall be installed on the above specified intake. It shall be electrically actuated from the pump panel and include a manual override hand wheel on the pump panel. The valve shall include a pressure relief valve to guard against incoming pressure surges.

INLET ADAPTER

One (1) Task Force Tips #AH3ST-NX 6” NST female x 5” Storz 30-degree adapter with #A01ST 5” Storz cap and chain shall be provided for the above inlet.

2.5" LEFT SIDE INLET

A 2.5" gated inlet valve shall be provided on the left side pump panel. The valve shall be supplied with chrome plate female swivel, plug, chain, and removable strainer. The valve shall attach directly to the suction side of the pump with the valve body behind the pump panel.

VALVE

The valve shall be Elkhart uni-body electric ball valves. Each valve shall be controlled by Elkhart electronic controls with pressure and flow meters. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by a swing type handle located at the operator’s panel. The handle shall have a full 90 degree movement.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

6" PUMP INLET

A 6" diameter suction port with 6" NST male threads shall be provided, on the right side of vehicle. The inlet shall extend through the side pump panels and come complete with removable strainer and long handle chrome-plated cap.

INTAKE VALVE

A Hale Master Intake valve shall be installed on the above specified intake. It shall be electrically actuated from the pump panel and include a manual override hand wheel on the pump panel. The valve shall include a pressure relief valve to guard against incoming pressure surges.

INLET ADAPTER

One (1) Task Force Tips #AH3ST-NX 6” NST female x 5” Storz 30-degree adapter with #A01ST 5” Storz cap and chain shall be provided for the above inlet.

DISCHARGE PLUMBING SIZING

All 2 ½” discharges shall be plumbed 3” with a 3” Valve and all 1 ½” discharges shall be plumbed 2” with 2” valves. The 4” discharge shall be plumbed 4” with 4” valve and the 3” deluge gun shall be plumbed 3” with a 3” valve.

DISCHARGE #1 - LEFT

The discharge in position #1 on the left side of the apparatus shall include the following features.

A 2.5" discharge shall be provided on the left side of the apparatus.

VALVE

The valve shall be Elkhart uni-body electric ball valves. Each valve shall be controlled by Elkhart electronic controls with pressure and flow meters. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart UBEC-3 electric actuator located at the operator's panel. The actuator shall be connected to both a flow sensor and a pressure sensor. The actuator shall display pressure, flow, and valve position.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

DISCHARGE ADAPTER

One (1) 2.5" NST female x 1.5" NST male chrome plated adapter with 1.5" NST chrome plated cap and chain shall be provided for the above discharge.

DISCHARGE #2 - RIGHT

The discharge in position #2 on the right side of the apparatus shall include the following features.

A 4" discharge shall be provided on the right side of the apparatus.

VALVE

The valve shall be Elkhart uni-body electric ball valves. Each valve shall be controlled by Elkhart electronic controls with pressure and flow meters. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart UBEC-3 electric actuator located at the operator's panel. The actuator shall be connected to both a flow sensor and a pressure sensor. The actuator shall display pressure, flow, and valve position.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

DISCHARGE ADAPTER

One (1) Task Force Tips #AH3ST-NP 4” NST female x 5” Storz 30-degree adapter with #A01ST 5” Storz cap and chain shall be provided for the above discharge.

DISCHARGE #3 - RIGHT

The discharge in position #3 on the right side of the apparatus shall include the following features.

A 2.5" discharge shall be provided on the right side of the apparatus.

VALVE

The valve shall be Elkhart uni-body electric ball valves. Each valve shall be controlled by Elkhart electronic controls with pressure and flow meters. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart UBEC-3 electric actuator located at the operator’s panel. The actuator shall be connected to both a flow sensor and a pressure sensor. The actuator shall display pressure, flow, and valve position.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

DISCHARGE ADAPTER

One (1) 2.5” NST female x 1.5” NST male chrome plated adapter with 1.5” NST chrome plated cap and chain shall be provided for the above discharge.

2.5" DISCHARGE LEFT REAR

There shall be a 2.5" gated discharge piped to the left rear, adjacent to the hose bed. The discharge shall be installed with proper clearance for spanner wrenches or adapters. Plumbing shall be 3" piping and a full flow 2.5" ball valve with the control at the pump operator's panel.

VALVE

The valve shall be Elkhart uni-body electric ball valves. Each valve shall be controlled by Elkhart electronic controls with pressure and flow meters. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart UBEC-3 electric actuator located at the operator’s panel. The actuator shall be connected to both a flow sensor and a pressure sensor. The actuator shall display pressure, flow, and valve position.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

2.5" DISCHARGE RIGHT HOSE BED - PRECONNECT #3

There shall be a 2.5" gated discharge piped to the right front of the auxiliary hose bed. The discharge shall be installed with proper clearance for spanner wrenches or adapters. Plumbing shall be 3" piping and a full flow 2.5" ball valve with the control at the pump operator's panel.

VALVE

The valve shall be an Elkhart, full flow trunnion mounted ball valve with two flanges and constructed with two self-adjusting seat/flange seals. The seats and ball shall be of Norkalon material. The valve shall have no more than three O-rings and no O-rings between the body and adapter flanges. The valve shall have two seats to hold pressure or vacuum in either direction. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart UBEC-3 electric actuator located at the operator's panel. The actuator shall be connected to both a flow sensor and a pressure sensor. The actuator shall display pressure, flow, and valve position.

THREAD TERMINATION

The above shall terminate with National Standard Threads.

FRONT BUMPER DISCHARGE – PRECONNECT #4

A 2.5" discharge with 3" plumbing shall be provided at the front bumper with a chick san swivel. The valve shall be remote controlled at the pump panel.

VALVE

The valve shall be Elkhart uni-body electric ball valves. Each valve shall be controlled by Elkhart electronic controls with pressure and flow meters. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart UBEC-3 electric actuator located at the operator's panel. The actuator shall be connected to both a flow sensor and a pressure sensor. The actuator shall display pressure, flow, and valve position.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

DISCHARGE ADAPTER

One (1) 2.5" NST female x 1.5" NST male chrome plated adapter with 1.5" NST chrome plated cap and chain shall be provided for the above discharge.

MIDSHIP CROSSLAYS – PRECONNECTS #1 AND #2

Two (2) crosslay hose beds shall be supplied. The piping and valves shall be 2"; the swivel shall be 1.5". The valves shall be controlled from the pump panel.

Each compartment shall hold 200 ft. of 1.75" double jacket hose. Both beds shall be of the same dimension.

VALVE

The valve shall be Elkhart uni-body electric ball valves. Each valve shall be controlled by Elkhart electronic controls with pressure and flow meters. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

The valve shall be controlled by an Elkhart UBEC-3 electric actuator located at the operator's panel. The actuator shall be connected to both a flow sensor and a pressure sensor. The actuator shall display pressure, flow, and valve position.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

CROSSLAY COVER

A vinyl crosslay cover shall be provided to enclose the top and sides of the crosslays, capable of being secured at the top and sides.

BOOSTER REEL AND EQUIPMENT

One (1) bright aluminum electric rewind booster reel with sealed joints, leak proof ball bearings, and an adjustable friction brake shall be provided. The reel shall have a heavy frame to keep the drum, bearings, and rewind mechanism in alignment at all times. The reel shall have roller guides to prevent hose damage while it is being taken on and off of the reel. The electric rewind shall be located for convenience and safety of operation. Positive rewind power shall be assured by the use of sprocket and chain in conjunction with a geared manual crank.

The following lengths of 1" Firequip SDH yellow collapsible booster hose with 1" Action couplings stenciled Fairfield Fire Department

Three (3) 100 ft. lengths (FIQ1X100SDHY)
Two (2) 50 ft. lengths (FIQ1X50SDHY)
One (1) 25 ft. length (FIQ1X25SDHY)

The reel shall be located in a compartment on the right side of the truck, under the aerial.

MASTER PUMP DRAIN

A multiport master drain valve shall be provided and plumbed to multiple locations on the main pump body. The valve assembly shall be clearly marked as the Master Drain.

DRAIN VALVES LIFT UP STYLE

Vertical lift up style, quarter turn style drain valves shall be provided for each suction inlet, or discharge outlet as specified. Each drain shall be clearly marked and color coded to match the corresponding suction of discharge.

WATERWAY VALVE AND ACTUATOR

The waterway valve shall be an Elkhart 3" electric valve. The valve shall be controlled by an Elkhart UBEC-3 electric actuator located at the operator's panel. The actuator shall be connected to both a flow sensor and a pressure sensor. The actuator shall display pressure, flow, and valve position.

FOAM SYSTEM

One (1) Feecon model #APH-1.5 "Around the Pump" Class B foam proportioning system shall be supplied and installed. A pump panel mounted metering valve shall be included with instruction plate. The system shall flow a max of 1400 gpm @ 1%, 3 % and 700gpm @ 6 % foam flow.

The system shall be installed to the manufacturer's specifications and capable of performing all flows with National Foam Universal Gold 1%-3% AR-AFFF.

The system shall include valve controls for the following:

- Foam tank to pump – Labeled "FOAM SUPPLY"
- Supply through eductor – Labeled "FOAM EDUCTOR"
- Flush valve – Labeled "FOAM FLUSH"

FOAM TANK

There shall be a 75-gallon foam tank. The tank shall be part of the main booster tank. There shall be a 3" PVC fill tower and cap and a tank vent. There shall be a 1-1/2" flanged outlet and drain valve at the lowest point in the tank.

FOAM REFILL SYSTEM

A Hale EZ Fill foam refill system shall be furnished and installed. The system shall refill one foam tank.

PUMP AND GAUGE PANELS

Pump panels on both sides shall be easily removable. The gauge and control panels shall be two separate panels for ease of maintenance. There shall be one (1) removable access door as large as possible on the right side pump panel. This door shall have 1/4 turn latching mechanisms for easy removal.

The pump controls and gauges shall be located at the left side of the apparatus and properly marked. The control panel shall be laid out in a user-friendly manner.

All valve controls shall have the corresponding discharge gauge located immediately adjacent to control handle to allow operator to view the discharge pressure without searching the panel.

GREASE MANIFOLD FOR ELECTRIC CONTROL VALVES

A grease manifold shall be provided and installed in the pump box for greasing of the Elkhart Electric Valves. Manifold shall consist of a minimum of 15 ports with Zerk style fittings and plumbed with plastic tubing to each Elkhart Electric Valve. Location of manifold will be in the upper left pump box. Final location and placement must be approved by the Fire Department.

PANEL FINISH

The panels shall be constructed of brushed stainless steel for maximum protection against abrasion caused during normal use.

ESCUTCHEON PLATES

All gauges, discharge outlets, discharge controls, and drains shall be labeled for ease of identification. 'VisionMark' brand etched labels and full size color coded trim rings shall be used. All trim rings shall have a minimum border of 1" color around the perimeter. Note: Vision Mark has a custom format for Fairfield Fire Department on file from previous builds.

The 'VisionMark' labels shall be color-coded by function I.D. and have a clear coat finish.

All labels shall be fastened to the body surfaces using mechanical fasteners and/or attached by adhesive materials. Lettering shall be etched on a color-coded matte surface within the bezel opening.

Discharge and suction opening trim rings shall be Vision Mark brand full size color coded and labeled.

All Elkhart UBEC controllers shall have custom color coded trim rings and function labeled.

COLOR CODING

Each discharge valve control, outlet, and corresponding line gauge shall be color-coded. The color-coding shall be:

#1 Pre-Connect – Front 1 ¾" crosslay - Yellow
#2 Pre-Connect – Rear1 ¾" crosslay - White
#3 Pre-Connect – 2 ½" Right rear - Purple
#4 Pre-Connect – Bumper/Car fire line - Blue
#1 Discharge – Left side 2 ½" - Red
#2 Discharge – Large Diameter Discharge – Green
#3 Discharge – Right side 2 ½" -Orange
#4 Discharge - Left side rear 2 ½" – Brown
Foam control valves including educator, tank, flush – Red outline, white box
Aerial Waterway / Deck Gun – Silver
Inlets – Black
Tank Fill - Lime Green
Tank to Pump – Burgundy

PUMP PANEL LIGHTING, LED

The driver's side pump panel controls and gauges shall be illuminated by a full width LED light strip manufactured by LumaBar SuperBright LED Pump Panel Lights or equivalent.

PUMP PANEL LIGHT

A light shall be provided for the opposite side pump panel.

PUMP PANEL GAUGES AND CONTROLS

The following gauges and controls shall be provided at the pump panel:

- Two (2) certified laboratory test gauge outlets.
- Pump primer control.
- Master drain control and additional drains as needed.
- Tank-fill and pump cooler valve controls.
- Tank to pump valve control.
- Pump capacity rating plate.
- All discharge controls.
- Two (2) master pump gauges.
- Gauges on all 1-1/2" and larger discharge lines.

PRIMING SYSTEM

The pump shall be capable of priming the pump within 30 seconds using 20 ft. of suction hose on a 10 ft. lift. The pump shall be electric positive displacement type. Both pump and priming valve shall be actuated by a single T-handle pull control on the operator's panel.

THERMAL RELIEF VALVE

There shall be a Hale TRV-L Thermal Relief Valve supplied. The valve shall automatically dump a controlled amount of water to atmosphere when the pump water exceeds 120 degrees Fahrenheit. The valve shall re-set automatically. A light shall be provided at the pump panel, which will illuminate when the pump reaches 120 degrees Fahrenheit to warn the operator that the pump is automatically dumping.

AIR HORN BUTTON

A push button switch shall be provided on pump operator’s panel to activate the air horns.

4” MASTER GAUGES

The master pump pressure and compound gauges shall be THUEMLING Series BC, a minimum of 4” (6" preferred) in diameter, and shall have white face with black lettering. The master pressure gauge shall have a pressure range of 0-400 psi. and the master compound gauge shall have a pressure range from -30-400 psi. The gauges shall have fluorescent orange tips on the needles.

The master pressure gauge and master compound gauge shall be grouped together on the gauge panel for ease of observation of the pump and engine operating conditions.

WATER TANK LEVEL GAUGE

Fire Research TankVision® model WL2000 water tank volume indicator kit shall be installed. The kit shall include an electronic indicator module, a pressure sensor, and sensor cable. The indicator shall show the volume of water in the tank on nine (9) easy to see super bright LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be waterproof and manufactured of aluminum.

The program features shall be accessed from the front of the indicator module. The program shall support self-diagnostics capabilities, self-calibration, and a datalink to connect remote indicators. Low water warnings shall include flashing LEDs at 25%, down chasing LEDs when the tank is almost empty.

The indicator shall receive an input signal from an electronic pressure sensor. The sensor shall be mounted on the outside of the water tank near the bottom; no probe shall be place on the interior of the tank. Wiring shall be weather resistant and have automotive type plug-in connectors.

The gauge shall be located on the pump operator's panel.

CLASS B FOAM TANK LEVEL GAUGE

A Fire Research TankVision® model WL2600 foam tank volume indicator kit shall be installed. The kit shall include an electronic indicator module, a pressure sensor, and sensor cable. The indicator shall show the volume of Class B foam in the tank on nine (9) easy to see super bright LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be waterproof and manufactured of aluminum.

The program features shall be accessed from the front of the indicator module. The program shall support self-diagnostics capabilities, self-calibration, and a datalink to connect remote indicators. Low water warnings shall include flashing LEDs at 25%, down chasing LEDs when the tank is almost empty.

The indicator shall receive an input signal from an electronic pressure sensor. The sensor shall be mounted on the outside of the water tank near the bottom; no probe shall be place on the interior of the tank. Wiring shall be weather resistant and have automotive type plug-in connectors.

The gauge shall be located on the pump operator's panel.

WATER GAUGE (AUXILLIARY)

There shall be an auxiliary water gauge provided. This gauge shall be a "boiler" style gauge (Earnest Gauge Company or acceptable alternative) filled with water and will be mounted on the Driver's side pump panel in an area to be determined.

WATER TANK

The tank shall be constructed of PT3™ polypropylene material by United Plastic Fabricating (UPF). This material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum protection. Tank shell thickness may vary depending on the application and may range from ½ to 1" as required. Internal baffles are generally 3/8" in thickness.

The tank shall be of a specific configuration and shall be designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include PolyProSeal™ technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The top of the booster tank shall be fitted with removable lifting assembly designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" PT3™ polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions shall interlock with one another and completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength as part of the tank's unique Full Floor Design™.

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT3™ polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall have a 1/4" thick removable polypropylene screen and a PT3™ polypropylene hinged cover. The capacity of

the tank shall be engraved on the top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 4" that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901 so as to not interfere with rear tire traction.

The tank cover shall be constructed of 1/2" thick PT3™ polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" minimum polypropylene dowels spaced a maximum of 40" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall accommodate the necessary lifting hardware.
There shall be one (1) sump constructed of a minimum of 1/2" PT3™ polypropylene and be located in the left front quarter of the tank, unless specified otherwise. On all tanks that require a front suction, a 3" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" N.P.T. threaded outlet on the bottom for a drain plug per NFPA. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 3" above the inside floor.

There shall be two (2) standard tank outlets: one for the tank-to-pump suction line, which shall be sized to provide adequate water flow to the pump; and, one for tank fill line, which shall be sized according to the NFPA minimum size chart for booster tanks. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1000 G.P.M. All auxiliary outlets and inlets must meet all NFPA guidelines in effect at the time of manufacture.

The UPF Poly-Tank® III shall rest on the body cross members in conjunction with such additional cross members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor. In cases where overall height of the tank exceeds 40 inches, cross member spacing must be decreased to allow for not more than 400 square inches of unsupported area.

The tank shall be isolated from the cross members through the use of hard rubber strips with a minimum thickness and width dimension of 1/4" x 1". The rubber must be installed so it will not become dislodged during normal operation of the vehicle. Additionally, the tank must be supported around the entire bottom outside perimeter and captured both in the front and rear as well as side to side to prevent tank from shifting during vehicle operation.

The tank shall be completely removable without disturbing or dismantling the apparatus structure.

The tank shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. The tank shall be delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on weight. Engineering estimates for capacity calculations shall not be permitted for capacity certification. A center of gravity and weight calculation for both empty and full conditions shall be required with each tank.

The tank shall have a limited Lifetime warranty that provides warranty service for the life of the fire apparatus in which the tank is installed. Warranties are transferable if the apparatus ownership changes by requesting the transfer from UPF. In applications where the tank will be subject to severe conditions, the tank may have a warranty unique to the application that is clearly defined for each such application.

WATER TANK

The water tank shall have a capacity of 500 U.S. gallons. NO EXCEPTIONS

DIRECT TANK FILL

There shall be a 3" direct tank fill. The location of the inlet shall be at the right side pump panel. The inlet shall be gated.
The intake shall be fitted with a 3" F to 5" Storz (with cap and chain)

VALVE

The valve shall be Elkhart uni-body electric ball valves. Each valve shall be controlled by Elkhart electronic controls with pressure and flow meters. The valve shall be capable of swinging out of line without removing all flange bolts for easy replacement of ball and seats.

VALVE ACTUATOR

One (1) Elkhart UBEC1AT Auto touch control module shall be supplied and installed on the left side pump panel. The Direct Tank Fill shall be plumbed and valved to supply a minimum of 700 gallons per minute directly into the booster tank. The Direct Tank Fill shall operate in two (2) ways: automatic mode or manual mode. The automatic mode shall have the valve operate electrically from the 'Tank Fill' gauge. When the 'Tank Fill' gauge drops to half tank capacity, the valve shall open until the tank and gauge reaches full and then the valve shall close. This will enable the operation of the Feecon Foam System by keeping the pump intake pressure below 5 psi. The manual mode shall perform as a "back up" in case of an electrical failure and would eliminate the valve from opening and closing while not using the Direct Tank Fill inlet in normal firefighting operations. The system shall utilize a selector switch labeled "Automatic / Manual".

An Elkhart model 40 relief valve shall be supplied and installed into the Direct Tank Fill System. One (1) 5" Storz intake with relief valve, cap and chain shall be supplied and installed on the Direct Tank Fill intake.

Connection shall be labeled "DIRECT TANK FILL".

APPARATUS BODY

The apparatus body shall be constructed of #4 brushed finish #304 stainless steel and shall include brushed stainless steel compartment interiors. Other scuff prone areas such as the area surrounding compartment openings, the rear inside beavertails, rear compartment door area and front and rear of the side compartments shall also be a brushed scuff resistant stainless steel finish.

The apparatus body, including the running boards shall be supported by structural channel and angle. The rear design shall be strong enough to support the complete body.

Each compartment shall be properly vented with louvers.

All compartment doors will be equipped with sensors to indicate if the doors are open or closed and shall be wired to a drivers warning indicator light.

Each compartment shall have drain holes for the release of moisture. Each compartment shall have sweep-out flooring with no obstructions at the floor bottom.

REAR STEP COMPARTMENTATION

There shall be one compartment at the rear step, transverse to the sides x 30" high x 40" deep with clear unobstructed opening: 42.5" wide x 23.25" high with hinged door; 44" wide x 21.5" high with roll-up door.

COMPARTMENTATION LEFT SIDE

L-1 There shall be one compartment ahead of the rear wheels approximately 30" wide x 60" high x 19" deep with clear unobstructed opening: 23.25” wide x 51.5” high with roll-up door.

L-2 There shall be one compartment above the wheel well approximately 60" wide x 30" high x 19" deep with clear unobstructed opening: 53.25” wide x 21” high with roll-up door.

L-3 The first compartment behind the rear wheels approximately 25" wide x 60" high x 19" deep with clear unobstructed opening: 18.5” wide x 51.5” high with roll-up door.

L-4 The second compartment behind the rear wheels approximately 50" wide x 60" high x 19" deep with clear unobstructed opening: 43.5” wide x 51.5” high with roll-up door.

This compartment shall have a transverse opening to the rear compartment.

COMPARTMENTATION RIGHT SIDE

R-1 There shall be a compartment ahead of the rear wheels approximately 30" wide x 45" high x 24" deep with clear unobstructed opening: 23.25” wide x 36.5” high with roll-up door.

R-2 There shall be a compartment above the wheel well approximately 60" wide x 15" high x 24" deep with clear unobstructed opening: 50” wide x 10” high with hinged door. The lift-up door shall be held open by gas springs.

R-3 The first compartment behind the rear wheels approximately 25" wide x 45" high x 24" deep with clear unobstructed opening: 18.5” wide x 36.5” high with roll-up door.

R-4 The second compartment behind the rear wheels approximately 50" wide x 45" high x 24" deep with clear unobstructed opening: 43.5” wide x 36.5” high with roll-up door.

This compartment shall have a transverse opening to the rear compartment.

BODY SUBFRAME

A stainless steel sub frame/undercarriage shall be provided for both the pump module and body compartments.

COMPARTMENT INTERIOR - L1

The L1 compartment on the left side of the apparatus shall include the following features:

ADJUSTABLE SHELF

There shall be a total of two (2) adjustable shelves provided and installed in the compartment. Each shelf shall be fabricated of .188" aluminum plate.

COMPARTMENT MATTING

Vynagrip interlock matting material shall be provided in the compartment for each shelf, tray, and compartment floor.

COMPARTMENT INTERIOR - L2

The L2 compartment on the left side of the apparatus shall include the following features:

ADJUSTABLE SHELF

There shall be an adjustable shelf provided and installed in the compartment. The shelf shall be fabricated of .188" aluminum plate.

COMPARTMENT MATTING

Vynagrip interlock matting material shall be provided in the compartment for each shelf, tray, and compartment floor.

COMPARTMENT INTERIOR - L3

The L3 compartment on the left side of the apparatus shall include the following features:

ADJUSTABLE SHELF

There shall be a total of two (2) adjustable shelves provided and installed in the compartment. Each shelf shall be fabricated of .188" aluminum plate.

COMPARTMENT DIVIDER

There shall be a vertical divider/partition provided in a compartment as specified. The divider shall be constructed of .188" thick smooth aluminum plate. The top and bottom of the divider shall have a formed flange bolted to the interior of the compartment.

ADJUSTABLE VERTICAL SLIDE-OUT PANEL

There shall be an adjustable vertical slide-out tool board with a 250 lb. capacity supplied and mounted on unistrut tracks. Extra compartment lights shall be provided and located as needed to properly illuminate the compartment.

COMPARTMENT MATTING

Vynagrip interlock matting material shall be provided in the compartment for each shelf, tray, and compartment floor.

COMPARTMENT INTERIOR - L4

The L4 compartment on the left side of the apparatus shall include the following features:

ADJUSTABLE SHELF

There shall be a total of two (2) adjustable shelves provided and installed in the compartment. Each shelf shall be fabricated of .188" aluminum plate.

ADJUSTABLE ROLLOUT DRAWER

There shall be a 250 lb. capacity rollout drawer supplied and installed in a compartment. The drawer shall be approximately 3" deep and shall be mounted on adjustable tracks.

COMPARTMENT MATTING

Vynagrip interlock matting material shall be provided in the compartment for each shelf, tray, and compartment floor.

COMPARTMENT INTERIOR - R1

The R1 compartment on the right side of the apparatus shall include the following features:

ADJUSTABLE SHELF

There shall be an adjustable shelf provided and installed in the compartment. The shelf shall be fabricated of .188" aluminum plate.

ADJUSTABLE ROLLOUT DRAWER

There shall be a 250 lb. capacity rollout drawer supplied and installed in the compartment. The drawer shall be approximately 3" deep and shall be mounted on adjustable tracks.

COMPARTMENT MATTING

Vynagrip interlock matting material shall be provided in the compartment for each shelf, tray, drawer and compartment floor.

COMPARTMENT INTERIOR - R2

The R2 compartment on the right side of the apparatus shall include the following features:

COMPARTMENT MATTING

Vynagrip interlock matting material shall be provided in the compartment for each shelf, tray, and compartment floor.

COMPARTMENT INTERIOR - R3

The R3 compartment on the right side of the apparatus shall include the following features:

ADJUSTABLE SHELF

There shall be an adjustable shelf provided and installed in the compartment. The shelf shall be fabricated of .188" aluminum plate.

COMPARTMENT MATTING

Vynagrip interlock matting material shall be provided in the compartment for each shelf, tray, and compartment floor.

COMPARTMENT INTERIOR - R4

The R4 compartment on the right side of the apparatus shall include the following features:

ADJUSTABLE ROLLOUT DRAWER

There shall be a 250 lb. capacity rollout drawer supplied and installed in the compartment. The drawer shall be approximately 3" deep and shall be mounted on adjustable tracks.

COMPARTMENT MATTING

Vynagrip interlock matting material shall be provided in the compartment for each shelf, tray, drawer and compartment floor.

COMPARTMENT INTERIOR - A1

The A1 compartment on the rear of the apparatus shall include the following features:

600# SLIDE-MASTER TRAY

There shall be a Slide-Master pullout drawer provided and installed. The drawer shall have a distributed load capacity of 600 lbs. and be capable of extending 70% of its depth. The tray shall be fabricated of .188" aluminum plate and have a formed lip that measures 2".

COMPARTMENT MATTING

Vynagrip interlock matting material shall be provided in the compartment for each shelf, tray, and compartment floor.

UNISTRUT

Each compartment shall come equipped with 1.625" x .875" x .125" aluminum Unistrut channel. The Unistrut shall be securely fastened to the interior walls of the compartment.

ROLL-UP COMPARTMENT DOORS

The apparatus body shall be equipped with R.O.M Robinson Shutter doors. The door slats shall be double wall box frame, manufactured from anodized aluminum. The doors shall have the following features:

- Manufactured wholly in the United States.
- Concave individual slat design to prevent loose equipment from hindering door operation.
- Co-Extruded stretch resistant inner seal between slats to prevent metal-to-metal contact and inhibit moisture and dust penetration.
- Interlocking swaged/dimpled end shoes shall be utilized to provide a tight fitting assembly and allow for easy removal in the event of damage.
- Effective counter balancing for ease of lifting and lowering the doors.
- One-piece side rail and track to provide an unobstructed slide area and reduce the risk of binding.
- Non-abrasive replaceable water and dust barrier to keep compartment equipment clean and dry.
- A magnetic type switch integral to the door shall be supplied for door ajar indication and compartment light activation.
- A full width positive latch bar shall be operable with one hand, even with heavy gloves.

A door open indicator light shall be provided in the cab.

PAINTED ROLL-UP DOORS

The doors shall be wet painted before assembly by the door manufacturer. The paint shall be the same as the apparatus to achieve an exact match of paint color and have the look and durability same as on the rest of the truck.

ROLL UP DOOR DRIP PAN/SPLASHGUARD

Each roller shutter door shall be equipped with a drip pan with built in splashguard. The drip pan shall attach to the pennant plate with spring pins to allow for easy removal and cleaning. The construction of the pan shall be a corrosion resistant extruded and injection molded high impact styrene.

COMPARTMENT DOORS (HINGED)

All doors shall be box pan overlapping type made out of stainless steel. The outside skin shall be 12-gauge with a 14-gauge reinforced pan.

All doors shall have 1/4" pin full length stainless steel continuous hinges.

All hinged doors shall have gas cylinder type stays.

All doors shall have stainless steel 6" "D" style slam latches installed.

All doors shall have a door switch that controls the compartment light and also the warning light in the cab.

COMPARTMENT LIGHTING

Each compartment shall be equipped with two (2) LED light strips which shall provide a consistent pattern to illuminate to entire compartment.

HOSE BED

The rear hose bed shall be divided into two separate sections. Each hose bed section shall be completely wide open to allow for quick and easy loading and unloading of hose. Hose bed flooring shall be slatted extruded aluminum.
The hose bed shall be capable of holding 1,200' of 5" supply hose

HOSE BED COVER

There shall be a heavy duty, red vinyl hose bed cover shall be supplied and attached to the front, right, left and rear sides of the hose body with rope cord & buckles. There shall be alternating 6” reflective chevrons on the rear flap to meet the NFPA Standard. The reflective chevrons on the rear flap of the hose bed cover shall align with the body chevrons on the rear body.

AUXILIARY HOSE BED RIGHT SIDE

There shall be an auxiliary hose bed located on the Officer's side of the body, outside of the main hose bed and inside of the ladder rack. This hose bed shall be capable of storing 600' x 2-1/2" attack hose (dead lay). The hose bed shall have a vinyl hose cover included.

HOSE BED COVER

There shall be a red nylon/vinyl hose bed cover for the right upper body hose bed. The cover shall be capable of being securely fastened at the front, sides and rear.

SUCTION HOSE

Two (2) 10 ft. lengths of 6" lightweight (KOCHEK) fire department hard suction hose with lightweight standard lug female couplings and pin lug male couplings shall be provided.

SUCTION HOSE MOUNTING

The suction hose shall be mounted above the compartment tops on the Driver side of the body. The hose shall be accessible from the rear of the body, with the hose kept in place with a Velcro strap. The hose shall be

STRAINER

A 6” Kochek barrel strainer

BODY HANDRAILS

Handrails shall be constructed of type 304 stainless steel 1.25 inch diameter tubing with bright finish and knurled gripping surface. Mounting flanges shall be constructed from 7 gauge, .180 thick, stainless sheet. Each grab rail shall have 90 degree returns to flanges. The ends of grab rail shall pass through the flanges and be welded to form one structural unit. The handrails, shall be mounted using 1.25" SS Hex bolts, with a barrier rubber gasket at each flange. Sufficient space shall allow for a gloved hand to firmly grip the rail.

The rails shall be located in the following areas:

(Note: These are in addition to those previously mentioned in the cab section):

There shall be one (1) handrail on each side of the access steps to the ladder. These handrails are covered with ribbed rubber to prevent hand slipping when climbing the steps.

STEPS

There shall be one (1) fold-down step on each side of the front face of side compartments as required by N.F.P.A.

There shall be one (1) fold-down step at each side of the rear area.

There shall be two (2) pull-out steps, approximately 25-3/4" wide x 11-3/4" deep, provided on the right side of the apparatus for ease of accessing side stacked ground ladders. These steps shall be located one ahead of the rear axle and one behind the rear axle.

RUB RAILS

The body shall be equipped with heavy extruded aluminum rub rails at the sides. Rub rails shall be spaced away from the body by 1/2" polymer spacers. The rub rails shall be polished to a bright finish and be fitted with custom cast end caps.

ALUMINUM TREADPLATE

All load bearing running boards shall be diamond plate aluminum “grip strut” inserts. Running boards and rear step edges shall be flanged down for added strength. Running boards shall also be flanged up to form kick plates. In areas where aluminum tread plate shall function as a load-bearing surface, there shall be a heavy steel sub-structure. The aluminum shall be insulated from the steel by closed cell foam body barrier material. An air space shall be provided between the running board, the body and the operator's stand to prevent moisture from being trapped between these components.

Tread plate locations:
1. Skirting around front bumper.
2. The step at the cab entrance.
3. The jump seat steps.
4. The running boards.
5. The rear step.
6. The top of the compartments.

SCBA CYLINDER COMPARTMENTS

There shall be a total of seven (7) spare breathing air cylinder compartments recessed in the rear fender wells, three (3) left and four (4) right. The compartments shall have brushed stainless steel doors with equipped with a weather resistant flush fitting thumb latch. The interior of the door shall incorporate a rubber seal to keep the compartment free of road debris and moisture.

DUO-SAFETY LADDERS

Apparatus shall be capable of carrying minimum of 48 ft. ground ladders:

One (1) 10 ft. collapsible ladder, Series 585A (mounted in fly section)

One (1) 14 ft. roof ladder with roof hooks, Series 775A

One (1) 24 ft. 2-section extension ladder, Series 900A

ZIAMATIC QUIC-LIFT LADDER RACK

The ground ladders shall be mounted on a Ziamatic electric ladder rack system so that they may be automatically lowered to a convenient height for safe and easy removal. The rack shall be made of high strength lightweight cast aluminum and be powered by two high cycle electric actuators and shall be self-locking in any position. The rack shall be capable of lowering the ladders approximately 31" from their stored position.

SKULL SAVER

A "Skull Saver" shall be provided on the ladders.

LICENSE PLATE BRACKET

A Cast Products LP0013 cast aluminum license plate bracket with LED light shall be provided at the rear of the apparatus.

MASTER ELECTRICAL PANEL

The main breaker panel shall be wired through the master disconnect solenoid and controlled with a three-position ignition rocker switch. Circuit breakers and flashers shall be located at officer's right side lower interior firewall with removable cover and schematic provided with notebook holder on outside cover.

A deluxe breaker panel with up to 22 ground switched relays with circuit breaker protection shall be provided.

An integrated electrical sub-panel shall be provided and interfaced to the body and chassis through an engineered wire harness system.

Twelve (12) 20-ampere and one (1) 70-ampere relay for cab light bar and assemblies shall be provided. If the option for a mechanical siren has been selected two (2) additional relays shall be provided.

Additional four relay boards with circuit breaker protection for additional loads. Maximum two boards (8 relays) per breaker panel. All relay boards set up to trip with input from switch of positive-negative or load manager by moving connector on board (no tools needed to do this).

All relay boards shall be equipped with a power-on indicator light (red), input indicator light (green) and power output indicator light (red).

Up to 23 additional automatic reset circuit breakers for non-switched loads that are remotely switched (i.e.: heater fans, hood lights, etc.).

All relays and circuit breakers on the relay boards shall be pull-out/push-in replaceable.

All circuit breakers on the relay boards shall be 20 ampere automatic reset which can be doubled or tripled for 40 or 60-ampere capacity.

The system shall utilize Deutch DRC weather resistant connectors at the breaker panel, toe board and main dash connections.

All internal wire end terminals, including locking connectors, shall be mechanically affixed to the wire ends by matching terminal crimping presses to assure the highest quality terminations.

All internal splices shall be ultrasonically welded connections and all internal wiring shall be high temperature GXL type wire that is protected by wiring duct wherever possible.

All switches shall be ground controlled; no power going through any rocker switch.

Any switch controlling a relay in the breaker panel shall be capable of being set to function only when the parking brake is set. All relays shall be tagged with the function that the relay is controlling.

BODY ELECTRIC SYSTEM

All body electrical wiring in the chassis will be XLP cross link-insulated type. Wiring is to be color-coded and include function codes every three (3) inches. Wiring harnesses will be routed in protective, heat resistant loom, securely and neatly installed. Two power distribution centers will be provided in central locations for greater accessibility. The power distribution centers contain automatic thermal self-resetting breakers, power control relays, flashers, diode modules, daytime driving light module, and engine and transmission data links. All breakers and relays are utilized in circuits which amp loads are substantially lower than the respective component rating thus ensuring long component life. Power distribution centers will be composed of a system of interlocking plastic modules for ease in custom construction. The power distribution centers are function oriented. The first is to control major truck function and the second controls overhead switching and interior operations. Each module is single function coded and labeled to aid in troubleshooting. The centers also have accessory breakers and relays for future installations. All harnesses and power distribution centers will be electrically tested prior to installation to ensure the highest system reliability.

All external harness interfaces will be of a triple seal type connection to ensure a proper connection. The cab/chassis and the chassis/body connection points will be mounted in accessible locations. Complete chassis wiring schematics will be supplied with the apparatus.

The wiring harness contained on the chassis shall be designed to utilize wires of stranded copper or copper alloy of a gauge rated to carry 125% of maximum current for which the circuit is protected without exceeding 10% voltage drop across the circuit. The wiring shall be uniquely identified by color code or circuit function code, labeled at a minimum of every three (3) inches. The identification of the wiring shall be referenced on a wiring diagram. All wires conform to SAEJ1127 (Battery Cable), SAEJ1128 (Low Tension Primary Cable), SAEJ1560 (Low Tension Thin Wall Primary Cable).

All harnesses shall be covered with moisture resistant loom with a minimum rating of 300 Degrees Fahrenheit and a flammability rating of VW-1 as defined in UL62. The covering of jacketed cable has a minimum rating of 289 degree Fahrenheit.

All harnesses are securely installed in areas protected against heat, liquid contaminants and damage. The harness connections and terminations use a method that provides a positive mechanical and electrical connection and are in accordance to the device manufacturer's instructions. No connections within the harness utilize wire nut, insulation displacement, or insulation piercing.

All circuits conform to SAE1292. All circuits are provided with low voltage over current protective devices. These devices are readily accessible and protected against heat in excess of component rating, mechanical damage, and water spray. Star washers are not used for ground connections.

BACK-UP ALARM

An Ecco model SA917 automatic self-adjusting electronic back-up alarm producing 87-112 db shall be installed at the rear between the frame rails. It shall operate whenever the transmission's reverse gear is selected.

TAIL/STOP/TURN/BACKUP LIGHTS

The taillights are to be Whelen M6 LED style. The brake/tail lights to be red and exceed SAE requirements. The turn signal shall be populated in an arrow pattern, amber in color. The backup lights shall also be LED. These lights shall be mounted in Whelen chrome 4 section flange #M6FCV4.

LED ICC/MARKER LIGHTS

LED type ICC/marker lights shall be provided to meet D.O.T. requirements.

STEP LIGHTS

Step lights shall be provided, one each side on the front compartment face at pump panels. The lights shall be Truck-lite® LED model #44042C lights.

Each step at the rear of the apparatus shall have a light to illuminate each step and the tailboard.

GROUND LIGHTING

The apparatus shall be equipped with lighting capable of illumination to meet NFPA requirements. Lighting shall be provided at areas under the driver and crew riding area exits and shall be automatically activated when the exit doors are opened. The ground lights shall be Truck-lite® LED model #44042C. Lighting required in other areas such as work areas, steps and walkways shall be activated when the parking brake is applied, provided the ICC lights are on.

WORK LIGHTS

There shall be two (2) Unity brand AG 6" chrome plated sealed beam flood lights provided. The lights shall be securely mounted at the upper rear of the apparatus body. Each light shall be supplied with individual switches.

OPTICAL WARNING SYSTEM

The optical warning system shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right-of-way and the other mode shall signal that the apparatus is stopped and is blocking the right-of-way. Switching shall be provided that senses the position of the parking brake.

A master optical warning device switch shall be provided to energize all of the optical warning devices provided. All lights shall operate at not less than the minimum flash rate per minute as specified by NFPA.

UPPER LEVEL WARNING DEVICES

The upper level is divided into zones A, B, C and D and the approved lighting package to be provided shall be as follows:
Zone A (front) shall have one (1) Whelen Model FN72QLED 12 LED Freedom Series 72" Light bar equipped with four (4) red Whelen Rota-Beam located in the corners of the light bar two (2) white linear modules and six (6) red linear modules
Zone B (right side) shall be covered by the module from the light bar and the right rear stanchion beacon.
Zone C (rear) shall have two (2) red Whelen Model R316 Rota-Beam beacons LED light bars mounted on the rear stanchions.
Zone D (left side) shall be covered by the module from the light bar and the left rear stanchion beacon.

LOWER LEVEL WARNING DEVICES

The lower level is divided into zones A, B, C and D and the approved lighting package to be provided shall be as follows:

Zone A (front) shall have a stainless steel warning light housing each side with Two (2) Whelen 600 Series Rota-Beam red lights with clear lens and Two (2) Whelen M6 white warning lights mounted in the front of each housing. The inboard pair of lights is in addition to the minimum NFPA warning system and shall be wired through a load-shedding device.

Zone B (right side) shall have four (4) Whelen M6 Series Super LED red lights with clear lens mounted one on the side of the front bumper, one at the middle of the apparatus, one on the body side at rear of apparatus, and one on the side of the aerial device.

Zone C (rear) shall have two (2) Whelen M6 Series Super LED, red/amber lights mounted one each side of the lower rear of the apparatus in the chrome housing with the brake/turn/reverse lights. Two (2) Whelen M6 Series red Combination #M6V2RC lights will be mounted on each side of the upper rear body of the apparatus. The scene light function shall activate from a switch in the cab for rear scene lights.

Zone D (left side) shall have four (4) Whelen M6 Series Super LED, red lights with clear lens mounted one on the end of the front bumper, one at the middle of the apparatus, one on the body side at rear of apparatus and one on the side of the aerial device.

TRAFFIC SIGNAL CONTROL UNIT

A Whelen GTT Opticom traffic signal control unit shall be provided in the light bar.

WHELEN PIONEER PLUS LED LIGHT

A total of two (2) Whelen Model #870870B1 Pioneer 3100 Series Pole Assemblies will be mounted on the rear of the cab with Spot/Flood Pioneer light heads

WHELEN PIONEER PLUS LED BROW LIGHT

A total of two (2) Whelen model #PFS2 LED brow light shall be provided. The light shall be mounted at the front of the cab. The light shall be controlled from a switch in the cab.

SCENE LIGHTS

A pair of Whelen M9 LED scene lights shall be installed on both sides of the cab between the front and rear cab doors. The light heads shall activate when the cab doors are opened, and be controlled from a switch inside the cab.

A pair of Whelen M6 #M6ZC scene lights shall be mounted on the side of the headlight housings. These lights shall activate when the cab doors are opened, and be controlled from a switch inside the cab.

AERIAL DEVICE - MIDSHIP MOUNTED

An aerial device with a minimum 75-foot vertical reach shall be provided. The height dimension shall be calculated with the aerial at 75 degrees. The horizontal reach of the device shall not be less than 68.5 feet. The overall height of the apparatus with the aerial device in the bedded positions shall be no more than 121” and the overall length of vehicle shall be not more than 486”.

CONSTRUCTION STANDARDS

The aerial device shall be designed and tested with a safety factor of three to one (3:1) figured on the dead load of the ladder assembly with a tip load of 1,000 pounds and a live load of 750 pounds at the tip while flowing 1,000 GPM at 90 degrees to the side.

A one and one half to one (1.5:1) stability factor shall also be provided that is in compliance with the intent of the Occupational Safety and Health Administration (OSHA) and the American National Standards Institute (ANSI) and National Fire Protection Agency (NFPA) 1901. These capabilities shall be established in an unsupported configuration.

CONSTRUCTION

The aerial ladder shall be comprised of four sections and shall extend to a nominal height of 75 feet at 75 degrees, measured in a vertical plane from the top rung of the fly section to the ground.

The ladder shall have the capability to support 1,000 pounds at the tip dry and 750 pounds at the tip while flowing 1000 gallons per minute in the unsupported configuration based upon 360 degree rotation, up to full extension and from –6 degrees to 80 degrees.

The ladder shall be constructed of certified 6061-T651 heat treated aluminum alloy. Each section shall be trussed diagonally, vertically, and horizontally using aircraft type Huck bolts. All critical points shall be reinforced for extra rigidity and to provide a high strength to weight ratio. All ladder rungs shall be round and Huck bolted to each section utilizing corner gusset bracing for torsional rigidity.

Minimum Climbing Ladder Dimensions:	Width	Height
First Section	35.25"	28.5"
Second Section	31"	25.75"
Third Section	27.25"	22.5"
Fourth Section	24.25"	19.75"

Access to the climbing ladder and the mid-ship turntable area shall be accomplished through one (1) recessed step area located on left side directly below the mid-ship turntable.

AERIAL EGRESS

A bolt-on removable egress shall be installed on the tip of the fly section. The rungs on the egress shall be on a plane of 20 degrees to provide a smoother transition onto the ladder when it is at a high angle.

LADDER LIGHTING SYSTEM

The climbing ladder shall be illuminated by (6) Rigid Industries D2 12V LED lights. The lights shall be spaced along the length of the boom to provide even lighting. The lights shall be activated by one (1) switch at the pump panel.

FOLDING STEPS

One (1) set of folding steps shall be installed at the tip of the ladder to provide solid footing for personnel.

LADDER TRAVEL SUPPORT

A heavy duty ladder rest shall be provided for support of the ladder in the travel position. On the base section of the ladder, stainless steel scuff plates shall be installed where the ladder comes in contact with the ladder support. A marker shall be provided on the turntable to indicate when the ladder is aligned with the travel support and may be lowered into it. The ladder rest shall be illuminated for nighttime operation.

LIFTING CYLINDERS

Two (2) double acting lift cylinders shall be utilized to provide smooth precise elevation from 6 degrees below horizontal to 80 degrees above horizontal. The lift cylinders shall have a 4.5" internal diameter (bore), a 2.5" cylinder rod, and a 40" stroke. The lift cylinders shall be equipped with integral holding valves located on the cylinder to prevent the unit from falling should the charged lines be severed at any point within the hydraulic system.

The lowering of the ladder shall be controlled by a pressure relief valve so as to limit the downward pull of the ladder when it is bedded. Both raising and lowering functions shall be influenced by flow compensation which shall maintain ladder tip speed within approximately 10% of design speed regardless of load, angle, or extension.

EXTENSION/RETRACTION SYSTEM

A full hydraulic powered extension and retraction system shall be provided using two sets of hydraulic cylinders and cables. Each set shall be capable of operating the ladder in the event of a failure of the other. The extension cylinder shall each have a 3.5" internal diameter (bore), a 2.5" diameter rod, and a stroke of 176.5". Extension and retraction shall be internally limited within the cylinders, eliminating excess strain on the cables, sheaves, and ladder structure. Each of the cylinder, cable, and sheave assemblies shall be completely independent of the other, so as to provide a safety factor wherein a failure of one assembly will not affect the function and operation of the other. The extension cylinders shall be equipped with counter balance valves to synchronize the cylinders for smoother operation and prevent the unit from retracting should the charged lines be severed at any point within the hydraulic system.

The reeling of the cable will be such as to provide synchronized, simultaneous movement of all sections to full extension.

Ultra-high molecular weight polyethylene (UHMW) wear pads impregnated with molybdenum disulfide shall be used between the telescoping sections for maximum weight distribution, strength and smoothness of operation.

TURNTABLE

The turntable shall be a minimum 63" in diameter. It shall be covered with slip resistant aluminum diamond plate to provide secure footing. The turntable shall be lighted for nighttime operation.

The turntable shall be attached directly on top of the mainframe assembly using 24-5/8" diameter grade 8 bolts. Turntable side plates shall be positioned at a 45-degree angle, exactly opposite the angle of the lift cylinders, to act as a partial counter-balance weight to the ladder.

The turntable shall be equipped with a rotating mechanism with a steel balanced fly wheel connected at one end which shall rotate the turntable 360 degrees through a planetary gear box that shall handle torque loads imposed by water hammer and hose breakage. The rotating mechanism shall give the turntable and ladder built-in coast as an added safety precaution to avoid lateral ladder side-to-side deflection (reactionary whipping effect) caused by the ladder being stopped suddenly.

The power operated turntable shall provide continuous rotating of the aerial structure clockwise or counter clockwise, thus enabling the structure to be positioned in any segment through 360 degrees. The rotating mechanism shall also provide sufficient power to rotate the aerial sections in any direction at any angle, fully extended, while carrying the manufacturer's rated load capacity with the waterway in operation and discharging water at the tip of the aerial fly section.

The complete rotation system shall have built-in relief to prevent damage from rotating the ladder into buildings or from overloaded water streams. Suitable indicators, clearly visible at all times, shall be provided to facilitate correct alignment of the turntable with the bed of the ladder. An automatic light shall be used to show correct alignment for bedding of the ladder from the turntable control station.

TURNTABLE BEARING

The turntable bearing shall be bolted to the top of the mainframe assembly and have a gear diameter of 42".

TURNTABLE SUPPORT

The turntable support shall be mounted mid-ship of truck forward the pump panel.

The turntable support assembly shall be a welded steel box beam structure extending across the chassis frame 34" x 39" in depth. The measurements of 34" x 39" are important to take shock loads imposed by water turret operation and to give a reserve strength factor to compensate for hose breakage and water hammer. To further compensate for hose breakage and water hammer, lateral tower deflection, there shall be steel support gusset beams, one each side, welded onto the turntable side plates.

HYDRAULIC SWIVEL

The aerial device shall be equipped with a hydraulic swivel which shall connect the hydraulic lines from the hydraulic pump and reservoir to the aerial control bank. The hydraulic swivel shall allow for 360 degrees of continuous rotation of the aerial device with no loss of speed or capacity in its function.

ELECTRIC SWIVEL

The ladder shall be equipped with an electric swivel to allow for 360 degrees of continuous rotation of the aerial while connecting all electrical circuits through the rotation point. A minimum of twenty-six (26) collector rings shall be provided.

HYDRAULICS

The apparatus shall be equipped with a power take-off (PTO) driven by the chassis transmission and actuated by an electric shift, located inside the cab. The PTO which drives the hydraulic pump shall meet all the requirements for the aerial unit operations. The hydraulic system shall operate at a nominal 20 gallons per minute at pressures up to 2,700 PSI. A green indicator light shall be installed on the cab instrument panel to notify the operator that the PTO is engaged.

The hydraulic system shall be supplied by a pressure compensating, variable gallonage type pump. The pump shall provide adequate fluid volume to allow all ladder functions to operate simultaneously, without noticeable loss of speed. The pump shall supply oil only when the ladder is in motion, thereby preventing overheating of the hydraulic oil. When the hydraulic pressure reaches a preset level, the pressure compensating feature of the pump shall discontinue any flow into the system.

AUXILIARY HYDRAULIC POWER

An emergency auxiliary hydraulic motor shall be furnished to provide a backup hydraulic system, should the regular hydraulic system fail. An electric switch located inside the hydraulic compartment shall start the auxiliary hydraulic motor. The auxiliary hydraulic motor shall be installed in the left side compartment directly below the midship turntable for ease of access and maintenance.

INTERLOCK

An interlock shall be provided that prevents operation of the aerial device until the chassis spring brakes have been set and the transmission has been placed in neutral or the transmission is in the drive position with the driveline to the rear axle disengaged.

An interlock shall be provided that allows operation of the engine speed control only after the chassis spring brakes have been set and the transmission is in neutral.

An interlock system shall be provided to prevent the lifting of the aerial device from the travel position until all the stabilizers are in a configuration to meet the stability requirements. The interlock system shall also prevent the moving of the stabilizers unless the aerial device is in the travel position.

One (1) limit switch shall be installed at the cradle to prevent operation of the stabilizer once the aerial has been elevated from the nested position.

OUTRIGGER JACKS

Two (2) hydraulically operated underslung scissor-type stabilizing jacks shall be attached to the midship mounted main frame assembly, one (1) jack on each side of vehicle with a minimum spread of 16 feet. Both jacks shall be operated by two (2) midship mounted hydraulic valve handles.

The hydraulic cylinders shall be enclosed in a protective heavy duty tubular frame. A solid steel fail-safe pin shall be provided for each jack tube. Said pins shall be manually inserted through the tubes after the outrigger jacks have been positioned.

The outrigger jacks shall have a maximum spread of 16 feet from pad to pad. The control is electric over hydraulic with electric push button activation.

BOOM CONTROLS

There shall be an operator's position with four controls located at the base of the turntable next to the left side pump panel area. The controls shall be spring loaded to bring any operation of the aerial controls back to a neutral position. The four controls shall have the following functions:

1. Outrigger jack controls.
2. Raise and lower.
3. Extend and retract.
4. Rotation 360 degrees right and left.

The controls shall be equipped with a latching, hinged cover for protection. A hydraulic lockout shall be provided that shall prevent aerial operation until the outrigger jacks are set into position. Hydraulic power is transferred to aerial operation when outriggers are set. Power can be transferred back to the outriggers only after the aerial has been bedded.

There shall be a plaque located at the controls displaying functions.

A slide out step shall be provided at the controls for safety of the operator.

TETHERED BOOM CONTROLS

There shall be a Linus6 tethered operator's control unit manufactured by HBC Radiomatic to remotely operate the aerial ladder and monitor nozzle with six (6) controls connected to the truck via a 25' coiled umbilical cord. Two (2) receptacle connections shall be located midship on both the left and right sides of the truck. The controls shall be spring loaded to bring any operation of the aerial controls back to a neutral position. The controls shall have the following functions:

1. Ladder - Raise and lower.
2. Ladder - Extend and retract.
3. Ladder - Rotation 360 degrees right and left.
4. Monitor - right/left
5. Monitor up/down
6. Monitor Stream/fog

INCLINOMETER

An illuminated inclinometer shall be provided and mounted in plain view of the pedestal operator location.

CENTRALIZED CONTROLS

All outrigger jack controls, turntable controls and pump controls shall be located in one centralized area to: a) allow person(s) close proximity to all control stations of the truck, b) allow faster set up time for all operations of the truck.

AERIAL DATA PLAQUES

Load instruction plates shall be located at the turntable pedestal control station indicating the recommended safe load of the aerial. The aerial shall carry the rated load capacity indicated in the following manner: raise, extend, rotate, retract and lower without exceeding the hydraulic pressures prescribed by the manufacturer.

AERIAL TEST & CERTIFICATION

The stabilizers and aerial device shall be tested and certified by a third party independent testing agency, in accordance with NFPA 1901 and 1914. The testing shall also include all hydraulic, electrical and structural components of the aerial device and shall include a load test. Successful aerial certification is a requirement of acceptance by the Town of Fairfield.

WATERWAY

The aerial waterway shall be constructed of heavy duty, light weight, telescopic, aluminum tubing. The water supply line shall come directly off the main pump discharge manifold and shall be piped through smooth high pressure piping without the use of 90 degree chicksan joints, to reduce friction loss. The water flow shall be controlled by a full flow ball valve to eliminate any possibility of water hammer on the waterway. The water shall be passed through a special 4" passage rotating swivel designed to also provide hydraulic passages and electrical circuits to the turntable.

Waterway piping immediately above the hydraulic swivel shall have one 90 degree elbow connected to a straight pipe attached to a reinforced stainless steel braided flex tube. There shall be no chicksan swivels or multiple bends or twists of the waterway pipe immediately above the hydraulic swivel, which would increase friction loss.

The base section of the waterway shall be a 5" minimum diameter and finish with a 3 ½ " diameter in the fourth section of the aerial. The base section shall completely enclose the first section of waterway, thereby protecting it from possible damage from buildings, roof cornices, etc. An automatic relief valve shall be provided in the waterway to eliminate any damage to the waterway by pressure shock or retracting the boom with the drain valve closed.

The waterway shall have the capability of flowing a minimum of 1500 gallons per minute.

A 1.5” waterway drain valve shall be provided, and controlled from the pump operator’s panel

POSITIONABLE WATERWAY

The waterway shall have the capability of being secured to the third or fourth section of the aerial by means of a lever operated positive locking device. To further enhance the safety of personnel working near the aerial, a permanent stop shall be provided at the end of the ladder, to prevent the waterway from leaving the aerial device.

A simple locking pin system shall not be acceptable. NO EXCEPTIONS

AERIAL SPOT LIGHTS

There shall be four (4) Unity brand LED spotlights with individual on/off switches for the aerial tower; two spotlights shall be mounted at the tip of the ladder, one each side, and two (2) at the base section of the ladder, one each side to act as aerial tracking lights.

MONITOR/NOZZLE

An Elkhart #7205 Cobra lightweight monitor shall be provided. It shall be attached to the end of the aerial with a 4-bolt flange. This monitor shall be capable of full flow of the aerial waterway up to 1500 G.P.M. Positioning of the monitor shall be accomplished through electronic controls located at the aerial tip, pump panel and hand held transmitter.

This monitor shall be equipped with an Elkhart SM-1500E nozzle. The nozzle shall have automatic flow rates of 350 - 1500 G.P.M.

INTERCOM

A Fire Research ACT Intercom model ICA900-112 two-way system shall be installed between the aerial operator's position and the tip of the ladder. The intercom kit shall include two control modules, one that is hands free and one that has a push-to-talk button, two speakers, and cables. The interconnection between control modules shall require two wires. The control modules shall have an LED volume display and push-button volume control. The hands free module shall constantly transmit to the other module unless the push-to-talk button is pressed.

The intercom shall be designed for exterior use. The control module shall be no more than 2 7/8" high by 5 1/8" wide by 1 7/8". The speaker shall be no more than 5 1/8" high by 5 1/8" wide by 1 1/2" deep. The power requirements for each control module with a speaker shall not exceed 1/2 amp at 12 VDC.

CORROSION REDUCTION POLICY

The manufacturer shall have in place a formal corrosion reduction program and assembly procedures designed for reducing and eliminating the possibility of corrosion. It is understood that fire apparatus will operate in harsh environments. At the time of the bid the apparatus manufacturer shall show proof of a corrosion policy. Failure to submit this information could be grounds for rejection. If a formal policy is not in place explain in your bid how your firm will take the necessary steps for corrosion reduction. There will be no exception to this requirement.

In addition to a formal program the manufacture shall show proof of testing corrosion reduction processes to ASTMB117. A copy of recent test shall be included in the bid.

Frame Rails

The chassis frame rails shall be coated with a high performance, two component, reinforced inorganic zinc rich primer with a proven cathodic protection makeup preferably Cathacoat 302HB. The surface shall be clean and free of all salts, chalk and oils prior to application. Were the primer has been broken during the frame assembly process the area shall be touch up to reestablish the seal. Prior to finish paint a second primer Devran 201 shall be applied. Once the assembly of the frame is complete and the second primer is applied the entire assembly shall be covered with high quality top coat paint preferably Imron 5000 or equal. The manufacturer shall submit with the bid a copy of the product brochure and or description of the primer to be used.

Electro Plating

Steel and Iron brackets such as the pump module bracket shall be Zinc plated to protect against corrosion. Plating shall be in accordance with ASTM B663. The apparatus manufacturer shall list all components with plating.

Fasteners

In any area that a stainless steel screw or bolt head is to come in contact with aluminum or steel, painted or non-painted, the fastener shall have the underside if the head pre-coated with nylon. The nylon coating shall act as a barrier between the fastener head and the metal or painted surface.
Screw or bolt taped into the metal shall be pre-coated with a Threadlocker type material pre-applied on the threads.

When bolting together stainless steel the manufacturer shall use a pan-head bolt with nylon coating under the head, a stainless washer with a rubber backing, and a Stover flange nut to secure the bolt.
When mounting aluminum components such as a step to the apparatus body. The manufacturer shall use stainless washers with rubber backing. All mounted components shall a barrier material between the two surfaces.

All rivet type fasteners shall be of the same material being secured.

Whenever possible, pre-drill and tap all holes for mounting components such as lights, steps and hand rails prior to the paint process to reduce the corrosion opportunity. If a hole must be drilled into a previously painted surface, re-establish the paint barrier around the hole and use a flange-type nutsert with a gasket under the flange.

Where possible, minimize the number of stainless trim screws in aluminum. Structural tape and or adhesive shall be used were possible for mounting trim to the body or cab.
If a pre-treated screw or bolt is not available, Dynatex Boltlocker or Theadlocker shall be applied on the threads of the screw, bolt or nutsert. This will help seal threads from moisture and help prevent the fasteners from loosening.

If lubricant is used when tapping the hole, clean out the lubricant and the shavings before applying blue Threadlocker into the hole.

Barrier Tape

Barrier tape shall be used on the backsides of all lights, trim pieces, or other components when bolting them to the apparatus; also when attaching stainless steel over an aluminum surface or when attaching aluminum tread plate to the stainless steel. All instances of dis-similar metals contacting each other require the addition of barrier tape between the metals where contact is made.

Before applying the tape, be sure the metal surface is clean from oil or dirt by cleaning the surface with a 50/50 mix of alcohol and water or similar solvent.

Gaskets

Gaskets shall be used under all snaps, loops and fasteners for such items as for hose bed covers. Reestablish paint seal around the mounting hole edges after drilling.

Mounting with Threadlocker coating shall be used.

Flat washers with rubber backing shall be used behind all lights that have stainless screws.

Rollup Doors

1 3/4" X 1/16” barrier tape shall be used on the frame opening to act as barrier between the aluminum door rail and the painted door opening surface.

Use a paint stick around the holes after drilling and tapping. In mounting the rails, use screws with the nylon under the head and Threadlocker on the threads for mounting the doorframes.

Install barrier tape to the painted surface where the trim is located on top of the door opening.

Hinged Doors

Barrier tape shall be applied to the painted surface of the body and on the painted hinge side of the door.
On the hinge side, mount tape out toward the edge to space over the barrel of the hinge, being sure to not touch the door.
Make sure the hinge fits into the extrusion frame with no corner weld beads interfering with the door fit. Do not put the hinge in a bind or cause the stainless steel hinge to touch the aluminum. Install the doors using a truss head bolt with the nylon coating under the head and Threadlocker on the threads.

Painting Steel

The manufacturer shall wipe any oil residue dry, remove any rust and remove weld slag or smoke. Clean the surface with solvent before painting. Prime with one even coat of black Color primer, and then spray a topcoat over the primer for the finish coat. After bolts are tightened to the proper torque, touch up the bolt area and ends of the bolts with primer or cold galvanizing coating.

Mounting Emergency Lights and Options

All emergency lights, accessory mountings, Kussmaul covers, and 110 outlet boxes mounted to the body should be mounted with pre-coated Threadlocker and nylon under the head screws or bolts to minimize corrosion between dissimilar metals.

Electrical Grounding

Grounding straps shall be installed consisting of a minimum 2-gauge strap bolted to the chassis frame.

- A ground cable from the cab to the right side frame rail
- From the alternator to the right side frame rail
- From the pump module frame to the right side truck frame.
- Aerials: from the hydraulic and pump module framework.
- From the pump mount to the truck frame rail.
- From the body module to the right side truck frame.

Proper grounding will help eliminate ground loop problems throughout the truck, reducing the possibility for electrolysis and corrosion to occur. Provide clean connection points on all ground connections, (remove paint where applicable), and spray or brush on electrical sealer as necessary.

When installing foam system pump wiring the power must come from a dedicated breaker to a power solenoid, and then to the power terminal provided by FoamLogix or FoamPro. Pay particular attention to the grounding detail for wire size and good grounding practice, including removing the paint at the point of ground attachment to the chassis. Keep the length of ground wire as short as practically possible.

SALT SPRAY TESTING

Salt spray test shall be used to confirm the relative resistance to corrosion of coated and uncoated metallic specimens, when exposed to a salt spray climate at an elevated temperature. Test specimens shall be placed in an enclosed chamber and exposed to a continuous indirect spray of neutral (pH 6.5 to 7.2) salt water solution, which falls-out on to the specimens at a rate of 1.0 to 2.0 ml/80cm²/hour, in a chamber temperature of +35C. This climate shall be maintained under constant steady state conditions.

Method

Salt fog testing shall be performed by placing samples in a test cabinet that has been designed in accordance with Paragraph 4 (Apparatus) of ASTM B117 and operated in accordance with Paragraph 10 (Conditions) of ASTM B117.

A 5% salt solution, prepared by dissolving sodium chloride into water that meets the requirements of ASTM D1193 Specification for Reagent Water, Type IV is supplied to the chamber. At the time the samples are placed into test, the cabinet should be pre-conditioned to the operating temperature of 35ºC and fogging a 5% salt solution at the specified rate. The fog collection rate is determined by placing a minimum of two 80 sq. cm. funnels inserted into measuring cylinders graduated in ml. inside the chamber. One collection device shall be located nearest the nozzle and one in the farthest corner.

Orientation

Unless otherwise agreed upon, the samples are placed at a 15-30 degree angle from vertical or tested in the "installed" position. This orientation allows the condensation to run down the specimens and minimizes condensation pooling. Overcrowding of samples within the cabinet should be avoided. An important aspect of the test is the utilization of a free-falling mist, which uniformly settles on the test samples. Samples should be placed in the chamber so that condensation does not drip from one to another.

Test durations

Test durations shall be 500 hours except for sample rotation and daily monitoring of collection rates, the cabinet should remain closed for the duration of the test.

PAINTING

All exposed metal surfaces not chrome plated, polished stainless steel or bright aluminum tread plate shall be thoroughly cleaned and prepared for painting. All irregularities in painted surfaces shall be rubbed down and all seams shall be caulked before the application of the finish coat.
All removable items such as brackets, compartment doors, door hinges, trim, etc. shall be removed and painted separately to insure finish paint behind all mounted items. Body assemblies that cannot be finish painted after assembly shall be finish painted before assembly. Both aluminum and steel surfaces to be painted shall be primed with a two (2)-component primer which is compatible with the finish coat. The apparatus shall be finish painted with a polyurethane base/clear system. "No Exception"

Utilizing the stainless steel body fabrication, the interior of all compartments, inside hose bed, and surrounding areas adjacent to compartments doors shall remain a #4 brushed stainless steel finish. This practice shall eliminate the possibility of paint chipping, and electrolysis of aluminum which can cause corrosive action between dissimilar metals. Chassis and compartment doors shall be painted the color indicated.
Prior to reassembly and reinstallation of lights, handrails, door hardware and any miscellaneous items, an isolation tape or gasket material shall be used to prevent damage to the finish painted surfaces. A nylon washer shall be installed under each acorn nut or metal screw that is fastened directly to a painted surface.
The following paint process shall be utilized:

Surface Preparation:

1. Wash surface thoroughly with mild detergent.
2. Clean and de-grease with Prep-Sol 3812S.
3. Sand and feather edge using 400 grit or finer on a dual action sander.
4. Remove sanding dust with a cleaner compatible with polyurethane base coat/clear coat final finish.

Substrate treatment:
1. Use a Metal Conditioner followed with a Conversion Coating product.

Priming:
1. Use a priming 615S pretreatment.
2. Use a self-etching primer applied to achieve a 1.5 mil dft minimum.
3. Use Prime N Seal sealer compatible with polyurethane base coat.

Color Coat:
1. Apply polyurethane base coat 1-2 mil dft minimum.

Clear coat:
1. Apply polyurethane clear coat 2 mil dft minimum.

PAINT-TWO TONE CAB

The cab exterior surfaces shall be two (2) colors. The paint break line shall be at the bottom of the windshield.

PAINTED FRAME AND LOWER AERIAL COMPONENTS

The frame rails, rear drop, fuel beam, outriggers, sway bars, base and lower jacks shall be painted job color red.

TURNTABLE PAINT

The turntable, side plates and lift cylinders shall be painted silver.

LETTERING

The equivalent of a total of Ninety (90) 3" 22KT Gold laminate gold-leaf letters, with left hand shading and right hand outline to equal 3-5/8" letter, shall be provided.

STRIPING

A 4" Scotchlite stripe shall be provided across the front of the cab and along each side of the apparatus.

“Z” STRIPE

The Scotchlite stripe shall be a one-piece "Z" type on the cab sides and continuing straight along each side of the apparatus.

An additional two (2) 1" Scotchlite stripes shall be provided, one (1) above and one (1) below the 4" stripe.

CHEVRON STRIPING, REAR BODY OUTBOARD, ORAFOL REFLEXITE

The apparatus shall have 6” red and yellow reflective Orafol Reflexite Chevron style striping affixed to the outboard rear body panels. The striping will be set in a manner to have the effect of an inverted “V” shape. The stripe will travel low to high from the outside to the inside.

BOOM SIGN

A boom sign, approximately 66" x 10", shall be provided on each side of the boom. The background of the boom sign shall be painted white.

BOOM SIGN LETTERING

The word “FAIRFIELD” shall be applied using 6" 22KT Gold laminated gold-leaf letters, with left hand shading and right hand outline to equal 6-5/8" letter, shall be provided on each boom sign.

MISCELLANEOUS EQUIPMENT FURNISHED

One (1) pint of touch-up paint.

Assorted stainless steel nuts and bolts, as used in the construction of the apparatus.

WHEEL CHOCKS

Two (2) Ziamatic #SAC-44 folding wheel chocks with SQCH-44H holders shall be provided. The wheel chocks shall be located in an area close to the rear axles easily accessible from the side of the apparatus.

PIKE POLE STORAGE

Three (3) storage tubes shall be recessed in the upper right corner of the driver's side body for pike pole storage. A spring-loaded clip shall be installed near each tube to secure the head of a standard pike pole.

OPERATION AND SERVICE MANUALS

Complete "Operation and Service" manuals shall be supplied with the completed apparatus, one (1) printed copy and one (1) CD. Service manual instructions shall include service, maintenance and troubleshooting for major and minor components of the truck. The apparatus manufacturer shall supply part numbers for major components (i.e. Engine, Axles, Transmission, Pump, etc.). A table of contents, hydraulic, air brake and overall apparatus wiring schematics shall be included.

A video demonstration DVD on the operation of the truck shall be supplied with the manuals.

DELIVERY

The custom built fire apparatus shall be driven from the manufacturing facility to the Town of Fairfield, CT by a factory trained delivery engineer who shall thoroughly demonstrate the complete apparatus operation and maintenance to the fire department designated personnel.

MANUFACTURING & LOCATIONS

The apparatus shall be manufactured in facilities inside the continental United States, approved by Owner, prior to award of contract. A complete stock of service parts must be maintained, including technical customer service during regular business hours. The company shall maintain parts and service for a minimum period of twenty (20) years on each apparatus model manufactured.

EQUIPMENT & MOUNTING (*PRICED SEPARATELY***)**

The following items shall be priced individually and separately in the proposal from the apparatus bid proposal.

DAVID CLARK WIRELESS INTERCOM SYSTEM

A David Clark 3800 series vehicle intercom system with radio interface modules for both the primary and mutual aid radios shall be supplied and installed in the 4 seating positions. The system shall include the model H 3442 headsets, control modules and all necessary hardware.

SPANNER WRENCHES AND MOUNTS

Two (2) Kocheck large diameter spanner wrench sets of four (4) and mounting bracket shall be supplied and installed at the rear of the apparatus body and right side pump panel area.

A set of two (2) Kocheck small hand line spanner wrenches and one (1) hydrant wrench in mounting bracket shall be supplied and installed in the L-1 compartment.

IRONS AND MOUNT

A Fire Hooks Unlimited 8 lb. force axe mated with Pro-Bar Halligan bar shall be supplied and installed in the jump seat area.

TFT FOAM ATTACHMENTS

One (1) TFT FJ-MX-HM
One (1) TFT FJ-LX-HM
One (1) TFT FJ-LX-M
One (1) TFT FJ-H

TFT AUTOMATIC NOZZLES

One (1) TFT H-V Handlin nozzle 95-300 gpm, 100 psi, 1.5 NST inlet swivel
One (1) TFT HMD-TO Mid-Force nozzle 70-200 gpm, dual pressure 55-100
Two (2) TFT HML-TO Mid Matic 70-200 gpm, 75 psi
Two (2) TFT H-VIT pistol grip shut off with integral tips
Two (2) TFT HM-VPGI Mid Matic 100 psi pistol grip

TFT TWISTER NOZZLES

Two (2) TFT D1024 Twister 1” nst nozzles

ELKHART NOZZLES AND TIPS

Three (3) Elkhart B-278 2.5nst X 1.5nst playpipes
Three (3) Elkhart 187A 1 ¼” Tips
One (1) Elkhart 187A 15/16” Tip
One (1) Elkhart B-275GA 1.5nst X1.5nst pistol grip shut off
Four (4) Elkhart 281A 1.5”nst stream straightener

AKRON PIERCING NOZZLE

One (1) Akron 1088 3 ft. piercing nozzle

SUPPLY HOSE

The following lengths of 5” Firequip LDH yellow supply hose with Kocheck locking storz couplings, stenciled Fairfield Fire Department

Fifteen (15) 100 ft. lengths (FIQ5X100LDHY)
One (1) 50 ft. length (FIQX50LDHY)
One (1) 25 ft. length (FIQ5X25LDHY)

BOOSTER HOSE

The following lengths of 1" Firequip SDH yellow collapsible booster hose with 1" Action couplings stenciled Fairfield Fire Department

Three (3) 100 ft. lengths (FIQ1X100SDHY)
Two (2) 50 ft. lengths (FIQ1X50SDHY)
One (1) 25 ft. length (FIQ1X25SDHY)

FIRE ATTACK HOSE

The following lengths and sizes of Firequip Commander Supreme attack hose, stenciled Fairfield Fire Department, with Action couplings:

(17) 50 ft. lengths of white 2.5" with 2.5" nst couplings (FIQCS25WB)
(12) 50 ft. lengths of white 1.75" with 1.5" nst couplings (FIQCS17WB)
(4) 50 ft. lengths of blue 1.75" with 1.5" nst couplings (FIQCS17BB)
(8) 50 ft. lengths of yellow 1.75" with 1.5 nst couplings (FIQCS17YB)

FIRE HOSE

The following lengths of Firequip Combat Master orange hose stenciled Fairfield Fire Department, with Action couplings:

One (1) 100 ft. length of 1.75" with 1.5" nst couplings (FIQCM17OD)
One (1) 50 ft. length of 1.75" with 1.5" nst couplings (FIQCM17OB)

EQUIPMENT MOUNTING

The following list of Fairfield equipment shall have a mount supplied and installed by the bidder:

Use Ziamatic rubber mounts with stud for the following:

One (1) Storz adapter 5" X 4"
One (1) gated "Y" 2 ½ X 1 ½
Two (2) double male 2 ½
Two (2) double female 2 ½
Three (3) 2 ½ threaded adapter
One (1) 2 ½" male to 1 ½" female swivel
One (1) 1 ½" X 1" booster

Use Chrome Tri Locks for the following:

Two (2) 2 ½" Smoothbore play pipe
One (1) 1 ½" TFT Handline nozzle
One (1) 2 ½" TFT Master Stream nozzle

Use Velcro Strap for the following:

One (1) Akron portable deck gun base
One (1) Angus gated appliance 5" X (3) 2 ½" with relief valve

Use Locking Storz Mount for the following:

One (1) 5" Storz hydrant elbow

Use a Ziamatic Spring Clip SCBA mount with strap:

One (1) Scott 4.5 air pack w/ 30 minute bottle (mount on left rear interior cab wall for driver)