

WATERTOWN FIRE DEPARTMENT

CORRECTED 3/7/22

TOWN OF WATERTOWN

WATERTOWN, CONNECTICUT

NOTICE OF BID

Watertown Fire Department

Fire Apparatus – Custom Fire Pumper and Equipment

Sealed bids are invited and will be received by the Purchasing Agent of the Town of Watertown at the office of the Purchasing Agent, Town Hall, 61 Echo Lake Road, Watertown, Connecticut, until **11:00 a.m. Tuesday, March 22, 2022**, at which time and place they will be publicly opened and read aloud for furnishing one new ~~current model aerial ladder truck~~ Custom Fire Pumper and Equipment to the Town of Watertown.

The Information for Bidders, Form of Bid, Specifications, Form of Bid Bond, Performance and Payment Bonds, and other contract documents may be obtained or examined at the office of the Purchasing Agent, Town Hall Annex, 424 Main Street, Watertown, Connecticut 06795 or by accessing the Town of Watertown's website at <http://www.watertownct.org>. Proposals must be submitted on the forms provided and in a sealed envelope plainly marked "**Bid – Watertown Fire Department Fire Apparatus**".

To receive consideration bids must be in the hands of the Purchasing Agent or his authorized representative no later than the day and hour mentioned above.

The Purchasing Agent reserves the right to accept or reject any or all bids; to waive any informality; or to accept any bid deemed in the best interests of the Town of Watertown.

The Town of Watertown reserves the right to take into account the residency of bidders within the Town of Watertown and/or the location of the bidder's business within the Town of Watertown in awarding this bid.

All bids will be considered valid for a period of sixty (60) days.

Donna L. Ford
Purchasing Agent
Town of Watertown

WATERTOWN FIRE DEPARTMENT

WATERTOWN, CONNECTICUT 06795

Watertown Fire Department

Fire Apparatus – Custom Fire Pumper and Equipment

BID OPENING: 11:00 a.m. Tuesday, March 22, 2022

PROPOSALS RECEIVED

All bids must be in a sealed envelope and received prior to **11:00 a.m. Tuesday, March 22, 2022**, at the office of the Purchasing Agent, 61 Echo Lake Road, Watertown, Connecticut 06795.

PREPARATION OF PROPOSALS

Proposals must be made upon forms contained herein. The blank spaces in the Proposal must be filled in correctly where indicated. The Bidder must state the prices for which he proposes to do each item of the work contemplated. In case of discrepancy where both words and the numerals are requested, the words shall govern. Ditto marks are not considered writing or printing and shall not be used. The Bidder shall sign his Proposal correctly. If the Proposal is made by an individual, his name, post office address and telephone number must be shown. If made by a firm, partnership, or corporation, the Proposal must be signed by an official of the firm, partnership, or corporation authorized to sign contracts, and must show the post office address and telephone number of the firm, partnership, or corporation. Failure to do so may disqualify the bid.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the Bidder, post office address, and name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to: The Purchasing Agent, Town Hall Annex, 424 Main Street, Watertown, CT 06795.

All information shall be entered in ink or by typewriter. Mistakes may be crossed out and corrections inserted before submission of your bid. The person signing the bid shall initial corrections in ink.

Corrections and/or modifications received after the closing time specified will not be accepted.

SUBMISSION OF PROPOSALS

All proposals and literature shall be submitted **IN DUPLICATE** on the proposal form, which is a part of these specifications.

Descriptive literature containing complete specifications must accompany each bid. If a bidder wishes to furnish additional information, more sheets may be added.

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Adobe Acrobat® Reader is required to view electronic documents on-line. If you do not have Adobe Acrobat® Reader, you may download it for free from Adobe at <http://www.adobe.com/products/acrobat/readstep.html>.

Response summaries will be available online at <http://www.watertownct.org> on the day of the bid opening.

Responses delivered via fax are received subject to the following qualifications and limitations:

- The Town is not responsible for the confidentiality of the information transmitted.
- The Town cannot guarantee that its fax equipment will be operational and able to receive transmittals by a particular time and date. It is the Bidder's responsibility to ensure that quotations are received in their entirety and on time at the required location. It is recommended that vendors be advised to call immediately after transmitting a document electronically to confirm complete and accurate receipt by the Town. The Town assumes no liability in the event that a bidder's electronic transmission is not received by the Town in a timely fashion, or is not received either in its entirety or error-free.
- Bids transmitted electronically which have a bond requirement are subject to the same submittal requirements as those responses delivered via traditional means, such as mail or hand delivery, or as otherwise stipulated by appropriate authority.

INCURRING COSTS

The Town of Watertown is not liable for any cost incurred for the preparation of proposals or submission of samples by the firms submitting proposals for the work requested in this bid document or request for proposals.

FAMILIARITY WITH THE WORK

Each bidder is considered to have examined the work to fully acquaint himself with the exact existing conditions relating to the work and has fully informed himself as to the work involved and the difficulties and restrictions attending the performance of this bid. Failure to do so will not relieve a bidder of his obligation to furnish the apparatus as described herein for the consideration set forth in this bid. The submission of a bid will be considered as conclusive evidence that the bidder has made such examination.

CONSIDERATION OF PRIOR SERVICE

Previous performance, quality of service and merchandise will be considered.

ADDENDA AND INTERPRETATIONS & ALTERNATE PROPOSALS

Addenda information will be available online at <http://www.watertownct.org>. Adobe Acrobat® Reader may be required to view this document. We strongly suggest that you check for any addenda a minimum of forty eight hours in advance of the bid deadline.

At the time of the opening of bids each bidder will be presumed to have inspected the work and to have read and to be thoroughly familiar with all of the Contract Documents (including all addenda).

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The failure or omission of any bidder to receive or examine any form, instruction or document shall in no way relieve any bidder from any obligation in respect to his bid.

If any person contemplating submitting a proposal is in doubt as to the true meaning of any part of these specifications, he may submit a written request for an interpretation to the Purchasing Agent. No interpretations as to the meaning of the plans, specifications or other Contract Documents will be made to any bidder orally.

Every request for such interpretation should be in writing addressed (duplicate copy) to the Town of Watertown, Purchasing Agent, 61 Echo Lake Road, Watertown, Connecticut 06795, and to be given consideration, must be received at least five (5) days prior to the date fixed for the opening of Bids. Any and all such interpretations and any supplementary instructions will be in the form of written Addenda to the Specifications which, if issued, will be mailed by Registered Mail with Return Receipt Requested to all prospective bidders at the respective addresses furnished for such purposes, not later than three (3) days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such Addendum or interpretations shall not relieve any bidder from any obligations under his bid as submitted. All Addenda so issued shall become part of the Contract Documents. Oral explanations will not be binding on the Town.

The specifications listed are to be interpreted as meaning the minimum acceptable by the Town of Watertown. Bidders are requested to submit quotations on the basis of these specifications. Alternative bids providing a broader scope and/or services than requested in these specifications may receive consideration providing such equipment and/or service is clearly explained. Any exceptions to the specifications requested herein must be clearly noted in writing and are to be included as a part of your bid proposal. If none are included it will be assumed that there are none.

Definition of the word "complete" means that each unit of the equipment proposed shall include all appurtenances, fasteners, parts, accessories, and services ordinarily catalogued.

An item equal to that named or described in the specifications may be furnished by the Bidder, except where expressly noted as "no substitutions." The naming of any commercial name, trademark, or other identification shall not be construed to exclude any item of any manufacturer not mentioned by name, nor limit competition, but shall establish a standard of equality only. An item shall be considered equal to the item so named or described if:

- It is at least equal in quality, durability, appearance, strength and design.
- It will perform at least equally the function imposed by the design for the work being contracted for or the material being purchased.
- It conforms substantially, even with deviations, to the detailed requirements for the item in the specifications.

The Bidder shall hold the Town of Watertown, its officers, agents, servants, and employees, harmless from liability of any nature or kind because of use of any copyrighted or uncopyrighted compositions, secret process, patented or unpatented inventions, articles or appliances furnished or used under this bid, and agrees to defend, at his own expense, any and all actions brought against the Town of Watertown or himself because of the unauthorized use of such articles.

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QUOTATION LIMITATION

Bidders shall offer only **ONE ITEM AND PRICE** for each line item bid. If an or equal item is to be bid, the bidder is to select the brand and model that meets or exceeds the specified item, and submit his bid for that item.

SAMPLES

Samples of articles, when required shall be furnished free of cost of any sort to the Town of Watertown. Samples received may be retained by the Town for future comparison. Samples which are not destroyed by testing, or which are not retained for future comparison will be returned upon request at the bidder's expense.

WITHDRAWAL OF BID

Bidders may withdraw their proposals at any time prior to the bid date. No agent/broker shall withdraw or cancel their proposal for a period of sixty (60) days after the bid closing date of **11:00 a.m. Tuesday, March 22, 2022**. The successful agent/broker shall not withdraw, cancel or modify their proposal.

BID SECURITY

Each bid must be accompanied by bid bond equal to five percent (5%) of the total bid for the first year of the proposal. Bid securities will be returned to all but the lowest three apparent low bidders at the time of the bid opening. The remaining bid securities will be returned upon signing of the contract. Bonds must be made to the order of the Town of Watertown in the form and with a surety company acceptable to the State Banking and Insurance Commissioner.

Securities may be held by the Town of Watertown for a period not to exceed 60 days from the date of the opening of the bids.

The successful bidder, upon his/her failure or refusal to sign the contract, shall forfeit to the Town as liquidated damages for such failure or refusal, an amount equal to the security deposited with his/her bid.

Bid security will be returned to all bidders except the successful bidder within five (5) calendar days after the bid award date. The date of the issuance of a Town of Watertown purchase order shall be considered the award. The bid security of the successful bidder will be returned upon receipt of the required performance bond, letter of irrevocable credit, other insurance, and any other items required by these bid specifications prior to commencing work or deliveries. If no award is made within sixty (60) days after the date of the bid opening, bid security will be returned to all bidders upon demand.

PERFORMANCE BONDS / PAYMENT BONDS

A performance bond is required and shall be in the amount of 100% of the bid award, in the name of the "Town of Watertown", in the form and with a surety company approved by the State Commissioner of banking and insurance, and issued within ten (10) calendar days of the bid award date. Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of Connecticut. This financial instrument shall be for the faithful performance of the contract, and shall be used at the sole discretion

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of the Town of Watertown to pay liquidated Damages for failure or refusal to perform in accordance with the contract. No withdrawals shall be made until after five (5) calendar days notice of noncompliance with the contract is sent by certified U.S. Mail. This in no way limits further actions the Town of Watertown may take.

POWER OF ATTORNEY

Attorneys-in-fact who sign contract bonds must file, with each bond, a certified and effectively dated copy of their power of attorney.

EXECUTION OF CONTRACT

The party to whom the Contract is awarded, or his authorized representative, will be required to attend at the office of the Purchasing Agent of the Town of Watertown, with the sureties offered by him or them, and a current certificate of Corporate good standing issued by the Office of the Secretary of State, in which the corporation is incorporated, and execute the Contract within five (5) days from the date of the award. If the party entering into this contract is a corporation, a Corporate Resolution duly executed by the President and Secretary of the Corporation authorizing the Corporation to enter into this Contract shall be provided. In case of his failure or neglect so to do, the Town may, at its option, determine that the Bidder has abandoned the Contract, and thereupon the Proposal and acceptance shall be null and void, and bid security accompanying the Proposal shall be forfeited as liquidated damages to the Town. If the party entering into this contract is a partnership, a partnership resolution duly executed by a majority of the general partners authorizing the partnership to enter into this contract shall be provided.

SUBCONTRACTORS

Each bidder contemplating the use of any subcontractor shall submit a list of subcontractors as listed on the Bid Form.

The apparent low bidder shall file with the Town of Watertown, within five (5) days after the date of bid opening, a complete list of the names and addresses of competent, responsible and qualified subcontractors who are actually to perform major portions of the work. This in no way restricts or limits the requirement that all subcontractors must be approved by the Town.

Subcontractors listed on the Bid Form or those previously approved may not be changed without the approval of the Town of Watertown. Local subcontractors, material suppliers, and labor in the Town of Watertown should be considered and sought insofar, as is practical in the performance of this project.

QUALIFICATION OF BIDDER

In determining the qualifications of a bidder, the Town may consider his record in the performance of any contracts for similar work into which he may have previously entered; and the Town expressly reserves the right to reject the bid of such bidder if such record discloses that such bidder, in the opinion of the Town, has not properly performed such contracts or has habitually, and without just

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cause, neglected the payment of bills or has otherwise disregarded his obligations to subcontractors, suppliers, state or local codes, men or employees of subcontractors.

The Town may make such investigation as he deems necessary to determine the ability of the bidder to perform the work and the bidder shall furnish to the Town all such information and data for this purpose as the Town may request. The Town reserves the right to reject any bid if the evidence submitted by or the investigation of such bidder fails to satisfy the Town that such bidder is properly qualified, or that such bidder misrepresented material facts in the bid documents.

DISQUALIFICATION OF BIDDERS

More than one proposal from an individual, firm, partnership, corporation, or an association under the same or different names will not be considered. Reasonable grounds for believing that any Bidder is interested in more than one proposal for the work contemplated will cause the rejection of all proposals in which such Bidder is interested. Any or all proposals in which such Bidder is interested will be rejected if there is reason for believing that collusion exists among the Bidders and all participants in such collusion will not be considered in future proposals for the same work. Proposals in which the prices are obviously unbalanced may be rejected. No Contract will be awarded except to competent Bidders capable of performing the class of work contemplated.

SERVICE CENTER REQUIREMENTS

To insure the Town of a source for service and parts over the anticipated 30 year life of the apparatus, the apparatus manufacturer shall maintain a factory service, fabrication/manufacturing, painting and testing facility within an acceptable distance from the Town of Watertown and shall indicate in his bid the name and location of the factory service facility which complies with the above stated requirement.

DELIVERY

Inasmuch as this work concerns a needed public improvement, the provisions of this bid relating to the time of delivery, performance and completion of the work are of the essence of this bid. Accordingly, the successful bidder shall commence work **upon receipt of the signed Purchase Order** unless the Town shall authorize or direct a further delay, and shall proceed with the work diligently so as to permit completion no later than **360 calendar days after receipt of the Town's Purchase Order**.

Time of delivery shall be stated as the number of calendar days following receipt of the Purchase Order by the Bidder to receipt of the goods or services by the Town of Watertown.

Prices quoted must include delivery to the Town of Watertown as specified on the Purchase Order. No charges will be allowed for parking, crating, freight, express or cartage unless specifically stated and included in this bid.

Time of delivery may be considered in the award.

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PAYMENT

The successful bidder shall execute three (3) copies of the contract agreements. The Town of Watertown encourages Bidders to propose payment options including but not limited to progress payments, prepayments or any payment option that would provide financial benefits to the Town.

The Town, after inspection and acceptance of workmanship, and in consideration of the faithful performance by the Bidder of all and singular his covenants, promises, and agreements contained herein, agrees to pay the Bidder for the full completion by him of the work embraced in this Contract, upon written acceptance by the Watertown Fire Department, within (10) Ten Days of the receipt of the final invoice. When subcontractors or suppliers are utilized, the successful contractor for this project shall be required to submit a Mechanics Lien Waiver, acceptable to the Town, with each progress payment, and/or at time of final payment, prior to any payment made.

Time, in connection with any discount offered, will be computed from the date of delivery to the Town or from the date a correct invoice is received by the Town's Finance Department, if the latter date is later than the date of delivery.

Prices will be considered as **NET**, if no cash or payment discount is shown.

The successful bidder shall submit invoices to the following address:

Town of Watertown
Watertown Fire Department
935 Main Street
Watertown CT 06795

IT IS UNDERSTOOD AND AGREED THAT SHOULD A BID BE ACCEPTED, IT WILL AUTOMATICALLY BECOME THE CONTRACT OR AN ADDENDUM TO ANY CONTRACT AGREED UPON.

Notification of the bid award will be made by issuance of a purchase order. Bidders are to list their bids on the appropriate attached sheets. Bidders may attach a letter of explanation. A clear notification should be made on the standard bid sheets at the appropriate point of explanation that there is a letter of explanation attached. All bids must be NET prices.

The successful bidder shall submit an itemized invoice to the Town of Watertown for the work as described herein.

The bidder shall be required to submit a Mechanics Lien Waiver, acceptable to the Town of Watertown, with each progress payment and at time of final payment prior to any payment being made.

At the time of award the successful bidder shall be required to supply the Town of Watertown a Certificate of Good Standing, certifying that the corporation is in fact a valid corporation and presently licensed to conduct business in the State of Connecticut.

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SALES TAX

Certain materials and supplies incorporated in the work of this project are exempt from Connecticut Sales Tax. The Bidder shall familiarize himself with current regulations of the State Tax Department. The tax on materials or supplies exempted by such regulations shall not be included as part of the bid. The Town will furnish the successful Bidder sales tax exemption authorization.

COMPLIANCE WITH FEDERAL, STATE AND LOCAL CODES

The Bidder shall be responsible for full compliance with any Federal, State and/or Local codes, laws, regulations and standards, as applicable-

AWARD

The Town of Watertown reserves the right to accept or reject any bid to best serve its interests, or to hold the bids for sixty (60) days before decision.

When analyzing the bid proposals, and in recommending a successful bidder, superior design, workmanship, materials, operating costs, location of factory, past experience, length of incorporation, compliance with specifications, price and completion time will be taken into consideration.

The Town reserves the right to reject any and all bids (or any part thereof), to waive defects in proposals, or to accept any proposal deemed to be in its best interest.

Exceptions will be considered to the specification provided, providing they are listed and fully explained on a separate page entitled "EXCEPTIONS TO SPECIFICATIONS"

Each exception will be considered as to its degree of impact and total effect on the bid. The purchaser shall determine which (if any taken) exceptions are acceptable, and this determination shall be final.

The Town of Watertown reserves the right:

- To award bids received on the basis of individual items, or groups of items, or on the entire list of items.
- To reject any or all bids, or any part thereof.
- To waive any informality in the bids. The Town of Watertown reserves the right to take into account the residency of bidders within the Town of Watertown and/or the location of the bidders business within the Town of Watertown in awarding this bid.
- To accept the bid that is in the best interest of the Town of Watertown. The Purchasing Agent's decision shall be final

INSURANCE

A. General:

The Bidder shall be responsible for maintaining insurance coverage in force for the life of the contract of the kinds and adequate amounts to secure all of the Bidder's obligations under the contract with an insurance company with an AM Best Rating of A - VII or better licensed to write such insurance in Connecticut and acceptable to the Town of Watertown.

The insurer shall provide the Town of Watertown with Certificates of Insurance signed by an authorized representative of the insurance company(ies) prior to the performance of this contract

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describing the coverage and providing that the insurer shall give the Town of Watertown written notice at least thirty (30) days in advance of any termination, expiration, or any and all change in coverage.

Such insurance or renewals or replacements thereof shall remain in force during the Bidder's responsibility under this agreement.

The Bidder at his own cost and expense shall procure and maintain all insurance required and shall name the Town of Watertown as an additional insured on all contracts except Worker's Compensation and Professional Errors & Omissions coverage.

In order to facilitate this requirement for insurance, it is recommended that the bidder forward a copy of this exhibit to the bidder's insurance representative(s).

B. Specific Requirements:

(1) Workers' Compensation Insurance

The Bidder shall provide Workers' Compensation Insurance required by law and the Employer's Liability Insurance for at least the amounts of liability for Bodily Injury by accident of \$100,000 each accident; Bodily Injury by Disease each employee of \$100,000; Bodily Injury by Disease, policy limit of \$500,000.

(2) Commercial General Liability Insurance

The Bidder shall carry Commercial General Liability policy (Insurance Services Office Incorporated Form CG-0001 or equivalent). A per occurrence limit of \$1,000,000 is required. The Aggregate Limit will be not less than \$1,000,000.

(3) Business Automobile Liability Insurance

The Bidder shall carry Business Automobile Liability Insurance. (Insurance Services Office Incorporated Form CA-00001 or equivalent). A per occurrence limit of \$1,000,000 is required. "Any Auto" (symbol 1 or equivalent) is required.

C. Hold Harmless & Subcontractor's Requirements:

The Bidder shall require the same insurance that it is required to carry by the Town of Watertown to be carried by any subcontractors and independent contractors hired by the Bidder and to obtain Certificates of Insurance before subcontractors and independent contractors are permitted to begin work.

The Bidder shall require that the Town of Watertown be named as Additional Insured on all subcontractor's and independent contractor's policies before they are permitted to begin work.

The Bidder and all subcontractors and independent contractors and their insurers shall waive all rights of subrogation against the Town of Watertown, and its officers, agents, servants and employees for losses arising from the work performed by each on this contract.

The Bidder assumes and agrees to hold harmless, indemnify, protect and defend the Town of Watertown against any and all liability for injuries and damages to Bidder and to Bidder's employees, agents, subcontractors and guests, third parties or otherwise incident to or resulting from any and all operations performed by a contractor under any terms of this contract.

D. Other Data:

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- NOTE 1: If Bidder is only a vender shipping goods via Common Carrier only, General Liability is required.
- NOTE 2: If Bidder is a Professional, Errors & Omission coverage will be required.
- NOTE 3: The Town reserves the right to amend amounts of coverage required and the types of coverage provided based on work or service to be performed.

NONDISCRIMINATION IN EMPLOYMENT

The successful bidder shall agree and warrant that, in the performance of this contract, he will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, sex, religion, or national origin in any manner prohibited by State, Federal, County, or Municipal law. A certification of Nonsegregated Facilities and a Certification Regarding Equal Employment Opportunity shall be considered a part of this contract.

MECHANICS LIEN WAIVERS

The successful Bidder shall be required to submit a Mechanics Lien Waiver, acceptable to the Town of Watertown, with each progress payment, and/or at time of final payment, prior to any payment made.

For further technical or administrative information contact Donna L. Ford, Purchasing Agent at (860) 945-5260 or via email at ford@watertownct.org.

PLEASE

**IT IS A REQUIREMENT OF
THIS BID THAT EACH
PROPOSAL SUBMITTED
MUST HAVE A
DUPLICATE COPY
ATTACHED.**

**YOUR COOPERATION IS
APPRECIATED**

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APPARATUS SPECS

INTRODUCTION:

The **Watertown Fire Department** will receive sealed bids for the furnishing of one (1) Custom Fire Pumper and equipment as specified until 11:00 a.m. Tuesday, March 22, 2022.

Bids must be clearly marked or stamped "PROPOSAL - FIRE APPARATUS" on both sides of an enclosed envelope along with opening date and time. Commissioners will not be responsible for accidental opening and will immediately reject bids with improper identification. Bid opening will be at the Office of the Purchasing Agent, 61 Echo Lake Road, Watertown, CT

The purchaser reserves the right to reject any or all bids and to accept the bid, which they deem to be in their best interest and will not necessarily be bound to accept the lowest bid. All bids shall be signed by an authorized official of the company that will build the apparatus. Authority granted by the corporation's board of directors that the person signing the bid can commit the corporation to a lawful binding contract shall be furnished with the bid. **BIDS SUBMITTED IN THE NAME OF AND/OR SIGNED BY A SALES REPRESENTATIVE WILL IMMEDIATELY BE REJECTED.**

Only bids from privately owned manufacturers will be accepted. Bids from dealers or agents will be rejected. The manufacturer shall, however, be represented by a full-time dealer.

Bidders must have in operation a factory adequate for the production of the apparatus as specified herein. All bidders shall have been in business for a minimum of twenty (20) years. Bidders must state in their bids the time that will be required to make delivery of the items they propose to furnish. This time must be stated in calendar days, not working days, and must not exceed 385 days. Any proposal stating a longer time will be deemed as unresponsive and will not be considered.

The time limit shall be subject to adjustment after award due to delays caused by strikes, riots, acts of God, or other causes beyond the control of the contractor, including orders, limitations or restrictions by any governmental agency having jurisdiction over the subject matter of the contract.

GENERAL INSTRUCTIONS AND REQUIREMENTS:

It is the intent of these specifications to cover the furnishing and delivery of a completed and soundly engineered fire apparatus as hereinafter specified. These specifications cover the 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

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discretion of the contractor, who shall be solely responsible for the design and construction of all non-specified features.

The apparatus shall be the manufacturer's latest design and model, all welded module construction and custom built per our specifications. They shall have been building this type and model of apparatus for a minimum of ten (10) years. Units with less than ten (10) years of field service WILL NOT BE CONSIDERED.

Apparatus will be weighed and delivered with a full tank of water, all equipment installed and the number of personnel that there are seats for. Apparatus will not be accepted or paid for until this has been done. If the apparatus does not comply with the axle loading laws in the State of CT it will be IMMEDIATELY REJECTED.

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

To insure the purchaser of a source for service and parts over the anticipated 30-year life of the apparatus, apparatus manufacturer shall maintain a factory service, fabrication/manufacturing, painting and testing facility within 50 miles of Watertown Fire Department. Bidder shall indicate in his bid the name and location of factory service facility which complies with the above stated requirements.

A data plate shall be installed in the cab. This plate shall contain the following information:

- Engine oil type and quantity
- Engine coolant, type and quantity
- Transmission fluid, type and quantity
- Pump transmission fluid, type and quantity
- Pump primer fluid, type and quantity
- Drive axle lubrication fluid, type and quantity

An accident prevention sign that states the number of personnel the apparatus is designed to carry shall be mounted in the cab in an area visible to the driver. Signs stating "OCCUPANTS MUST BE SEATED AND BELTED WHEN THE APPARATUS IS IN MOTION" shall be provided and shall be visible at all seating positions. An accident prevention sign shall be located at the rear step area to warn personnel that standing on the step while the apparatus is in motion is prohibited.

WARRANTY:

The following warranty shall be furnished on the entire apparatus.

Bidder shall warranty each piece of fire apparatus manufactured by them to be free of defects in material and/or workmanship under normal use and service for a period of five (5)

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years from date of delivery to the original user. In addition, the body must be warranted for fifteen (15) years, the pump for three (3) years and the booster tank for the lifetime of the apparatus.

Bidder's obligation under this warranty shall be limited to repairing or replacing at their election, any part or parts manufactured by them, which upon examination by them, prove to be defective. Part or parts will be returned to bidder, freight prepaid, accompanied by a claim in writing. Normal wear and deterioration is excluded from this warranty. All warranty work is to include labor.

This warranty shall not apply to:

1. Normal maintenance services or adjustments.
2. Any vehicle or part thereof that has been repaired or altered outside the bidder's factory in any way that in the bidder's judgment affects the original purpose of the apparatus or its stability or reliability.
3. Any vehicle or part thereof that in the bidder's judgment has been subjected to misuse, negligence, accident or has been operated under conditions more severe than "normal operation".
4. Any vehicle or part thereof that has been operated at a speed exceeding the factory rated speed or loaded beyond the factory rated load capacity.

This warranty shall be printed on a company form and shall be included with your bid. If any component manufacturer has a longer warranty, it shall be included at no additional cost to the department. A copy of the component manufacturer's warranty shall be included with the bid.

QUALITY AND WORKMANSHIP:

The design of the apparatus shall embody the latest automotive engineering practices. Workmanship shall be of the highest quality in its respective field. Special consideration will be given to the following points; accessibility of the various components which require periodic maintenance, symmetrical proportions, ease of handling, operation and proper distribution of load.

The construction shall be rugged and ample safety factors provided to carry loads as specified and to meet the required road, speed and stationary conditions and tests. Welding shall not be employed in the assembly of the apparatus in a manner to prevent the ready removal of any component part for service and/or repairs.

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GENERAL CONSTRUCTION:

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

The apparatus shall be designed and constructed and the equipment so mounted, with due consideration to distribution of the load between front and rear axle that all specified equipment, loose equipment, full water tank, and men will be carried without overloading or injuring the apparatus.

DELIVERY:

Apparatus, to insure proper break-in of all components while still under warranty, shall be delivered under its own power. Rail or truck freight is not acceptable.

A qualified delivery engineer representing the company building the apparatus shall delivery the apparatus and remain in the community a sufficient length of time to instruct the fire department personnel in the proper operation, care and maintenance of the equipment delivered.

Two (2) copies of a complete operation and maintenance manual covering the apparatus as delivered, including but not limited to the chassis, fire pump, lubrication charts and firefighting equipment, shall be supplied on delivery.

PERFORMANCE TESTS AND REQUIREMENTS:

A road test will be conducted with the apparatus fully loaded and a continuous run of twenty (20) miles or more will be made under all driving conditions. During this time, the apparatus shall show no loss of power or overheating. The transmission, drive shafts and axles shall run quietly and be free from abnormal noise or vibration throughout the operating range of the apparatus.

The apparatus must be capable of accelerating to 35 MPH from a dead stop within 25 seconds on a level concrete highway without exceeding the maximum governed RPM of the engine.

The service brakes shall be capable of stopping the fully loaded unit within 30 feet from 20 MHP on level concrete highway.

The fully loaded unit shall be capable of obtaining a speed of 55 MPH on a level concrete highway with the engine not exceeding its governed full load RPM.

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

FAILURE TO MEET TESTS:

In the event the apparatus fails to meet the test requirement of these specifications on the first trials, second trials may be made at the option of the bidder within thirty (30) days from 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.

Failure to comply with changes necessary to conform to any clause of the specifications within thirty (30) days shall also be cause for rejection of the apparatus. Permission to keep or store the unit in any building owned or occupied by the purchaser during the above specified time period with the permission of the builder shall not constitute acceptance.

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.

All bidders must submit a proposal. Returning a copy of our specifications indicating compliance is not acceptable.

EXCEPTIONS TO SPECIFICATIONS:

The following specifications shall be strictly adhered to. Exceptions will be allowed if they are equal to or superior to that specified, and provided that they are listed and fully explained on a separate page entitled "EXCEPTIONS TO SPECIFICATIONS". Each exception shall specifically reference the page and paragraph to which exception is being taken. **PROPOSALS TAKING TOTAL EXCEPTION TO SPECIFICATIONS WILL NOT BE ACCEPTABLE.** Apparatus shall be inspected upon delivery for compliance with specification. Deviations will not be tolerated and will be cause for rejection of apparatus unless such deviations were originally listed in the bidder's proposal and specifically indicated on the "EXCEPTIONS" page.

No exceptions will be allowed relating to the make and model of specified equipment when referred to by brand and/or model, gauge, and type of materials, size of compartments, methods of construction, and overall design features of the apparatus.

Bids will be rejected which substitute less substantial materials and/or methods of body construction than those specified. Since all manufacturers have the ability to purchase the materials described as well as to shear, fabricate and assemble body panels as specified, these areas are considered a strict requirement of the specifications.

Purchaser does not, in any way, obligate itself to accept the lowest bid.

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Bid proposals must be submitted in the same sequence as specifications for ease of checking compliance to same.

INSPECTION TRIPS:

During the course of construction, the builder will be required to make arrangements for two (2) inspection trips to his factory by three (6) people. The cost of these trips shall be borne by the builder. If manufacturer is within 250 miles, ground transportation is to be provided. Travel in excess of this will be Air transportation. If nothing is mentioned in the bid pertaining to the inspection trips, it will be assumed that the bidder is taking exception and will be rejected.

CONTRACT AWARD:

When analyzing the bid proposals, and in recommending a successful bidder, superior design, workmanship, materials, operating costs, location of factory, past experience, length of incorporation, compliance with specifications, price and completion time will be taken into consideration.

PAYMENT:

Final payment for the apparatus shall be made at time of delivery of the completed vehicle. Due to insurance liability, the apparatus will not be left at the purchaser's location without full acceptance and payment or prior agreement between the purchaser and bidder.

Final delivery price shall not include any Local, State or Federal taxes. The bidder shall not be liable for any State or Federal mandated tax or program after sale or delivery of the apparatus.

PRE-CONSTRUCTION CONFERENCE:

A pre-construction conference shall be conducted at the Fire Department Headquarters, at which time all final designs and equipment mounting locations will be approved, prior to any sheet metal being cut. All expenses for travel, meals and lodging shall be the responsibility of the successful bidder.

Bidder shall indicate the intention to provide the required pre-construction conference in the proposal packet.

FINAL DELIVERY AND TRAINING:

Final delivery of the completed apparatus shall be made via drive-a-way, FOB Fire Department Headquarters, at which time Fire Department personnel shall be properly instructed as to the proper use of the entire apparatus including, but not limited to, chassis, fire pump system, the apparatus and all equipment. Delivery shall be made by a factory

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employed delivery engineer who shall be responsible for complete instruction as to operation and maintenance of the chassis, and the completed vehicle.

Delivery engineer shall remain at the Fire Department for a sufficient time to provide thorough training of all personnel, or as instructed by Chief of the Department. All meals, motel and travel costs shall be the responsibility of successful bidder.

BLUEPRINTS:

All bidders are required to include with their bid detailed CAD Blueprints of the specified unit they propose; showing the left, right and rear exterior; the left, right front and top views of interior. (No exceptions) Bids not containing these blueprints will be rejected. These Blueprints must be provided by the manufacturer to insure full compliance understanding of the complexity of this vehicle.

Chassis Specification

MODEL

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

MODEL YEAR

The chassis shall have a vehicle identification number that reflects a 2022 model year.

COUNTRY OF SERVICE

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

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

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CAB AND CHASSIS LABELING LANGUAGE

The cab and chassis shall include the applicable caution, warning, and safety notice labels with text to be written in English. All applicable caution, warning, and safety notice labels shall be Innovative Controls brand. Where applicable to the location within the specific layout and label package of the cab and chassis, the labels shall include decorative chrome bezels. Designs shall include bezels that fit individual labels or packaged configurations of labels in certain common locations.

The following labels shall be Innovative Controls brand, each including a decorative chrome bezel (where applicable):

- Shoreline
- Air Conditioner
- Cab Tilt Plate
- Air Compressor Breaker
- Battery Conditioner Breaker
- Helmet Caution
- Horn Tag
- Q2B Tag
- Load Center Plate
- Not a Step Label
- Occupancy Tag
- Do Not Move
- Occupants Must Be Seated
- Do Not Stand
- Danger Do Not Weld
- Danger--Untrained Operator
- DEF Fill Access (Including Additional 2907 Optional Labels)
- Battery Direct
- Kneeling
- Engine Brake

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- Retarder
- LR 100 Amp Node
- 300 Amp EPU
- 100 Amp Front O/R Node
- 100 Amp T/T Node
- 100 Amp RR O/R Node
- 10 Amp EPU
- Master Power
- 12 Volt Power
- Aerial Hours
- Pump In Drive

Windshield Washer Fluid

APPARATUS TYPE

The apparatus shall be a pumper vehicle designed for emergency service use, which shall be equipped with a permanently mounted fire pump, which has a minimum rated capacity of 750 gallons per minute (3000 L/min). The apparatus shall include a water tank and hose body whose primary purpose is to combat structural and associated fires.

VEHICLE TYPE

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

VEHICLE ANGLE OF APPROACH PACKAGE

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

NFPA1901 Angle of Approach definition:

“To determine the angle of approach, place a thin steel strip against the front of the tires where they touch the ground or stretch a tight string from one front tire to the other at the

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

AXLE CONFIGURATION

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

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be 20,000 pounds.

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

GROSS AXLE WEIGHT RATINGS REAR

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

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

PUMP PROVISION

The chassis shall include provisions to mount a drive line pump in the middle of the chassis, behind the cab, more commonly known as the midship location. Chassis driveline pump provisions shall include an interlock feature for automatic setting of the park brake when the vehicle is shifted into pump mode while the transmission is in neutral and the transmission output speed translates to less than 1 mph. When the conditions are met the

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driver side parking brake valve shall activate. Once shifted to road mode the condition for electric automatic brake engagement is no longer present and the driver's parking brake control valve shall function normally.

WATER & FOAM TANK CAPACITY

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

CAB STYLE

The cab shall be a custom, fully enclosed, LFD model with a 10.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to ten (10) seating positions.

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

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

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

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

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The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 144.60 inches with 67.50 inches from the centerline of the front of the axle to the back of the cab.

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

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 65.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 65.38 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

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

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

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

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

OCCUPANT PROTECTION

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

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rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

The system components shall include:

- Driver steering wheel airbag
- Driver dual knee air bags (patent pending) with energy management mounting (patent pending) and officer knee airbag.
- Large driver, officer, and crew area side curtain airbags
- APS advanced seat belt system - retractor pre-tensioners tighten the seat belts around the occupants, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries
- Heavy truck Restraints Control Module (RCM) - receives inputs from the outboard sensors, selectively deploys APS systems, and records sensory inputs immediately before and during a detected qualifying event
- Integrated outboard crash sensors mounted at the perimeter of the vehicle - detects a qualifying front or side impact event and monitors and communicates vehicle status and real time diagnostics of all critical subsystems to the RCM
- Fault-indicating Supplemental Restraint System (SRS) light on the driver's instrument panel

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

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

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

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CAB FRONT FASCIA

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

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

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

FRONT GRILLE

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

CAB UNDERCOAT

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

CAB SIDE DRIP RAIL

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

CAB PAINT EXTERIOR

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

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

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resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

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

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

CAB PAINT MANUFACTURER

The cab shall be painted with Sikkens paint.

CAB PAINT PRIMARY/LOWER COLOR

The primary/lower paint color shall be: Red, color to be determined

CAB PAINT SECONDARY/UPPER COLOR

The secondary/upper paint color shall be: White, color to be determined

CAB PAINT EXTERIOR BREAKLINE

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

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CAB PAINT PINSTRIPE

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

CAB EXTERIOR ROLL-UP DOOR FINISH

The roll-up doors on the exterior of the cab shall have a two-tone painted finish the same as the primary and secondary colors of the cab. The trim along the side of the door shall be painted to match the door. The painting of the primary color shall be provided by the roll-up door manufacturer and the painting of the upper color shall be provided by the chassis manufacturer. The painting shall be complete prior to the doors being installed into the compartment.

CAB PAINT WARRANTY

Purchaser shall receive a Paint and Finish (Exterior Clear coated) Ten (10) Years limited warranty in accordance with, and subject to, warranty certificate RFW0710. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

CAB PAINT INTERIOR

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

CAB ENTRY DOORS

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

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

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

CAB ENTRY DOOR TYPE

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

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

CAB INSULATION

The cab ceiling and walls shall include a nonwoven polyester fiber insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

LH MID EMS COMPARTMENT

The cab shall include a compartment located in the middle of the wall above the left side wheel well. This compartment shall measure 17.00 inches wide X 43.00 inches high X 23.00 inches deep.

LH MID EMS EXTERIOR ACCESS

The cab shall include a ROM series IV roll up door located in the middle of the wall above the left side wheel well. The compartment shall have a clear door opening of 14.50 inches wide X 34.00 inches high. There shall be a switch to activate the open compartment warning light in the cab in the event the door is left ajar.

LH MID EMS COMPARTMENT INTERIOR

The cab compartment located in the middle of the wall above the left side wheel well shall include solid aluminum walls with an interior access point rear facing. This compartment shall be finished to customer specification.

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LH MID EMS COMPARTMENT INTERIOR ACCESS

The left hand EMS compartment shall include access from inside the cab. The compartment shall be accessible from the inside of the cab via an aluminum framed aluminum hinged door with one (1) non-locking latch. The interior access door shall feature a clear door opening of 14.50 inches wide and as tall as possible in the available customer specified left EMS compartment height and access point. The interior access door shall include a finish to match the EMS compartment exterior finish.

LH MID EMS COMPARTMENT INTERIOR SHELVING

The left hand mid EMS compartment located in crew area of the cab shall include one (1) aluminum shelf which shall be secured using Unistrut channel on two (2) sides of the interior walls of the compartment. The shelf shall include a 1.00 inch lip around the edges. The shelf shall be finished the same as the interior of the compartment.

RH MID EMS COMPARTMENT

The cab shall include a compartment located in the middle of the wall above the right side wheel well. This compartment shall measure 17.00 inches wide X 43.00 inches high X 23.00 inches deep.

RH MID EMS COMPARTMENT INTERIOR

The cab compartment located in the middle of the wall above the right side wheel well shall include solid aluminum walls with an interior access point rear facing. This compartment shall be finished to customer specification.

RH MID EMS COMPARTMENT INTERIOR ACCESS

The right hand EMS compartment shall include access from inside the cab. The compartment shall be accessible from the inside of the cab via an aluminum framed aluminum hinged door with one (1) non-locking latch. The interior access door shall feature a clear door opening of 14.50 inches wide and as tall as possible in the available customer specified right EMS compartment height and access point. The interior access door shall include a finish to match the EMS compartment exterior finish.

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RH MID EMS COMPARTMENT INTERIOR SHELVING

The right hand mid EMS compartment located in crew area of the cab shall include one (1) aluminum shelf which shall be secured using Unistrut channel on two (2) sides of the interior walls of the compartment. The shelf shall include a 1.00 inch lip around the edges. The shelf shall be finished the same as the interior of the compartment.

MID EMS COMPARTMENT LIGHTING

The interior portion of each of the mid EMS compartments shall include compartment door activated LED lighting to illuminate all usable surfaces within each compartment.

MID EMS COMPARTMENT EXTERIOR FINISH

The mid EMS compartment surfaces that are exposed to the interior of the cab shall be painted with a multi-tone silver gray texture finish.

MID EMS COMPARTMENT INTERIOR FINISH

The EMS compartment interior shall feature a DA sanded finish.

LH EXTERIOR REAR COMPARTMENT

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

LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING

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

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LH EXTERIOR COMPARTMENT INTERIOR FINISH

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

RH EXTERIOR REAR COMPARTMENT

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

RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING

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

RH EXTERIOR COMPARTMENT INTERIOR FINISH

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

CAB STRUCTURAL WARRANTY

Purchaser shall receive a Cab Structure (Aluminum) Ten (10) Years or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0602. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

CAB TEST INFORMATION

The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when

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tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5.

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

ELECTRICAL SYSTEM

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

OEM WIRING

The wiring system shall include a custom interface harness provided by the chassis manufacturer designed to meet the requirements provided by the OEM. The harness shall include eight (8) 14 gauge wires which shall be routed from under the center dash area to the frame area behind the cab. There shall be a coil provided at the back of the cab with a minimum of 15.00 feet of additional wire provided.

APPARATUS WIRING PROVISION

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

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MULTIPLEX DISPLAY

The multiplex electrical system shall include (2) Weldon Vista IV displays which shall be located one (1) on the right side of the dash in the switch panel and one (1) on the left side of the dash in the switch panel. The Vista IV displays shall feature full color LCD display screens which include a message bar displaying the time of day and important messages requiring acknowledgement by the user which shall all be displayed on the top of the screen in the order they are received. There shall be eight (8) push button virtual controls, four (4) on each side of the display for the on-board diagnostics. The display screens shall be video ready for back-up cameras, thermal cameras, and DVD.

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

LOAD MANAGEMENT SYSTEM

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

DATA RECORDING SYSTEM

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

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

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- Time
- Date

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

ACCESSORY POWER

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

AUXILIARY ACCESSORY POWER

An auxiliary set of power and ground studs shall be provided and installed behind the electrical center cover with a 40 amp breaker. The studs shall be 0.38 inch diameter and capable of carrying up to a 40 amp battery direct load.

ADDITIONAL ACCESSORY POWER

An additional ten (10) position blade type fuse panel shall be installed behind the officer's seat. The fuse panel shall be protected by a 40 amp fuse. The panel shall be capable of carrying up to a maximum 40 amp battery direct load.

EXTRA ACCESSORY POWER

One (1) extra set of power and ground studs shall be provided and installed behind the MDT cut out with a 40 amp breaker. The studs shall be 0.38 inch diameter capable of carrying up to a 40 amp battery direct load.

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ANCILLARY ACCESSORY POWER

One (1) ancillary set of power and ground studs shall be provided and installed behind the driver seat with a 40 amp breaker. The studs shall be 0.38 inch diameter capable of carrying up to a 40 amp load and shall be wired battery direct. The studs shall include an additional 2.00 feet of wire.

EXTERIOR ELECTRICAL TERMINAL COATING

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

ELECTRICAL SYSTEM WARRANTY

Purchaser shall receive an Electrical System Two (2) Years or 36,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0202. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

ENGINE

The chassis engine shall be a Cummins L9 engine. The L9 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 450 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250 foot pounds of torque at 1200 RPM with 543 cubic inches (8.9 liters) of displacement.

The L9 engine shall feature a VGT™ Turbocharger, a high pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the 2021 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.

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

WATERTOWN FIRE DEPARTMENT

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

CAB ENGINE TUNNEL

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, 0.19 of an inch thick aluminum. The tunnel shall be a maximum of 41.50 inches wide X 25.50 inches high.

DIESEL PARTICULATE FILTER CONTROLS

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

ENGINE PROGRAMMING HIGH IDLE SPEED

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

ENGINE HIGH IDLE CONTROL

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

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

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

WATERTOWN FIRE DEPARTMENT

AUXILIARY ENGINE BRAKE

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

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

AUXILIARY ENGINE BRAKE CONTROL

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

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

The compression brake shall be controlled via an off/low/medium/high virtual button on the Vista display and control screen. The virtual button will default to high setting when vehicle power is switched from off to on.

ELECTRONIC ENGINE OIL LEVEL INDICATOR

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

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FLUID FILLS

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

ENGINE DRAIN PLUG

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

ENGINE WARRANTY

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

REMOTE THROTTLE CONTROL

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

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

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

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

REMOTE THROTTLE HARNESS

An apparatus interface wiring harness for the engine shall be supplied with the chassis. The harness shall include a connector for connection to the chassis harness which shall terminate in the left frame rail behind the cab for reconnection by the apparatus builder. The harness shall contain connectors for a Fire Research In Control 300/400 pressure governor and a multiplexed gauge. Separate circuits shall be included for pump controls, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle

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switch and high idle indication light. The harness shall contain interlocks that will prevent shifting to road or pump mode unless the transmission output speed translates to less than 1 mph and the transmission is in neutral. The shift to pump mode shall also require the park brake be set. The harness shall be designed for a side mount pump panel.

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

ENGINE PROGRAMMING REMOTE THROTTLE

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

ENGINE PROGRAMMING IDLE SPEED

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

ENGINE AIR INTAKE

The engine air intake system shall include an ember separator. This ember separator shall be designed to protect the downstream air filter from embers using a combination of unique flat and crimped metal screens packaged in a heavy duty galvanized steel frame. This multilayered screen shall trap embers and allow them to burn out before passing through the pack.

The engine air intake system shall also include an air cleaner mounted above the radiator. This air cleaner shall utilize a replaceable dry type filter element designed to prevent dust and debris from being ingested into the engine. A service cover shall be provided on the housing, reducing the chance of contaminating the air intake system during air filter service.

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

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ENGINE FAN DRIVE

The engine cooling system fan shall incorporate a thermostatically controlled, Horton fully variable type fan drive with SmartClutch J-1939 CAN controller. The clutch fan shall override the thermostatic variable speed and function as full on automatically in pump mode.

The variable speed fan clutch only engages at the amount needed for proper cooling to facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail-safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure. The fan speed shall include a J-1939 CAN clutch controller to receive signal from the engine control module to activate at variable rates of speed. Variable speeds shall be set through thermostatic and engine speed signals to run as efficiently and quietly as required to maintain temperature.

ENGINE COOLING SYSTEM

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

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

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

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

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The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and rearward oriented sight glass to observe coolant in the system. A cold fill and observation line shall be included within the frame mounted translucent recovery bottle to monitor the level of the coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements and allows for expansion and recovery of coolant into a separate integral expansion chamber.

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

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

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

ENGINE COOLING SYSTEM PROTECTION

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

ENGINE COOLANT

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

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

WATERTOWN FIRE DEPARTMENT

ELECTRONIC COOLANT LEVEL INDICATOR

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

ENGINE PUMP HEAT EXCHANGER

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

COOLANT HOSES

The cooling system hoses shall be blue stripe heater hose with formed silicone radiator coolant hoses and formed aluminized steel tubing. The heater hose, radiator hose, and tubing shall be secured with stainless steel constant torque band clamps.

ENGINE COOLANT OVERFLOW BOTTLE

A remote engine coolant overflow expansion bottle shall be provided in the case of over filling the coolant system. The overflow bottle shall capture the expansion fluid or overfill rather than allow the fluid to drain on the ground.

ENGINE EXHAUST SYSTEM

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

WATERTOWN FIRE DEPARTMENT

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

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

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

DIESEL EXHAUST FLUID TANK

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

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

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

ENGINE EXHAUST ACCESSORIES

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

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ENGINE EXHAUST WRAP

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

The exhaust flex joint shall not include the thermal exhaust wrap.

EMISSIONS SYSTEMS WARRANTY

Purchaser shall receive a Regulated Emissions Systems Five (5) Years or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0140. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

TRANSMISSION

The drive train shall include an Allison model EVS 3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

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

The transmission gear ratios shall be:

1st 3.49:1

2nd 1.86:1

3rd 1.41:1

4th 1.00:1

5th 0.75:1

6th 0.65:1 (if applicable)

Rev 5.03:1

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TRANSMISSION MODE PROGRAMMING

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

TRANSMISSION FEATURE PROGRAMMING

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

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

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

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

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ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

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

TRANSMISSION SHIFT SELECTOR

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

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

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

TRANSMISSION COOLING SYSTEM

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

TRANSMISSION DRAIN PLUG

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

TRANSMISSION WARRANTY

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

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LH PTO

A ten (10) bolt standard duty clutched drive PTO shall be provided by the chassis manufacturer and installed on the transmission. Installation shall include mounting of the PTO and wiring the unit with a control switch.

LH PTO MODEL

A ten (10) bolt Chelsea model 280-GSFJP-B8RK heavy duty transmission driven PTO shall be installed. The clutched shifted PTO is designed specifically for the Allison world transmission and provides an intermittent and continuous torque rating of 265 lb. ft.

PTO LOCATION

The transmission shall have two (2) power take off (PTO) mounting locations, one (1) in the 8:00 o'clock position and one (1) in the 4:00 o'clock position.

LH PTO CONTROL

The left hand power take off shall be controlled by the transmission. It will use a virtual button on the Vista display and control screen with text messages. Disable is displayed when switch is off. Enable is displayed when the switch is turned on. Active is displayed when the switch is on with positive engagement of the power take off.

Required operating conditions for enabling this function are:

- Throttle position is low
- Engine speed is within customer specified constant limits
- Transmission output speed is within customer specified constant limits

Park brake set

PTO PROGRAMMING

The power take off shall be programmed for operator control such that it shall only engage at or below 900 RPM and operate in a range up to 4000 RPM. The PTO programming shall provide for automatic disengagement set at a specified engine speed of 4000 RPM which shall protect equipment driven from the power take off.

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DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with MSI 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®. The drivelines shall include Meritor brand u-joints with thrust washers.

DRIVELINE GUARDS

One (1) driveline guard loop shall be provided and installed to support the driveline shaft for routine maintenance and in the event of a driveline component failure.

MIDSHIP PUMP / GEARBOX

A temporary jackshaft driveline and pump mounting brackets shall be installed by the chassis manufacturer to accommodate the midship split shaft pump as specified by the apparatus manufacturer.

MIDSHIP PUMP / GEARBOX MODEL

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

MIDSHIP PUMP GEARBOX DROP

The Hale pump gearbox shall have an "X" (extra long) drop length.

MIDSHIP PUMP RATIO

The ratio for the midship pump shall be 2.32:1 (23).

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

The midship pump shall be located so the dimension from the centerline of the suction to the centerline of the rear axle is 89.00 inches.

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PUMP SHIFT CONTROLS

One (1) air pump shift control panel shall be located on the left hand side of the engine tunnel, integrated with the shifter pod. The following shall be provided on the panel: a three (3) position control lever; an engraved PUMP ENGAGED identification light; and an engraved OK TO PUMP identification light. The pump shift control panel shall be black with a yellow border outline and shall include pump instructions. An instruction plate describing the transmission shift selector position used for pumping shall be provided and located so it can be read from the driver's position per NFPA **16.10.1.3**. The road mode shall be selected when the control lever is in the forward position and pump mode shall be selected when the control lever is in the rearward position.

The control lever center position shall exhaust air from both pump and road sides of the pump gear box shift cylinder.

PUMP SHIFT CONTROL PLUMBING

Air connections shall be provided from the air supply tank to the pump shift control valve and from the pump shift control valve to the frame mounted bracket. The frame mounted bracket shall include labeling identifying the pump and road connection points with threaded 0.25 inch NPT fittings on the solenoid for the customer installed pump to the air shifter system. The "Pump Engaged" switch shall be connected. The air supply shall be pressure protected from service brake system. There shall be 15.00 feet of hose supplied to the connection points with the additional length coiled near the bracket.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a Fleetguard FS20121 fuel filter/water separator with a thermostatically controlled integral heater as a primary filter. The fuel filter shall have a drain valve.

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

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

FUEL LINES

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

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FUEL SHUTOFF VALVE

A fuel shutoff valve shall be installed in the fuel draw line at the primary fuel filter to allow the fuel filter to be changed without loss of fuel to the fuel pump.

A second fuel shutoff valve shall be installed in the fuel draw line, near the fuel tank to allow maintenance to be performed with minimal loss of fuel.

ELECTRIC FUEL PRIMER

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

FUEL TANK

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

The baffled tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

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

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

FUEL TANK MATERIAL AND FINISH

The fuel tank shall be constructed of 12 gauge stainless steel. The exterior of the tank shall be powder coated black and then shall feature a spray on bedliner coating.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 Method B, results to be

WATERTOWN FIRE DEPARTMENT

5B minimum. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of H-2H. The direct impact resistance test per ASTM D2794, results to be 5B minimum.

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

FUEL TANK STRAP MATERIAL

The fuel tank straps shall be constructed of #304 stainless steel and shall feature a spray on bedliner coating.

FUEL TANK FILL PORT

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

FUEL TANK SERVICEABILITY PROVISIONS

The chassis fuel lines shall have additional length provided so the tank can be easily lowered and removed for service purposes. The additional 3.00 feet of length shall be located above the fuel tank and shall be coiled and secured. The fuel line fittings shall be pointed towards the right side (curbside) of the chassis.

FUEL TANK DRAIN PLUG

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

FRONT AXLE

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle.

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FRONT AXLE WARRANTY

The front axle shall be warranted by Meritor for five (5) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

FRONT WHEEL BEARING LUBRICATION

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

FRONT SHOCK ABSORBERS

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

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

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

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

FRONT SUSPENSION

The front suspension shall include a ten (10) leaf spring pack in which the longest leaf measures 54.00 inch long and 4.00 inches wide and shall include a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 pounds.

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STEERING COLUMN/ WHEEL

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

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

ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

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

POWER STEERING PUMP

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

FRONT AXLE CRAMP ANGLE

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

POWER STEERING GEAR

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

CHASSIS ALIGNMENT

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

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REAR AXLE

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

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.63 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

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

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with synthetic oil.

REAR AXLE WARRANTY

The rear axle shall be warranted by Meritor for five (5) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with synthetic oil.

REAR AXLE DIFFERENTIAL CONTROL

A driver controlled differential lock shall be installed on the rear axle. This feature shall allow the main differential to be locked and unlocked when encountering poor road or highway conditions, where maximum traction is needed, for use at speeds no greater than 25 MPH. The differential lock shall be controlled by a locking rocker switch on the switch panel. The light on the switch shall illuminate with positive engagement of the differential control.

WATERTOWN FIRE DEPARTMENT

VEHICLE TOP SPEED

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

REAR SUSPENSION

The single rear axle shall feature a Reyco 102AR air suspension with a single air bag on each side attached to a tapered forged drop leaf spring with one adjustable and one fixed torque rod.

The suspension shall feature dual air height control valves which shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load. The suspension shall also include two premium shock absorbers, one each side.

The rear suspension capacity shall be rated at 24,001 to 27,000 pounds to meet the rear axle rating selected.

REAR SHOCK ABSORBERS

Shock absorbers shall be supplied by the suspension manufacturer and installed on the rear axle suspension.

TIRE INTERMITTENT SERVICE RATING

The chassis shall be rated using Intermittent Service ratings provided to the emergency vehicle market by the tire manufacturers as the basis for determining the maximum vehicle load and speed.

FRONT TIRE

The front tires shall be Goodyear 315/80R-22.5 20PR "L" tubeless radial G289 WHA highway tread.

The front tire stamped load capacity shall be 20,400 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 130 pounds per square inch.

The Goodyear Intermittent Service Rating maximum load capacity shall match the stamped rating.

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The Goodyear Intermittent Service Rating maximum speed capacity shall match the nominal speed rating.

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

REAR TIRE

The rear tires shall be Goodyear 12R-22.5 16PR "H" tubeless radial G622 RSD mixed service tread.

The rear tire stamped load capacity shall be 27,120 pounds per axle with a nominal speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum load capacity shall be 29,020 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum speed capacity shall match the nominal speed rating.

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

REAR AXLE RATIO

The rear axle ratio shall be 5.38:1.

TIRE PRESSURE INDICATOR

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

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FRONT WHEEL

The front wheels shall be Alcoa hub piloted, 22.50 inch X 9.00 inch LvL One™ polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoa's Dura-Bright® finish as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

REAR WHEEL

The rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch LvL One™ aluminum wheels with a polished outer surface and Alcoa Dura-Bright® wheel treatment as an integral part of the wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

BALANCE WHEELS AND TIRES

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

WHEEL TRIM

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

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

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

WATERTOWN FIRE DEPARTMENT

WHEEL GUARDS

The rear dual wheels shall include a plastic isolator approximately 0.04" thick installed between the inner and outer wheel to help prevent corrosion caused by metal to metal contact.

TIRE CHAINS

Onspot brand six (6) strand automatic ice chains with brass caps shall be installed on the rear axle of the chassis to provide instant traction while traveling on ice and snow at speeds below 35 MPH.

TIRE CHAINS ACTIVATION

The tire chain system shall be activated by a red locking switch on the dash to deter accidental activation. The light on the switch shall illuminate when the tire chains are engaged. The tire chains shall be interlocked with the transmission and shall engage only if the vehicle is traveling 30 MPH or less. After traveling over 30 MPH, the vehicle must be reduced to a speed below 5 MPH for the tire chains to be engaged or re-engaged.

BRAKE SYSTEM

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

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

A four (4) sensor, four (4) modulator Anti-lock Braking System (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted

WATERTOWN FIRE DEPARTMENT

ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

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

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

The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

FRONT BRAKES

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

REAR BRAKES

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

PARK BRAKE

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

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SUPPLEMENTAL BRAKE

A supplemental brake engagement shall be supplied that can only be engaged while the rear spring brakes are engaged. In addition to the mechanical rear brake engagement, the front service brakes shall also be engaged via air pressure, providing additional braking capability. Front service brake activation shall be accomplished with activation of the rear mechanical park brake valve.

PARK BRAKE CONTROL

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake.

The parking brake actuation valve shall be mounted to the left side of the engine tunnel integrated into the transmission shift pod console within easy access of the driver.

REAR BRAKE SLACK ADJUSTERS

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

REAR BRAKE DUST SHIELDS

The rear brakes shall be equipped with brake dust shields.

AIR DRYER

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

FRONT BRAKE CHAMBERS

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

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REAR BRAKE CHAMBERS

The rear axle shall include TSE 30/30 H.O.T. (High Output Technology) brake chambers shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE 30/30 H.O.T. chambers are designed to provide the same performance as 30/36 chambers in a smaller package.

AIR COMPRESSOR

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

AIR GOVERNOR

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

AUXILIARY AIR RESERVOIR

One (1) auxiliary air reservoir with a 1200 cubic inch capacity shall be installed on the chassis to act as an additional reserve supply to the air system for air horn, air tool, or other non-service brake use. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

MOISTURE EJECTORS

An automatic moisture ejector with a manual drain provision shall be installed on the wet tank of the air supply system. Manual pet-cock type drain valves shall be installed on all remaining reservoirs of the air supply system.

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AIR SUPPLY LINES

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

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

AIR TANK SPACERS

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

REAR AIR TANK MOUNTING

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

WHEELBASE

The chassis wheelbase shall be 176.00 inches. – Exact TBD

REAR OVERHANG

The chassis rear overhang shall be 47.00 inches. - Exact TBD

FRAME

The frame shall consist of single rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, 10.25 inch web X 3.50 inches deep upper and lower flanges X 0.38 inches thick. Each rail shall

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be constructed of 110,000 psi minimum yield high strength low alloy steel. Each single rail shall be rated by a Resistance Bending Moment (RBM) minimum of 1,830,400 inch pounds and have a minimum section modulus of 16.64 cubic inches calculated by the radius method. The outside dimension frame shall measure 34.25 inches in width.

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

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

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

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

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

REAR TOW DEVICE

Two (2) heavy duty painted tow eyes shall be installed extending rearward from the frame at the rear of the chassis. The tow eyes shall be fabricated from 0.75 inch thick #1020 ASTM-36 hot rolled steel. The inside diameter of the tow eye shall be 2.00 inches and shall have a chamfered edge. The tow eyes shall be bolted one (1) on each side to the outside of the chassis frame with grade 8 bolts. The tow eyes shall be painted to match the chassis frame.

FRAME PAINT

The frame shall be hot dip galvanized prior to assembly and attachment of any components. The components that shall be galvanized shall include:

- Main frame “C” channel or channels
- Front splayed rails and fish plates

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- Cross members (excluding suspension cross members)
- Cross member gussets
- Fuel tank mounting brackets
- Fuel tank straps (unless material/finish is specified in 3130 subcat)
- Air tank mounting brackets (unless material/finish is specified in 3205, 3305, or 2232 subcat)
- Exhaust mounting brackets
- Air cleaner skid plate
- Radiator skid plate
- Battery supports
- Battery trays (unless material/finish is specified in 5106 subcat)
- Battery covers (unless material/finish is specified in 5107 subcat)

The frame parts which are not galvanized shall be powder coated prior to any attachment of components. Parts which shall be powder coated shall include but are not limited to:

- Bumper extensions
- Steering gear bracket
- Air tanks (unless color coded tanks are specified in 3205 subcat)

Other non-galvanized under carriage components which are received from the suppliers with coatings already applied shall include but are not limited to:

- Suspension components
- Front and rear axles

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

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FRAME ASSEMBLY STRUCTURAL

Purchaser shall receive a Frame Assembly Structural Twenty (20) Years or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0304. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

FRAME RAIL CORROSION

Purchaser shall receive a Frame Rail Corrosion (Zinc Plate and Powder Coat) Twenty Five (25) Years or 150,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0316. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

FRAME COMPONENTS CORROSION

Purchaser shall receive a Frame Components Corrosion (Zinc Plate) Twenty (20) Years or 132,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0314. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

FRONT BUMPER

A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10 gauge 304 stainless steel, 12.00 inches high and 99.00 inches wide.

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 18.00 inches ahead of the cab.

FRONT BUMPER APRON

The 18.00 inch extended front bumper shall include an apron constructed of 1/8" grip stainless steel polished diamond plate.

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

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FRONT BUMPER DISCHARGE

The chassis shall include frame mounted 2.50 inch diameter plumbed pipe intended for use as a discharge trash line. The discharge pipe shall be routed from the right hand front splay rail area behind the bumper to the area rear of the front axle, ahead of the battery box.

The discharge shall pipe shall be a, 2.50 inch stainless steel schedule 10 tube. The discharge shall include a Victaulic groove for connecting to the pump and discharge hose plumbing on each end of the tube.

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

FRONT BUMPER COMPARTMENT CENTER

The front bumper shall include a compartment in the bumper apron located in the center between the frame rails which may be used as a hose well. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape.

MECHANICAL SIREN

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

MECHANICAL SIREN LOCATION

The siren shall be recess mounted on the left side of the front fascia of the bumper approximately in the center of the flat surface between the bumper radius and the frame rail.

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AIR HORN

The front bumper shall include two (2) Hadley brand E-Tone air horns which shall measure 21.00 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish on the exterior and a painted finish deep inside the trumpet.

AIR HORN LOCATION

The air horns shall be recess mounted in the front bumper face on the right side of the bumper in the inboard and outboard positions relative to the right hand frame rail.

AIR HORN RESERVOIR

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

ELECTRONIC SIREN SPEAKER

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

ELECTRONIC SIREN SPEAKER LOCATION

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

FIRE BELL

A chromed cast formed fireman's bell shall be installed on the front bumper. The bell shall include an eagle perched at the top and feature a polished chrome finish. The bell shall measure approximately 17.50 inches in height from the top of the eagle to the base of the bell.

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FIRE BELL LOCATION

A fire bell shall be shipped loose for mounting to the bumper extension by the body builder.

FRONT BUMPER TOW HOOKS

Two (2) heavy duty tow hooks, painted to match the frame components, shall be installed in the rearward position out of the approach angle area, bolted directly to the side of each chassis frame rail with grade 8 bolts.

CAB TILT SYSTEM

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

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

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

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

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

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

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CAB TILT CONTROL RECEPTACLE

A six (6) pin Deutsch receptacle that includes a cap shall be installed in the front bumper tail on the right hand side to provide a place to plug in the cab tilt remote control pendant.

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

CAB TILT LOCK DOWN INDICATOR

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

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

CAB WINDSHIELD

The cab windshield shall have a surface area of 2825.00 square inches and be of a two (2) piece wraparound design for maximum visibility.

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

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

GLASS FRONT DOOR

The front cab doors shall include a window, which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

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

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

GLASS TINT FRONT DOOR

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

GLASS REAR DOOR RH

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

GLASS TINT REAR DOOR RIGHT HAND

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

GLASS REAR DOOR LH

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

GLASS TINT REAR DOOR LEFT HAND

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

CLIMATE CONTROL

A ceiling mounted combination defroster and cabin heating and air conditioning system shall be located above the engine tunnel area. The system covers and plenums shall be of severe

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duty design made of aluminum, which shall be coated with a customer specified interior paint. The design of the system's covers shall provide quick access to washable air intake filters as well as easy access to other serviceable items.

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

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

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

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

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

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

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

*****The chassis manufacturer recommends that the overall climate system performance be based off third-party testing in accordance with the Society of Automotive Engineering standards as a complete system.***

Individual component level BTU ratings is not an accurate indicator of the performance capability of the completed system. System individual component BTU ratings:

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

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- Heater coil total BTU/HR: 98,000

Performance data specified is based on testing performed by an independent third-party test facility using a medium four-door 10" raised roof cab equipped with an ISL engine.

CLIMATE CONTROL DRAIN

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

CLIMATE CONTROL ACTIVATION

The heating, defrosting and air conditioning controls shall be located on the Vista display and control screen.

HVAC OVERHEAD COVER PAINT

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

HEATER HOSE INSULATION

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

A/C CONDENSER LOCATION

A roof mounted A/C condenser shall be installed centered on the cab forward of the raised roof against the slope rise.

A/C COMPRESSOR

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

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*****The chassis manufacturer recommends that the overall climate system performance be based off third-party testing in accordance with the Society of Automotive Engineering standards as a complete system.***

Individual component level ratings are not an accurate indicator of the performance capability of the completed system.

Refrigerant Compressor displacement: 19.1 cubic inches per revolution.

UNDER CAB INSULATION

The underside of the cab tunnel surrounding the engine shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments.

The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

The engine tunnel insulation shall measure approximately 0.30 inch thick including a multi-layer foil faced glass cloth and polyester fiber layer. The foil surface acts as protection against heat, moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The cab floor insulation shall measure 0.56 inch thick including a 1.0#/sf PVC barrier and a moisture and heat reflective foil facing, reinforced with fiberglass strands. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed MVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by acrylic pressure sensitive adhesive. In addition, the insulation shall have an expanded aluminum overlay installed to assist in retaining the insulation tight against the engine tunnel surfaces and the underside of the cab floor. The cab floor overlay shall use aluminum pins with hard hat, hold in place fastening heads.

INTERIOR TRIM FLOOR

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

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INTERIOR TRIM

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

REAR WALL INTERIOR TRIM

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

HEADER TRIM

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

TRIM CENTER DASH

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge of the electrical access cover for ventilation. The center dash electrical access cover shall include a gas cylinder stay which shall hold the cover open during maintenance.

TRIM LH DASH

The left hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate for a perfect fit around the instrument panel. For increased occupant protection the extreme duty left hand dash utilizes patent pending break away technology to reduce rigidity in the event of a frontal crash. The left hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.

TRIM RH DASH

The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 6.38 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

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ENGINE TUNNEL TRIM

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

POWER POINT DASH MOUNT

The cab shall include a 12 volt cigarette lighter type receptacle in the cab dash to provide a power source for 12 volt electrical equipment. The cab shall also include one (1) dual universal serial bus (USB) charging receptacle in the cab dash switch panel to provide a power source for USB chargeable electrical equipment. Each dual USB receptacle shall include two ports and shall be capable of up to a 5 Volt 2.1 amp output. Port 1 is optimized for fast charging at 1 amp. Port 2 is optimized for fast charging up to 2.1 amps, when used individually. The receptacles shall be wired battery direct.

STEP TRIM

Each cab entry door shall include a three-step entry. The first step closest to the ground shall be constructed of polished 5032 H32 aluminum Grip Strut® grating with angled outer corners. The step shall feature a splashguard to reduce water and debris from splashing in to the step. The splashguard shall have an opening on the outer edge to allow debris and water to flow through rather than becoming trapped within the stepping surface. The lower step shall be mounted to a frame, which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed with a Flex-Tred® adhesive grit surface material.

STEP TRIM KICKPLATE

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

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UNDER CAB ACCESS DOOR

The cab shall include an access door in the left crew step riser constructed of aluminum tread plate with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.

INTERIOR DOOR TRIM

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

DOOR TRIM KICKPLATE

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

DOOR TRIM SCUFF PLATE

There shall be stainless steel scuff plate along the door jamb to protect the painted surface from damage should the seat belt buckle come in contact with the door jamb.

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

DOOR TRIM CUSTOMER NAMEPLATE

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

CAB DOOR TRIM REFLECTIVE

The interior of each door shall include high visibility reflective tape. A white reflective tape shall be provided vertically along the rear outer edge of the door. The lowest portion of

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each door skin shall include a reflective tape chevron with red and white stripes and a Spartan logo. The chevron tape shall measure 6.00 inches in height.

INTERIOR GRAB HANDLE "A" PILLAR

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

INTERIOR GRAB HANDLE FRONT DOOR

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

INTERIOR GRAB HANDLE REAR DOOR

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

INTERIOR SOFT TRIM COLOR

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

INTERIOR TRIM SUNVISOR

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

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be gray in color.

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CAB PAINT INTERIOR DOOR TRIM

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

HEADER TRIM INTERIOR PAINT

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

TRIM CENTER DASH INTERIOR PAINT

The entire center dash shall be coated with multi-tone silver gray texture finish. Any accessory pods attached to the dash shall also be painted this color.

TRIM LH DASH INTERIOR PAINT

The left hand dash shall be painted with a multi-tone silver gray texture finish.

TRIM RIGHT HAND DASH INTERIOR PAINT

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

DASH PANEL GROUP

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

SWITCHES CENTER PANEL

The center dash panel shall include six (6) switch positions in the upper left portion of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank

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switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

SWITCHES LEFT PANEL

The left dash panel shall include three (3) switches. There shall be one (1) headlight switch over one (1) windshield wiper/washer control switch and one (1) instrument lamp dimmer switch on the left hand portion of the panel. All switches shall have backlighting provided.

SWITCHES RIGHT PANEL

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

SEAT BELT WARNING

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide a visual warning indicator in the Vista display and control screen(s) and a fast tone audible alarm. The wiring connections at each seat shall have heat shrink tubing applied so that the wiring cannot be easily disconnected to disable the system.

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

SEAT MATERIAL

SEAT MATERIAL The Bostrom Firefighter seats shall include a covering of extra high strength, tear resistant, and waterproof fabric made of durable Durawear Plus™ 1800 denier ballistic polyester. A PVC coating shall be bonded to the backside of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Durawear Plus shall include low seam stitching to eliminate seam wear. Durawear Plus™ meets or exceeds specification of the common trade name Imperial 1800. The material meets FMVSS 302 flammability requirements. Seats shall be Foam Block™ encapsulated foam with Zip Clean covers. The encapsulated Foam Block™ feature shall resist gas and liquid absorption in the cushion. Seat cushions, headrest and side bolsters shall zip off

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using a heavy-duty skirted zipper to allow for quick removal and easy cleaning. All Zip off covers are designed for machine washing and air-drying. One (1) extra seat cushion and applicable back cover(s) shall be provided per seating position.

If applicable, Theatre style seats located in the cab shall be high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the backside of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.

SEAT COLOR

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

SEAT BACK LOGO

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

SEAT DRIVER

The driver's seat shall be an H.O. Bostrom 400 Series Firefighter Sierra model seat. The seat shall feature eight-way electric positioning. The eight positions shall include up and down, fore and aft with 8.00 inches of travel, back angle adjustment and seat rake adjustment. The seat shall feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

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

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

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

SEAT BACK DRIVER

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

SEAT MOUNTING DRIVER

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

OCCUPANT PROTECTION DRIVER

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

The driver's seating area APS shall include:

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

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

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SEAT OFFICER

The officer's seat shall be a H.O. Bostrom 500 Series Sierra seat model. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

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

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

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

SEAT BACK OFFICER

The officer's seat back shall include an IMMI brand SmartDock® Gen 2 hands-free self contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

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

SEAT MOUNTING OFFICER

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

OCCUPANT PROTECTION OFFICER

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

The officer's seating area APS shall include:

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

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

POWER SEAT WIRING

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

SEAT BELT ORIENTATION CREW

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

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SEAT FORWARD FACING OUTER LOCATION

The crew area shall include two (2) forward facing outboard seats, which include one (1) located next to the outer wall of the cab on the left side of the cab and one (1) located next to the outer wall on the right side of the cab.

SEAT CREW FORWARD FACING OUTER

The crew area shall include a seat in the forward facing outer position, which shall be a H.O. Bostrom 500 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position. The seat and cushion shall be hinged and compact in design for additional room. The seat shall include a "Fold and Hold" feature so that the cushion shall remain in the seated position and simply touched to flip up.

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

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

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

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SEAT BACK FORWARD FACING OUTER

The crew area seat backs shall include an IMMI brand SmartDock® Gen 2 hands-free self-contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

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

SEAT MOUNTING FORWARD FACING OUTER

The forward facing outer seat frame mounting holes shall be mounted 1.00 inch inboard from the outer edge of the forward facing seat frame.

OCCUPANT PROTECTION FFO

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

Each forward facing outer seating position APS shall include:

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

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

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SEAT FORWARD FACING CENTER LOCATION

The crew area shall include one (1) forward facing center crew seat located directly behind the engine tunnel in the center of the cab.

SEAT CREW FORWARD FACING CENTER

The forward facing center seat shall be a H.O. Bostrom 500 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position. The seat and cushion shall be hinged and compact in design for additional room. The seat shall include a "Fold and Hold" feature so that the cushion shall remain in the seated position and simply touched to flip up.

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

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

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

SEAT BACK FORWARD FACING CENTER

The crew area seat backs shall include an IMMI brand SmartDock® Gen 2 hands-free self-contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of

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emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

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

OCCUPANT PROTECTION FFC

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

Each forward facing center seating position APS shall include:

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

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

SEAT FRAME FORWARD FACING

The forward facing center seating positions shall include an enclosed style seat frame located and installed at the rear wall. The seat frame shall measure 62.38 inches wide X 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The seat box shall be painted with the same color as the remaining interior.

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SEAT FRAME FORWARD FACING STORAGE ACCESS

There shall be two (2) access points to the storage area centered on the front of the seat frame. Each access point shall be covered by a hinged door to allow access for storage in the seat box.

SEAT MOUNTING FORWARD FACING CENTER

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

CAB FRONT UNDERSEAT STORAGE ACCESS

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

SEAT COMPARTMENT DOOR FINISH

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

HELMET STORAGE SHIPLOOSE QUANTITY

The ship loose items shall include five (5) helmet storage brackets.

HELMET STORAGE SHIPLOOSE

The ship loose items shall include Ziamatic model UHH-1 helmet storage designed to meet current NFPA regulations. The UHH-1 shall securely fasten fire helmets to flat cab surfaces. The UHH-1 utilizes a helmet hook and an adjustable strap to accommodate nearly any helmet size or configuration.

WINDSHIELD WIPER SYSTEM

The cab shall include a triple arm linkage wiper system, which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers; each shall be affixed to a radial arm. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

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ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

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

CAB DOOR HARDWARE

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of a fiber reinforced plastic composite with a black matt finish.

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

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

DOOR LOCKS

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

DOOR LOCK LH EMS COMPARTMENT

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

DOOR LOCK LH REAR CAB COMPARTMENT

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

DOOR LOCK RH REAR CAB COMPARTMENT

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

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GRAB HANDLES

The cab shall include one (1) 18.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of SAE 304 stainless steel and be 1.25 inch diameter to enable non-slip assistance with a gloved hand.

GRAB HANDLES ACCESSORY

Each assist handle shall include a stainless-steel plate which saves the cab from scuffs through continued use of the handle.

REARVIEW MIRRORS

Retrac Aerodynamic West Coast style single vision mirror heads model 613285 shall be provided and installed on each of the front cab doors.

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

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an 8.00 inch convex mirrors with a stainless steel back, model 980-4, installed below the flat glass to provide a wider field of vision. The flat mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The convex mirrors shall be manually adjustable. The flat mirror glass shall be heated for defrosting in severe cold weather conditions.

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

REARVIEW MIRROR HEAT SWITCH

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

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CAB FENDER

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

MUD FLAPS FRONT

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

CAB EXTERIOR FRONT & SIDE EMBLEMS

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

IGNITION

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

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

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

BATTERY

The single start electrical system shall include six (6) Deka 1231MF 1000 CCA batteries with a 195 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541.

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BATTERY TRAY

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

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

BATTERY BOX COVER

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

BATTERY CABLE

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

BATTERY JUMPER STUD

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step, 8.00 inches apart. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

ALTERNATOR

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

STARTER MOTOR

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

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BATTERY CONDITIONER

A Kussmaul Auto Charge 40 LPC battery conditioner shall be supplied. The battery conditioner shall provide a 40 amp output for the chassis batteries and a 15 amp output circuit for accessory loads. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position.

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in front of the left side door just below the windshield.

CAB/CHASSIS ELECTRICAL OUTLET

A NEMA 5-20R black nylon duplex 20 amp receptacle with a clear weather proof cover shall be mounted on the left side of the cab behind the driver's seat on the hose cover. The outlet shall include a wall plate in a box shaped housing. The receptacle shall be ground fault circuit interrupter (GFCI) outlet with two (2) pole, three (3) wire configuration rated for 125 volts.

Body ELECTRICAL OUTLET

A Duplex 20 amp receptacle with a stainless steel cover shall be installed in the left rear "L3" compartment. Outlet shall be wired to the shore power.

AUXILIARY AIR COMPRESSOR

A Kussmaul Auto Pump 120V air compressor shall be supplied. The air compressor shall be installed behind the officer's seat. The air compressor shall be plumbed to the air brake system to maintain air pressure.

ELECTRICAL INLET LOCATION

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

ELECTRICAL INLET

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

WATERTOWN FIRE DEPARTMENT

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

Amp Draw Reference List:

Kussmaul 40 LPC Charger - 5 Amps

Kussmaul 40/20 Charger - 8.5 Amps

Kussmaul 80 LPC Charger - 13 Amps

Kussmaul EV-40 - 6.2 Amps

Blue Sea P12 7532 - 7.5 Amps

Iota DLS-45/IQ4 - 11 Amps

1000W Engine Heater - 8.33 Amps

1500W Engine Heater - 12.5 Amps

120V Air Compressor - 4.2 Amps

120V Dometic HVAC - 15 Amps

ELECTRICAL INLET CONNECTION

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

ELECTRICAL INLET COLOR

The electrical inlet connection shall include a yellow cover.

HEADLIGHTS

The cab front shall include four (4) rectangular LED headlamps with separate high and low beams mounted in bright chrome bezels. Each lamp shall include a heating system that de-ices the headlight.

HEADLIGHT LOCATION

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

WATERTOWN FIRE DEPARTMENT

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model M6 4.00 inch X 6.00 inch amber LED turn signals which shall be installed in a chrome radius mount housing above and outboard of the front warning and head lamps.

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include two (2) Tecniq S170 LED side marker lights, which shall be provided just behind the front cab radius corners. The lights shall be amber with chrome bezels.

MARKER AND ICC LIGHTS

In accordance with FMVSS, there shall be five (5) Tecniq S170 LED cab marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level. The lights shall be amber with chrome bezels.

HEADLIGHT AND MARKER LIGHT ACTIVATION

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

LIGHTBAR SWITCH

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

WATERTOWN FIRE DEPARTMENT

INTERIOR OVERHEAD LIGHTS

The cab shall include a LED dome lamp located over each door. The lights shall include push switches on each lamp to activate both the clear and red portions of the light individually.

INTERIOR OVERHEAD LIGHTS ACTIVATION

The clear portion of each lamp shall be activated by opening the respective door and via the multiplex display.

LIGHTBAR PROVISION

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

CAB FRONT LIGHTBAR MODEL

The cab shall be provided with one (1) Whelen light bar.

See the light bar layout for specific details.

CAB FRONT LIGHTBAR

The lightbar provisions shall be for one (1) Whelen brand Freedom IV WeCan X LED lightbar mounted centered on the front of the cab roof. The lightbar shall be 72.00 inches in length. The lightbar shall feature fourteen (14) red/red over/under LED light modules and two (2) clear/clear over/under LED light modules. The clear lights shall be disabled with park brake engaged. The cable shall exit the lightbar on the right side of the cab.

FRONT SCENE LIGHTS

The front of the cab shall include two (2) Whelen Pioneer model PCH2 contour roof mount scene light installed on the brow of the cab.

Each 150-watt lamp head shall incorporate a 12-volt DC Super-LED combination flood/spot light installed in a die-cast aluminum housing. Each lamp head shall use a collimator/metalized redux spot/flood reflector assembly with Proclera™ silicone optics

WATERTOWN FIRE DEPARTMENT

and a clear non-optic polycarbonate lens. The lens/reflector assembly shall utilize a liquid injected molded silicone gasket to be resistant to water, moisture, dust, and other environmental conditions. The PCH2 shall be vibration resistant. The Pioneer PC boards shall be conformal coated for additional protection. Each combination flood/spot light lamp head shall draw 13.0 amps in spotlight mode and generate 17,750 lumens total. Each lamp head shall measure 4.25 inches in height X 14.00 inches in width. The lamp heads and brackets shall be powder coated white.

FRONT SCENE LIGHT LOCATION

There shall be two (2) scene lights mounted on the front brow of the cab.

FRONT SCENE LIGHTS ACTIVATION

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

SIDE SCENE LIGHTS

The cab shall include two (2) Whelen Pioneer model PCPSM2C LED surface mount lights installed one (1) on each side of the cab.

The PCPSM2C configuration shall consist of 24 white Super-LEDs for the spot light with a specialized spot reflector on the bottom, 48 white Super-LEDs in the flood light with a clear optic collimator/metalized reflector assembly on the top, and a clear non-optic polycarbonate lens. The Pioneer flood/spot light shall draw 12.0 amps and generate 16,000 usable lumens. The PCPSM2C projects light directly down at 5-degree and producing illumination to the side of the vehicle arching upward to a 90-degree pattern of light. Each lamp head shall measure 6.37 inches in height X 16.22 inches in width and shall be chrome plated.

SIDE SCENE LIGHT LOCATION

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

WATERTOWN FIRE DEPARTMENT

SIDE SCENE ACTIVATION

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

GROUND LIGHTS

Each door shall include a Tecniq T44 LED ground light mounted to the underside of the cab step below each door. The lights shall include a polycarbonate lens, a housing that is vibration welded and LEDs, which shall be shock, mounted for extended life.

GROUND LIGHTS

The ground lighting shall be activated when the parking brake is set, by the opening of the door on the respective cab side, and through a virtual button on the Vista display and control screen.

UNDER BUMPER LIGHTS

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

LOWER CAB STEP LIGHTS

The middle step located at each door shall include a Tecniq T44 LED light, which shall activate with the opening of the respective door. The lights shall include a polycarbonate lens, a housing that is vibration welded and LEDs, which shall be shock, mounted for extended life.

INTERMEDIATE STEP LIGHTS

The intermediate step well area at the front doors shall include a TecNiq D06 LED light within a chrome housing. The front egress step lights shall provide visibility to the step well area for the first step exiting the vehicle. The Egress step lights shall activate with entry step lighting.

WATERTOWN FIRE DEPARTMENT

INTERIOR UNDERDASH LIGHT

The area under the dash shall include two (2) red lights, one (1) under the left hand dash and one (1) under the right hand dash. The lights shall be activated by a virtual button on the Vista display and control screen. If the truck is equipped with APS, the under dash light location will be outside of the APS airbag clear zone.

MAP LIGHTS

A Sunnex swivel map light shall be provided. The light shall have a clear lens and a control switch on the base. The light shall be mounted on the overhead HVAC cover on the right hand side.

CAB SPOTLIGHTS

The cab shall include a Golight model 30214 black remote controlled spotlight. The spotlight shall be mounted on the flat surface of the cab roof as far outboard as possible on the right side. The spotlight shall feature an LED lamp, capable of 370-degree rotation and 135-degree vertical adjustment. The spotlight shall include a hard wired remote control installed in the center dash switch panels.

LIGHT TOWER PROVISION

The cab roof shall include reinforcement for a light tower. The reinforcement shall consist of four (4) aluminum pads mounted to the exterior of the cab roof and additional internal cab roof structure. The entire reinforcement shall be integral with the roof for rigidity. The light tower shall be provided and installed by the body manufacturer.

LIGHT TOWER MODEL

The light tower provisions shall be for a Will-Burt Nightscan model 2.3 (NS-7.5) light tower with four (4) 12 volt LED Fire Research Spectra light heads.

LIGHT TOWER ORIENTATION

The roof reinforcement shall be installed parallel to the rear wall of the cab.

WATERTOWN FIRE DEPARTMENT

LIGHT TOWER HORIZONTAL JUSTIFICATION

The roof reinforcement shall be justified to the center of the cab left to right.

LIGHT TOWER LIGHT HEAD ORIENTATION

The roof reinforcement shall be oriented in order for the light head on the light tower to be to the left side while in the stored position.

LIGHT TOWER FORE/AFT ORIENTATION

The roof reinforcement shall be oriented on the roof of the cab towards the rear wall of the cab.

ENGINE COMPARTMENT LIGHT

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

DO NOT MOVE APPARATUS LIGHT

The front headliner of the cab shall include a flashing red TecNiq K50 LED light clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated.

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

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

MASTER WARNING SWITCH

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

WATERTOWN FIRE DEPARTMENT

INBOARD FRONT WARNING LIGHTS

The cab front fascia shall include two (2) Whelen M6 Super LED front warning lights in the left and right inboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. Both the left and right side lights shall be programmed to operate in steady burn mode. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

INBOARD FRONT WARNING LIGHTS COLOR

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

OUTBOARD FRONT WARNING LIGHTS

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

OUTBOARD FRONT WARNING LIGHTS COLOR

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

MASTER WARNING SMART CONTROLLER

A master warning system smart controller shall be included under the cab center dash. The smart controller shall be a Whelen CenCom Core amplifier and input/output interface module powered by WeCanX, CAN (Controller Area Network) based communication system. The CenCom Core shall include 17 total inputs and 23 outputs, with 7 different interface connections. The CenCom core can support up 99 WeCanX devices. All Whelen warning lights are to be individually wired to the Cencom Core. The Cencom data wires shall be routed down the chassis frame rail behind the cab.

The following circuits shall be wired to inputs:

- Park brake
- Master warning.

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- All other front, side, and lightbar activation are implied. (The number of inputs used for each shall be wired based on activation selected)

The CenCom Core shall include a V2V vehicle-to-vehicle WeCanX sync module to automatically synchronize Dynamic Variable Intensity (DVI) light patterns and tones on vehicles within proximity to aid approaching motorists.

FRONT WARNING SWITCH

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

INTERSECTION WARNING LIGHTS

The chassis shall include two (2) Whelen M6 series Super LED intersection-warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn. The lights shall be set to flash pattern one hundred fifty-nine (159) Steady Burn.

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red.

INTERSECTION WARNING LIGHTS LOCATION

The intersection lights shall be mounted centered front to rear on the flat portion of the side of the bumper tail.

SIDE WARNING LIGHTS

The cab sides shall include two (2) Whelen M6 Super LED warning lights, one (1) on each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. Both the left and right side lights shall be programmed to operate in steady burn mode. The lights shall be mounted to the sides of the cab within a chrome bezel.

SIDE WARNING LIGHTS COLOR

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

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SIDE WARNING LIGHTS LOCATION

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

SIDE AND INTERSECTION WARNING SWITCH

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

TANK LEVEL LIGHTS

There shall be two (2) FRC MaxVision surface mount water level light strips.

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

TANK LEVEL LIGHTS ACTIVATION

The tank level lights shall be pre-wired and coiled at rear of the cab for connection to the apparatus by the body builder.

TANK LEVEL LIGHTS LOCATION

There shall be water level lights mounted on each side of the cab, centered between the rear cab doors and the rear corners of the cab.

TRAFFIC CONTROL

There shall be one (1) GTT (Global Traffic Technologies) Opticom model 795H traffic control optical emitter mounted in the lightbar on the front of the cab roof. There shall be an indicator light on the dash. The emitter shall be activated by the master warn switch and shall be deactivated when the parking brake is applied.

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INTERIOR DOOR OPEN WARNING LIGHTS

The interior of each door shall include one (1) red Whelen 500 Series TIR6™ Super-LED® warning light located on the door panel. Each light shall activate with a flashing pattern when the door is in the open position to serve as a warning to oncoming traffic.

Each door shall also include one (1) 15.87 inch long X 0.73 inch tall amber Weldon LED warning light. The light shall be located on the upper portion of the door frame to be visible when a person is standing in front of the door while entering or exiting the cab. Each light shall activate with a scrolling directional flash pattern which moves from inside to outside when the door is in the open position. This shall serve as an additional warning to oncoming traffic.

SIREN CONTROL HEAD

A Whelen 295HFS2 electronic siren control head with remote amplifier shall be provided and flush mounted in the switch panel with a location specific to the customer's needs. The siren shall feature 200-watt output, hands free mode and shall be in "standby" mode awaiting instruction. The siren shall offer radio broadcast, public address, wail, yelp, or piercer tones and hands free operation which shall allow the operator to turn the siren on and off from the horn ring if a horn/siren selector switch option is also selected.

STEERING WHEEL HORN BUTTON SELECTOR SWITCH

A virtual button on the Vista display and control screen shall be provided to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

AUDIBLE WARNING LH FOOT SWITCH

A foot switch wired to actuate the mechanical siren(s) shall be supplied for installation in the front section of the cab for driver actuation.

MECHANICAL SIREN FOOT SWITCH LH

The mechanical siren foot switch shall be a Linemaster model 491-S.

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MECHANICAL SIREN FOOT SWITCH LH LOCATION

The mechanical siren foot switch shall be located on the left hand side accessible to the driver between the steering column and the door.

MECHANICAL SIREN FOOT SWITCH LH POSITION

The mechanical siren foot switch shall be positioned outboard of any other foot switch, if applicable.

AUDIBLE WARNING LH FOOT SWITCH BRACKET

A 30.00 degree angled foot switch bracket, wide enough to accommodate (2) foot switches, shall be installed outboard of the steering column for specified driver accessible foot switch activations.

AUDIBLE WARNING RH FOOT SWITCH

Two (2) foot actuated switches shall be supplied for installation in the front section of the cab for officer actuation. One (1) switch shall be wired to actuate the air horn(s) and one (1) switch the mechanical siren(s).

AIR HORN FOOT SWITCH RH

The air horn foot switch shall be a Linemaster model 491-S.

AIR HORN FOOT SWITCH RH LOCATION

The air horn foot switch shall be temporarily tied up with a coiled wire drop at the firewall inboard for installation by the customer on the right hand side accessible to the officer.

MECHANICAL SIREN FOOT SWITCH RH

The mechanical siren foot switch shall be a Linemaster model 491-S.

WATERTOWN FIRE DEPARTMENT

MECHANICAL SIREN FOOT SWITCH RH LOCATION

The mechanical siren foot switch shall be temporarily tied up with a coiled wire drop at the firewall inboard for installation by the customer on the right hand side accessible to the officer.

MECHANICAL SIREN BRAKE/AUXILIARY ACTIVATION

A red momentary siren brake rocker switch shall be provided in the switch panel on the dash.

MECHANICAL SIREN INTERLOCK

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

BACK-UP ALARM

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

FIRE BELL ACTIVATION

There shall be a black push button located on the switch panel which shall actuate the fire bell. The button shall be clearly labeled for identification.

INSTRUMENTATION

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

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

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The instrument panel shall contain the following gauges:

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

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

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, voltmeter, and transmission temperature shall be included. The scale on the engine oil pressure gauge shall read from 0 to 100 pounds PSI with a red line zone indicating critical levels of oil pressure. A red indicator light in the gauge and audible alarm shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (°F) with a red line zone indicating critical coolant temperatures. A red indicator light in the gauge and audible alarm shall indicate high coolant temperature. The scale on the voltmeter shall read from 9 to 18 volts with a red line zone indicating critical levels of battery voltage. A red indicator light in the gauge and an audible alarm shall indicate high or low system voltage. The low voltage alarm shall indicate when the system voltage has dropped below 11.8 volts for more than 120 seconds in accordance with the requirements of NFPA 1901. The scale on the transmission temperature gauge shall read from 100 to 300 degrees °F with a red line zone indicating critical temperatures. A red indicator light in the gauge and an audible alarm shall indicate a high transmission temperature.

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

RED INDICATORS

Stop Engine - indicates critical engine fault

Air Filter Restricted - indicates excessive engine air intake restriction

Park Brake - indicates parking brake is set

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Low Coolant - indicates critically low engine coolant

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

AMBER INDICATORS

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

Check Engine - indicates engine fault

Check Transmission - indicates transmission fault

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

High exhaust system temperature – indicates elevated exhaust temperatures

Water in Fuel - indicates presence of water in fuel filter

Wait to Start - indicates active engine air preheat cycle

Windshield Washer Fluid – indicates washer fluid is low

DPF restriction - indicates a restriction of the diesel particulate filter

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

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

SRS - indicates a problem in the supplemental restraint system

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

GREEN INDICATORS

Left and Right turn signal indicators

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

High Idle - indicates engine high idle is active.

Cruise Control - indicates cruise control is enabled

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

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

Auxiliary Brake - indicates secondary braking device is active

BLUE INDICATORS

High Beam indicator

AUDIBLE ALARMS

Air Filter Restriction

Cab Tilt Lock

Check Engine

Check Transmission

Open Door/Compartment

High Coolant Temperature

High or Low System Voltage

High Transmission Temperature

Low Air Pressure

Low Coolant Level

Low DEF Level

Low Engine Oil Pressure

Low Fuel

Stop Engine

Water in Fuel

Extended Left/Right Turn Signal On

ABS System Fault

WATERTOWN FIRE DEPARTMENT

BACKLIGHTING COLOR

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

AUXILIARY SPEEDOMETER

The overhead area forward of the right hand front seating position shall include an auxiliary speedometer which shall feature a digital readout. The speedometer shall be located inboard towards the center of the cab in the right hand front seating area.

APPARATUS PANEL INSTRUMENTATION

One (1) fuel level gauge and one (1) diesel exhaust fluid (DEF) gauge shall be shipped loose with the cab and chassis for the body builder to install. The DEF gauge shall display the diesel exhaust fluid level as a bar graph which shall provide a yellow warning indication once the level has dropped below 12.5 percent and a red warning indication once the level has dropped below to 5 percent.

RADIO

A Jensen radio with weather band, AM/FM stereo receiver, compact disc (CD) player, and four (4) speakers shall be installed in the cab. The radio shall include rear RCA input pigtail connector, satellite radio capability, and a covered front auxiliary mini stereo input with iPod ready USB jack. The CD player shall be compatible with CD-R, CD-RW and MP3 format discs. The radio shall be installed in the left hand overhead position. The speakers shall be installed inside the cab with two (2) speakers recessed overhead in the front portion of the cab rearward of the windshields and two (2) speakers on the upper rear wall of the cab.

AM/FM ANTENNA

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

CAMERA

An FRC branded inView 360-HD™ heavy duty 360° camera system powered by SEON shall be supplied. Three (3) HD cameras with box shaped housing shall be shipped loose for OEM

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installation in the body to afford the driver a clear view to the rear and sides of the vehicle and one (1) HD camera shall be mounted on the front of the cab, above the windshield.

The system shall provide a dual camera view. One (1) view shall be a stitched bird's eye 360.00 degrees view around the truck and one (1) shall be a direct feed from a single camera. This feed shall display the rear camera when the transmission is placed in reverse, the left or right camera with the activation of the respective side turn signal, or the front camera at all other times.

CAMERA DISPLAY

The camera system shall be wired to two (2) Weldon Vista display located on the driver's and officer's side dash. The camera system display can be activated through the Vista display panels.

COMMUNICATION ANTENNA

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

COMMUNICATION ANTENNA CABLE ROUTING

The antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

AUXILIARY COMMUNICATION ANTENNA

An auxiliary antenna base, for use with an NMO type antenna, shall be installed on the cab. The antenna base shall be an Antenex model MABVT8 and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna shall be mounted on the left hand front corner of the cab roof so not to interfere with light bars or other roof

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mounted equipment installed by chassis builder. The antenna base shall be chassis builder supplied.

AUXILIARY COMMUNICATION ANTENNA CABLE ROUTING

The auxiliary antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

CAB EXTERIOR PROTECTION

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

FIRE EXTINGUISHER

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

DOOR KEYS

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

DIAGNOSTIC SOFTWARE OCCUPANT PROTECTION

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

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

- Dearborn Group DPA4 Plus
- Noregon Systems JPRO® DLA+
- Cummins INLINE5
- Cummins INLINE6

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- NexIQ™ USB-Link™

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

WARRANTY

Purchaser shall receive a Custom Chassis Five (5) Years or 72,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0105. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

CHASSIS OPERATION MANUAL

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

ENGINE AND TRANSMISSION OPERATION MANUALS

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

- (2) Hard copies of the Engine Operation and Maintenance manual digital copy.
- (2) Digital copies of the Transmission Operator's manual
- (2) Digital copies of the Engine Owner's manual

CAB/CHASSIS AS BUILT WIRING DIAGRAMS

The cab and chassis shall include three (3) complete sets of wiring schematics and option wiring diagrams. Two (2) sets shall be a printed hard copies and one (1) set shall be a digital copy.

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PAINT CONFIRMATION

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

DRIVELINE LAYOUT CONFIRMATION

During the design phase of the chassis the Spartan Chassis driveline engineer shall submit the driveline layout to an OEM engineer to review the chassis design for any potential problems integrating the OEM body to the chassis. The OEM engineer shall provide approval to the driveline engineer prior to driveline bills of materials being released.

ADDITIONAL ITEMS TO BE INSTALLED IN THE CAB:

BINDER STORAGE COMPARTMENT:

One (1) custom fabricated compartment shall be supplied for the storage of three (3) 3-ring notebook binders. The compartment shall be located in a location determined by the Watertown Fire Department.

STREAMLIGHT HANDLIGHTS:

Five (5) Streamlight model Fire Vulcan Hand LED lights shall be supplied. Each Hand light shall have a 12-VDC vehicle charging rack, and shoulder strap. The handlights shall be wired to the Kussmaul battery charger "Battery Saver Circuit" and shall be mounted in the cab in a location to be determined.

HANDSET CHARGER RACKS:

One (1) custom fabricated aluminum tray, 2-way portable radio charger rack shall be customer provided and mounted in the cab. The rack shall be designed to hold six (6) radios. The portable radio charger shall be wired to the Battery Saver Circuit. The charger rack shall be mounted in locations determined by the Fire Department.

Two (2) customer supplied single portable radio chargers shall be installed, one by the driver and one by the officer. The locations shall be determined by the Fire Department.

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RADIO EQUIPMENT:

Two (2) two-way radios supplied by the Fire Department shall be installed on the apparatus. Radio equipment installation shall include all required equipment such as antennas, outside microphone boxes, etc.

I-PAD MOUNT:

One (1) Havis model #DS-APP-102 docking station with case shall be supplied and installed in the apparatus in front of the officer position.

GAS METER & TIC CHARGERS:

One (1) customer supplied gas meter charger & one (1) customer supplied TIC charger shall be installed in a location to be determined.

FIRE PUMP – HALE “Q-TWO”:

The pump shall be a mid-ship mounted, two-stage pump that complies with all applicable requirements of the latest "Standard for Automotive Fire Apparatus", NFPA Pamphlet 1901, and has a rated capacity of 1,500 GPM.

The pump shall be a Class "A" type and shall deliver the percentage of rated discharge at pressure indicated:

100% of rated capacity at 150 PSI

70% of rated capacity at 200 PSI

50% of rated capacity at 250 PSI

100% of rated capacity at 165 PSI

Pump shall be free from objectionable pulsation and vibration under all normal operating conditions.

PUMP CONSTRUCTION:

The entire pump shall be assembled and tested at the pump manufacturer's factory. The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance specs as outlined by the latest NFPA Pamphlet No. 1901. Pump shall be free from objectionable pulsation and vibration.

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The pump shall be driven by a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable the pump to meet and exceed its rated performance.

PUMP BODY:

The pump body and parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI. All moving metal parts in contact with water shall be of high quality bronze or stainless steel.

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

The pump shall have two (2) double suction impellers. The pump body shall have two opposed discharge volute cutwaters to eliminate radial unbalance.

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

There shall be a mechanical seal in place of pump packing. The mechanical seal shall 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.

IMPELLERS:

The pump impellers shall be hard, fine grain bronze of mixed flow design; accurately machined and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

IMPELLER SHAFT:

The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super-finished. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wraparound double labyrinth design for maximum efficiency.

THERMAL RELIEF VALVE:

A Hale model #TRV-120L" thermal relief valve shall be supplied to protect the pump from

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overheating by automatically relieving water from the pump when water temperature exceeds 120 degrees F. The relief valve shall include a pump panel mounted indicator light.

PUMP GEARBOX "L" STYLE:

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

The gearbox shall be of sufficient size to withstand up to 16,000-lbs. ft. of driveline torque.

The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

The gearbox drive shafts shall be of heat-treated chrome nickel steel and shall be of at least 2-3/4 inches in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine. All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel.

Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurate cut spur design shall be provided to eliminate all possible end thrust.

The pump ratio shall be selected by the apparatus manufacturer to given maximum performance with the engine and transmission.

The gearbox power shift, shifting mechanism shall be a heat treated, hard-anodized aluminum power cylinder, with stainless steel shaft. An in cab control, for rapid shift shall be provided that locks in road or pump.

PUMP SHIFT:

Pump shift engagement shall be made by a two-position free sliding collar, air controlled from the cab. An internal locking mechanism shall be provided that insures the collar shall be maintained in ROAD or PUMP position. A spring-loaded locking collar shall be mounted over the valve lever in the cab to prevent accidental shifting. Two (2) indicator lights shall be located in the cab adjacent to the pump shift switch. One (1) light, labeled "O.K. TO PUMP" and one to indicate, "PUMP ENGAGED".

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TRANSFER VALVE:

The pump shall be equipped with an all bronze waterway transfer valve, capable of switching from one pumping 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.

PRIMER:

A Trident Emergency products, LLC. Model # 31.001.0 Automatic Air Primer system shall be installed. This system does not require lubrication. Nothing but water shall be dumped on the ground. The Air primer is rigidly attached to the pump transmission. There are no rotating parts in this system. The Air Primer is made of brass for corrosion resistance and long life.

A rocker switch control located on the pump panel shall operate the combination manual/automatic priming valve. A sensor shall automatically restart the primer if any discharge pressure is lost. A "pump engaged" interface only permits automatic operation when the pump is engaged.

The pump when dry, shall be capable of taking suction and discharge water with a lift of ten (10) feet in not more than 60 seconds, through forty (40) feet of hard suction hose.

ANODE SYSTEM:

Two (2) Hale zinc anodes shall be installed on the pump to aid in the prevention of galvanic corrosion within the pump and associated plumbing. The Hale Anode System provides sacrificial, replaceable zinc anodes, which help to diminish, or prevent, pump and pump shaft galvanic corrosion. Two (2) anodes shall be supplied, one on the suction side, and one (1) on the discharge side of the pump.

PIPING:

All suction and discharge lines over 2" in diameter shall be heavy-duty Schedule 40 stainless steel pipe. Victaulic couplings shall be used wherever chassis flexing or vibration may loosen or damage piping, or where necessary to improve maintainability.

All suction and discharge valves shall be Elkhart quarter-turn ball type and be designed to seal for vacuum/pressure. All pump lines shall drain through either the master pump drain valve or be equipped with individual drain valves. All drain valve controls shall be extended to the pump panel and be located on the lower portion of the side panels. All individual drain lines shall be extended, with rubber hose, to drain below the chassis frame.

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2 ½" SUCTION

One (1) 2 ½" auxiliary suction inlet shall be supplied on the left side pump panel. Piping shall be 2 ½" with a 2 ½" valve with nylon ball, chrome plated swivel, strainer and chrome plated plug. The valve shall be located behind the pump panel with an Elkhart electric valve. It shall be controlled by an Elkhart UBEC1 electric controller on the left side pump panel.

"MIV" MASTER INTAKE VALVE:

Two (2) Hale Master Intake Valves "MIV" shall be provided on each 6" suction inlet. The Hale MIV valve is a NFPA compliant large diameter intake valve of all bronze construction that mounts between the pump body and suction tube behind the pump compartment panel. The MIV is hydro tested at 600 PSI and allows full water flow up to rated pump capacity during draft operation.

The MIV has a built-in adjustable bronze relief valve plumbed out to a 2 ½" NST threaded adapter, an air bleed tap and a second auxiliary with electric operation permitting total remote operation of the valve from the pump operator's panel.

One (1) MIV-E, electrically operated valve shall be installed behind the left side pump panel.

The MIV-E includes a 12-VDC remote control electric motor operation that uses a panel-mounted switch. The MIV-E also includes a panel mounted manual override hand wheel that permits operation of the valve during abnormal conditions.

One (1) MIV-E electrically operated valve shall be installed behind the right side pump panel. The MIV-E includes a 12-VDC remote control electric motor operation that uses a panel-mounted switch. The MIV-E also includes a panel mounted manual override hand wheel that permits operation of the valve during abnormal conditions.

For suction mounted valves, there are no special tools or partial disassembly of either the valve or apparatus required to make emergency operations.

SUCTION INLETS:

Two (2) 6" suction inlets shall be provided one (1) on each side of the apparatus. The suction fittings shall include a removable die cast screen to provide cathodic protection for the pump thus reducing corrosion.

Short style suction tubes shall be used to prevent excessive overhang of valves and pump mounted accessories.

Each suction inlet shall include one (1) 6" N.S.T. x 5" Storz 30 degree elbow adapter with 5" Storz blind cap with cable.

All Discharge Valves shall be Elkhart electric style with full flow valves. All discharges shall have Elkhart Apex color coded electric controllers with pressure gauge built into the valve controller & flow meter where listed. All discharges shall be controlled from the left pump panel.

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DISCHARGE OUTLETS:

One (1) 1 ½' discharge with an Elkhart 1 ½" electric full flow valve shall be supplied to the rear booster reel.

One (1) 2 ½' discharge with a Elkhart 2 ½" electric valve shall be supplied to the front bumper box. It shall have a 2 ½" X 2 ½", 90 degree chrome plated brass mechanical swivel with a 2 ½" x 1 ½" reducer.

Five (5) 2 ½" discharges shall be supplied, one (1) on the right-side pump panel, two (2) on the left side pump panel, and two (2) 2 ½" discharge piped to the right-side front of the hose bed.

All 2 ½" discharges shall have 2 ½" Elkhart electric valves. Discharges shall also include 30-degree chrome elbows with caps and chains on the side discharges, the two rear discharges shall have a 2 ½" NPT to 2 ½" NST adapter. The two (2) 2 ½" discharge piped to the front of the hose bed shall each also have a flow meter on the controller.

One (1) Elkhart, 3" electric valve shall be piped over the top of the pump with an 8-bolt flange for an Elkhart deck gun.

One (1) Elkhart Brass Model #7200XSD "Cobra EXM2' 1250 GPM, electric monitor shall be supplied with panel mounted control model#7010X2 and hand-held wireless control model#7015X2. It shall feature a stream straightener model #282-A with a remote-controlled automatic nozzle model #SM-1250E. It shall also have a set of four stack tips model #ST-194 that shall be mounted on the apparatus.

One (1) Elkhart Brass model #8598 18" Electric Riser shall be furnished and installed. It shall be controlled from the left pump operator's panel.

One (1) Elkhart, 3.5" electric valve shall be piped to the right-side pump operator's panel. This discharge shall have 3.5" piping with 3.5" N.S.T. chrome adapter with 5" Storz, 30-degree Storz elbow with cap.

Two (2) crosslay hosebeds shall be furnished above the pump. Each shall have a capacity of 300 ft. of 1 ¾" double-jacketed hose. Each 1 ¾" crosslay shall be supplied with a 2" electric Elkhart valve. Each shall have a flow meter on the controller. Each of these hosebeds shall be furnished with a 2" by 1 ½" mechanical swivel.

The crosslay hosebeds shall be constructed of stainless steel with turtle tile flooring

The crosslay hosebeds shall have a aluminum tread plate hinged cover and red D & S Custom Covers vinyl crosslay covers attached to the hinged cover on both ends with rope cords along the sides to meet NFPA.

DRAINS:

MASTER DRAIN:

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The pump shall be equipped with a manifold drain assembly consisting of a stainless steel plunger in a bronze body with multiple ports. The valve shall be designed so that the pump discharge pressure is used to force the plunger closed. The drain valve control shall be cable operated from the pump operator's panel and is identified as PUMP DRAIN. A master drain valve shall be supplied that shall drain the main pump. The control shall be push-pull on operator's panel. The valve shall be manufactured by Hale.

LINE DRAINS:

One (1) ¾" drain valve shall be furnished for all discharge. The valves shall be located along the bottom of the pump panels, both sides. The valves shall have ¼ turn control knobs and shall also be color-coded and numbered.

PUMP COOLER:

One (1) 3/8" pump cooler line with ¼ turn-type control on operator's panel. The line shall run from the discharge side of pump back to the booster tank to cool the pump during sustained periods of pump operation when water is not being discharged. A check valve shall be supplied.

TANK SUCTION VALVE:

One (1) Elkhart 3.5" electric valve with 4" piping shall be supplied from the front of the tank to the pump. A 3 ½" x 4" Hump Hose" is furnished in the piping to allow the tank to flex if necessary. This piping shall allow at least a flow rate of 600 G.P.M.. A check valve shall be supplied on the pump. All plumbing shall be stainless steel. It shall be controlled by an Elkhart APEX electric controller on the left side pump panel

TANK FILL:

A 2" pump to tank refill line shall be supplied. The piping shall be 2" I.D. with an Elkhart 2" electric full flow valve. All plumbing shall be stainless steel. It shall be controlled by an Elkhart APEX electric controller on the left side pump panel

PUMP OPERATORS' CONTROL PANEL:

Operator's panel is located on left side and shall include all valves, controls, and gauges, unless otherwise specified. Both right side and left side panels are to be removable for pump access. Polished stainless steel trim rings to be installed around all inlets, outlets and control rod openings.

Each right and left pump panel controls and gauges shall be illuminated by LED lights mounted under a stainless steel hood. These LED light shall be controlled by the parking brake.

Both pump panels shall be black vinyl clad aluminum, with all pump controls installed for the best operation.

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PUMP ACCESS DOOR:

The right side pump panel shall have a pump access door approximately 16" x 22" for inspection and service of the pump and controls. The door shall be flat type vertically hinged with trigger latch. Perimeter of opening shall be trimmed with polished aluminum moldings.

PUMP AND GAUGE PANEL LABELS:

All gauges, discharge outlets, discharge controls, and drains shall be labeled for ease of identification. Innovative Controls labels shall be used.

The labels shall be color-coded.

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.

PUMP CONTROLS:

ELECTRONIC PRESSURE GOVERNOR:

A Fire Research "INCONTROL" 400 Governor System designed to control the engine to maintain a desired pump pressure or engine speed setting shall be provided. This unit shall work with the electronically controlled engine via an electrical control signal to the engine control module.

The unit shall include an "RPM" mode, "PSI" mode, "Idle" mode, "Preset" mode, and "High Idle" mode. Switching between the modes shall be achieved by pressing and holding the mode switch, which shall change the controller between modes without loss of speed or pressure. The display shall change accordingly. The control shall be on the pump operator's panel.

The following gauges and controls shall be furnished on the gauge panel and pump panel:

- Fourteen (14) Elkhart APEX Valve controllers
- Two (2) Hale MIV controllers
- One (1) Fire Research Corp. In-Control 400 governor
- One (1) ¼" plugged test outlets, one for suction, one for discharge
- One (1) Pump cooler control valve.
- One (1) Auxiliary engine cooler control valve.
- One (1) Automatic Direct Tank Filler controller
- One (1) Pump primer control push button type.

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- One (1) Hale Foam System controller
- One (1) Hale Foam Fill System controller
- One (1) Master drain control and hose line drains.
- One (1) Fire Research "TankVision" water tank level indicator.
- One (1) Fire Research "TankVision" foam tank level indicator.
- One (1) Momentary switch to activate the chassis air horns.

FOAM SYSTEM:

A Hale FoamLogix model 3.3 foam system shall be supplied and installed.

The system shall include the following components.

- Operate control module
- Paddle wheel flow meter
- Pump and electric motor/motor drives
- Wiring Harnesses
- Low Level tank switch
- Foam injection check valve
- Shut-off valve on foam tank
- Stainless steel manifold with stainless steel check valve

The foam shall be supplied through the two (2) crosslays and a rear 2 ½" discharge.

The manifold shall flow a min of 660 gpm.

BOOSTER TANK:

The current poly booster tank and hose bed floor shall be reused. New 60 duro rubber shall be supplied and installed per UPF's specifications for the tank to be mounted on.

AUTO DIRECT TANK FILL SYSTEM:

A Fire Research "Wise" Auto Fill system shall be supplied and installed. This system shall control a 2 ½" Elkhart electric valve direct tank filler mounted on the left pump panel. It shall be controlled by the Fire Research water tank gauge allowing water to automatically fill the water tank when

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need. It shall have a manual mode to allow the valve to be opened manually. The control shall be on the operators pump panel. Piping shall be 2 ½" with a 2 ½" chrome plated swivel, strainer and chrome plated plug.

FOAM FILL SYSTEM:

The apparatus shall be equipped with a Hale Products, Inc. EZ-Fill™ fixed-mount foam tank refill pump system. The unit shall include a 12-volt electric motor that drives a 5-gpm foam concentrate pump used to refill the foam apparatus reservoir(s), a panel mounted smart-switch operator control and a wand suction hose connection.

The EZ-Fill system shall incorporate push-button smart-switch technology and be designed so that with a momentary press of the EZ-Fill control panel "Fill" or "Flush" buttons, the unit shall automatically cycle respectively filling the foam concentrate reservoir or running itself through a flush cycle.

The system shall be configured to handle refilling a single foam concentrate tank apparatus reservoir system.

The EZ Fill shall be equipped with a clear wand suction hose having a cam-lock fitting designed for 5-gallon pail drafting operations. The suction hose shall be equipped with integral strainer to prevent intake of unwanted debris. The cam-lock foam suction inlet connection shall be equipped with a cap for stowage. The wand shall attach to a cam-lock fitting receptacle on the pump operators panel during the refill process. Once the clear suction wand is connected via the cam-lock fitting, and the wand end is placed in a 5-gallon bucket of foam concentrate, with one push of the "Fill" button the unit shall self-prime and fill the apparatus foam concentrate reservoir. The EZ-Fill system shall then automatically shut itself off either after a 60-second run duration or when the foam concentrate reservoir is full. The EZ-Fill system shall contain a foam pump Flush"

feature via a three-way integral valve mounted inside the pump-house.

The EZ-Fill pump panel smart-switch control shall be designed to override automatic re-fill operation by allowing the pump operator to hold down the "Fill" or "Flush" buttons, which allows for continuous foam pump refill or flush action. The foam concentrate reservoir(s) shall be equipped with a "high level tank switch" to prevent foam reservoir overflow during automatic operation. The EZ-Fill shall include a factory supplied wiring harness configured for power and ground leads and an installation and operation manual.

TANK GAUGES:

One (1) Fire Research model #WLA400-A00 "Tank Vision" kit for water, including display, sensor, and 12" sensor cable shall be supplied. This shall be located on the left pump operator's panel

Three (3) Fire Research model #WLA280-A00, large remote water level gauges shall be supplied. Two shall be mounted on the cab (that are included in the chassis section), one each side and one on the

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rear of the apparatus.

One (1) Fire Research model #WLA460-A00 "Tank Vision" kit for class "A" foam, including display, sensor, and 12" sensor cable shall be supplied. This shall be located on the left pump operator's panel

BOOSTER REEL:

The current booster reel shall be reused. It shall have new plumbing supplied from the pump to the reel either stainless steel hard pipe or high-pressure hose.

There shall be an electric rewind button on the rear. The reel shall be wired to the chassis electrical system.

There shall be 200' of Mercedes Textiles Boostlite 3/4" booster hose supplied with the reel.

BODY:

The current stainless-steel body shall be reused. It shall be removed from the current chassis. The body shall be completely stripped of all items. It shall be sandblasted to remove all paint. All unused holes shall be weld filled. Any corrosion and/or damage shall be repaired and any bodywork shall be completed. The body shall be etch primed and blocked out before painting. Painting shall be completed per the painting section of the specifications.

NEW PUMP MODULE:

A separate pump house module shall be fabricated and attached to the chassis frame rails at four (4) points. The material shall be stainless steel tubing, angles and channels. Front and rear of the enclosure shall be 1/8" bright finished stainless steel treadplate, attached to the framing material with stainless steel bolts and nuts.

Two (2) service doors shall be located on the front of pump enclosure module. The doors shall be fabricated from 3/16" aluminum treadplate with "D-ring" latch.

The pump module shall not be attached to the cab or the body.

NEW BODY SUBFRAME BASE PLATES:

A 3/16" stainless steel formed channel shall be installed on the frame to use as a base for the body sub-frame. It shall be fastened to the frame using grade 8 steel bolts. It shall have a 1/4" rubber isolator between the frame and the channel.

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NEW WHEEL WELL FENDERETTES

The wheel well opening shall be equipped with a new round radius polished stainless steel fenderette bolted in place.

The fenderette shall have new beaded silicon or new welting between fenders and wheel well panel. Three (3) New S.C.B.A. cylinder compartments manufactured by "Signature" that hold one (1) cylinder each shall be supplied in the wheel well panels of the body. Each compartment shall include an N.F.P.A. compliant brushed stainless-steel doors, hardware and cylinder retainer straps.

A New "Signature" brushed stainless-steel fuel door shall be supplied.

RUB RAILS:

The current stainless steel rub rails shall be polished and reinstalled with new stainless-steel bolts.

NEW HOSE BED COVER:

The hose bed shall have a red vinyl cover attached at the front with rope cords along the sides and clips with chevrons in the rear to meet the NFPA Standard. It shall be manufactured by D & S Custom covers.

NEW RUNNING BOARDS:

These shall be fabricated using 1/8" polished stainless steel grip-strut, with a double break on the outer edge, "down and in".

Running boards shall be furnished on each side under the pump panels. These running boards shall be approximately 50" L x 10" D.

NEW STAINLESS STEEL TREADPLATE OVERLAY:

The stainless steel treadplate shall be 1/8" polished type.

The vertical surfaces of the front compartments and rear compartments shall be covered with polished stainless steel treadplate and held in place with stainless steel screws and nuts.

The walkways over the high side compartments shall be polished stainless steel treadplate both sides. The treadplate shall be bent-up on hose body sides and down over compartments to act as a drip rail, fastened with stainless steel bolts and nuts. Where the

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treadplate meets the body sides, beaded silicon caulking shall be applied.

The surfaces of the compartments, each side at the rear that extend out to rear of the step, shall be covered with stainless steel treadplate.

NEW STEPS:

Ten (10) N.F.P.A. compliant, folding steps shall be furnished, four (4) on the rear panel for access to hose bed and three (3) on front face of side compartments. Each compliant folding step with nonslip surface, chrome finish, and integrated top and bottom LED lights.

NEW HAND RAILS:

Rails shall be 1 ¼" O.D. aluminum tubing with three (3) full-length rubber inserts equally spaced, rails are mounted in bronze chrome plated stanchion brackets. Rails are furnished as follows on the body: one (1) each side on the rear of the compartments, one (1) full width across rear panel below hose bed floor and one (1) each side on top of the pump panel.

NEW COMPARTMENT – DOORS (ROLL-UP STYLE):

All compartments shall have roll-up style doors.

All compartment doors shall be manufactured by the ROM, and include a wet paint to match the body paint color except for the rear door which shall have a anodized finish.

Replacement parts shall be available in two (2) to three (3) working days.

The slats shall be double wall box frame extrusion. The exterior surface shall be flat, interior surface shall be concave to prevent loose equipment from jamming the door.

Slats shall be anodized to eliminate oxidation and include inner locking end shoes on every slat secured by Punch-Dimple process.

The slats shall have interlocking joints with a folding locking flange.

Between each slat shall be a PVC/Vinyl inner seal to prevent metal to metal contact.

Door tracks shall be one-piece aluminum, which shall include an attaching flange and finishing flange incorporated into its design, which facilitates installation and provides a finished look to installation without additional trim and caulking. Track shall have replaceable side seal. The slide seal prohibits water and dust intrusion into the compartments.

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Drip rail shall have built in replacement wiper seal. Drip rail shall be made of aluminum.

Roll-up doors shall have a 4" diameter counter balance to assist in lifting and eliminate risk of accidental closing.

Doors shall be secured with a full width lift bar, to be operable by one hand, even with heavy gloves. Securing methods shall be a positive latch device.

These doors shall be provided on all compartments.

ADDITIONAL COMPARTMENT FEATURES:

All compartments shall have sweep out style floors.

All compartments shall have two (2) New LED light strips operated by a New door switch.

All compartment floors shall be covered with New black "Turtle Tile".

TOOL BOARDS:

There shall be two (2) "swing-out" tool boards fabricated and installed in the two center compartments for the purpose of mounting equipment. They shall be mounted so that tools can be mounted on both sides.

NEW LADDERS:

One (1) 24-foot, 2-section Duo-Safety pumper style ladder, one (1) 14-ft. Duo-Safety pumper style roof ladder and one (1) Duo-Safety 10-foot, aluminum folding ladder to be supplied. All three-(3) ladders shall be mounted on the current ladder rack.

Two (2) NY style steel hooks:

Hooks shall be mounted one each side on the rear exterior cab wall.

NEW REAR STEP, BUMPER AND TOWING DEVICE:

The rear step support assembly, which also contains the rear-towing device, shall consist of 6" x 1" thick steel flat bars that are bolted to the chassis rails and extend down to the rear step level. 3" x 3" x 3/8" steel tubing is welded to the flat bars to form a rigid support for the "step-bumper". In addition, two (2) tow eyes are welded to this framework. The tow eyes must be capable of flat towing the apparatus.

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This shall have stainless steel grip strut step surface.

NEW MUD FLAPS:

Heavy-duty mud flaps shall be provided and installed to the rear of each front wheel and to the rear of each pair of dual rear wheels. All mud flaps shall be an adequate width to protect apparatus from wheel debris. Mud flaps shall be made of heavy duty, semi-flexible vinyl to prevent "sailing".

MOUNTING ALLOWANCE:

There shall be a \$5,000.00 allowance in the bid for the purpose of equipment mounting on the apparatus.

ELECTRICAL:

All the electrical equipment installed in the body shall conform to the National Electrical Code. Wiring installed by the manufacturer shall be run in heat resistant plastic convoluted loom split along its entire length and shall be protected by automatic reset circuit breakers.

All wiring shall be number and/or color-coded. Grommets shall be used wherever wires or loom pass through holes in metal.

All necessary clearance, marker and back-up lights along with a lighted license plate bracket shall be furnished and shall meet Federal Standards. Rear cluster marker lights shall be recess mounted in the rear step flange for protection.

All electrical and electronic components shall be selected to minimize electrical loads, thereby not exceeding the vehicle's generating system capacity. The electrical system components and wiring shall be readily accessible through panels for checking and maintenance. All electrical shall be monitored by the Multiplex system.

WIRING:

All new wiring, breakers and relays shall be used in the body.

12 VOLT LIGHTING:

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EXTERIOR LIGHTS:

Clearance, marker and license plate lights, shall be L.E.D. type red marker/clearance lights, along with reflectors shall be mounted along the length of the body and at the rear of the body and shall be wired in accordance with federal regulations. A rear license plate bracket with LED light shall be furnished.

A rear LED marker light shall be furnished at each side, outermost practical mounting location at the top of the body.

A secondary turn signal/clearance light, amber LED, shall be provided below each side of the body, in the area forward of the rear axle.

The following lights shall be mounted in a #M6FCV4 four light housing, mounted on each side on the rear of the compartments.

1. Two (2) Whelen model #M6BTT, M6 series, LED rectangular, red stop/tail lights.
2. Two (2) Whelen model #M6T, M6 series, LED, left & right rectangular amber directional signal lights.
3. Two (2) Whelen model #M6BUW, M6 series, LED rectangular, automatically operated clear back-up lights.

Three (3) LED type hose loading lights, mounted on stanchion brackets shall be supplied and installed. These lights shall be one spot and one flood. Two (2) lights shall be mounted on the rear of the hose bed and one (1) flood light shall be mounted on the front of the hose bed. All these lights shall be controlled from the cab.

Pump panel lighting as previously mentioned shall be supplied and installed as specified in the PUMP OPERATOR'S CONTROL PANEL section.

Six (6) Tecniq LED ground lights, two (2) each side under the pump panel step and two (2) in the rear shall be mounted on angle brackets and controlled by switch in cab shall be supplied and installed.

Four (4) Whelen model #PCPSM1C, Pioneer surface mount 12-volt clear LED scene lights shall be furnished and installed, one on each side of the body and two in the rear. They shall be controlled from the cab.

LED step lights with rubber grommets shall be provided and located to properly illuminate all body steps, walkway areas and hose bed where required.

WATERTOWN FIRE DEPARTMENT

LIGHT TOWER

A Will-Burt "Nightscan" model 2.3 Powerlite P/N NS2.3-600-4 WHL FLD FLD, 600 watt light tower with four Whelen Pioneer Flood/Flood LED 12 volt light heads shall be supplied and installed on the roof of the cab. Each light head produces 16,000 Lumens. It shall have an NFPA umbilical cord remote control that shall be mounted next to the circuit breaker panel. It shall have an aluminum shield fabricated and installed around the light tower to protect it. The cover shall be painted white to match the cab of the apparatus.

WARNING LIGHT SYSTEM:

Listed below is a Whelen Engineering flashing LED lighting system that shall be provided which consist of the following:

Zone "A" Upper, (cab roof): One (1) Whelen 72" Freedom WCX lightbar, length 72", with two (2) front corner red LED's, ten (10) front LED's (8 Red & 2 White) and two (2) end red LED's.. The lightbar shall include one (1) Opticom unit mounted in the center.

Zone "B" Upper & Zone "D" Upper, (left & right, front & rear corners): Both upper front zones shall be covered by the side modules of the lightbar and the right and left rear by the rear LED beacons.

Zone "C" Upper, (upper rear body): Two (2) Whelen model #B6MMRAP dual level super LED beacons color red with a rear facing linear amber super LED light. The rear amber lights shall activate when the parking brake is applied and when the warning lights are activated. The lights shall be mounted on Cast stations.

Zone A Lower, (front of cab): See Cab section for description.

Zone B Lower, (right lower side of apparatus): Two (2) Whelen model #M6RS LED warning lights shall be supplied. One (1) shall be mounted in the front side on the bumper tail and One (1) shall be mounted on the cab side. Two (2) Whelen model #M2WRS, surface mounted LED flashers, color red. Lighthoods shall be mounted as follows: one (1) in the middle of the apparatus and one (1) on the side of the body at the rear of the apparatus in the rub rail area. Each light head shall be mounted in a chrome bezel with a gasket.

Zone C Lower, (lower rear body): Two (2) Whelen model #M6RS series surface mounted LED flashers, color red. Each light head shall be mounted in the quad housing in the lower position.

Zone D Lower, (left lower side of apparatus): Two (2) Whelen model #M6RS LED warning lights shall be supplied. One (1) shall be mounted in the front side on the bumper tail and

WATERTOWN FIRE DEPARTMENT

One (1) shall be mounted on the cab side. Two (2) Whelen model #M2WRS, surface mounted LED flashers, color red. Light heads shall be mounted as follows: one (1) in the middle of the apparatus and one (1) on the side of the body at the rear of the apparatus in the rub rail area. Each light head shall be mounted in a chrome bezel with a gasket.

One (1) Whelen model #TAL85 amber LED "Traffic Advisor" mounted on the rear body panel with control head located on the front dash panel.

All warning lights shall be controlled by a Whelen CORE controller supplied with the chassis.

WARNING LIGHT CERTIFICATION:

The warning light systems specified shall have a total amperage draw of 45 AMPS with all lights activated in either the "Clearing Right of Way" or the "Blocking Right of Way" mode.

This warning light system shall be certified by the light system manufacturer, to meet all of the requirements as noted in chapter 13 of the 2009 edition of the NFPA 1901 fire Apparatus Standard.

GENERATOR:

A Harrison hydraulic driven A/C electric generator system with updraft fan shall be supplied and installed, model 6 MCR-16R, 120/240, 6,000 watt capacity. This unit shall be powered by a P.T.O. from the transmission. The PTO control shall be on the V-Mux control panel. The generator shall be mounted over the pump.

A circuit breaker panel shall be installed in the left front equipment compartment and shall contain a min of six (6) breakers with a main breaker. All circuits shall be identified on the inside cover of the box.

A meter shall be supplied and connected to the generator and mounted adjacent to the circuit breaker panel.

Generator shall have full rated power from idle to maximum engine R.P.M.

One (1) generator engage/disengage control shall be through the Vista multiplex and shall indicate when the generator is engaged.

ELECTRIC CABLE REEL (120 VOLTS):

The current cord reel shall be reused and mounted in the right-side pump house and the

WATERTOWN FIRE DEPARTMENT

cable shall exit out the right-side pump panel. The current cord on the reel shall be reused. A new weather tight plug shall be installed on the end of the cord. The end shall be mounted on the pump panel.

Rollers and guides shall be supplied and installed in the pump panel for easy rewind of the cable.

A new Akron Junction Box with two (2) 20-amp GFI duplex outlet and two (2) 20-amp twist-lock outlets shall be supplied. The junction Box shall have rubber feet and be powder coated yellow. The junction box shall have a connector on the cord end to match up with the connector on the reel. The box shall be mounted in the right front body compartment.

The reel shall be wired directly to the chassis battery system with heavy-duty stranded copper cable, with guarded finger type rewind button on the right-side pump panel.

It shall be connected directly to the generator system. The wiring from the generator system shall be through electrical weatherproof loom, with stranded copper wiring. The wiring shall terminate in a sealed conduit box at the reel with mechanical type connectors for quick removal of wiring.

PAINT, PREPARATION AND FINISH:

The PPG Delta, low VOC polyurethane finishing system shall be utilized.

All exposed welds shall be ground smooth for final finishing of areas to be painted. After final bodywork is completed, grinding (36 and 80 grit), and finish sanding shall be used in preparation for priming.

Priming shall be a two-stage process. First stage shall be coating with a two-part component, self-etching, and corrosion resistant primer to chemically bond the surface of the metal for increased adhesion. Second stage shall be multiple coats of a catalyzed two-component polyurethane, primer surfacer, applied for leveling of small imperfections and topcoat sealing.

THREE (3) COLOR COATS OF PPG DELTA LOW VOC POLYURETHANE SHALL BE APPLIED WITH TWO (2) TO THREE (3) COATS OF CLEAR POLYURETHANE OVER THE COLOR COATS. THE CLEAR COATS ARE SANDED AND BUFFED TO A MIRROR FINISH.

All removable items such as brackets, etc. shall be painted separately to insure finish paint behind mounted items.

The inside and underside areas of the complete body assembly shall be painted black with a polyurethane base paint prior to the installation of the body on the chassis.

WATERTOWN FIRE DEPARTMENT

All compartment un-welded seams exposed to high moisture environments shall be sealed using permanent pliable caulking. One (1) pint of each exterior color of paint for touch-up purposes shall be supplied to the Watertown Fire Department.

The interior of the fire body compartments shall have a "swirled" stainless steel finish.

The inside of the hose body panels and hose bed partitions shall have a "DA" brushed finish.

The fire body and cab shall be painted to match the Fire Department's existing apparatus, PPG paint #DUHS-72704K. The cab shall have a white top PPG paint #DUHS-2185

PAINT FINISH WARRANTY:

The finish paint on the unit shall be provided with a seven (7) year paint finish guarantee, which shall cover the finish for the following items:

1. Peeling or delamination of the topcoat and/or other layers of paint.
2. Cracking or checking
3. Loss of gloss caused by defective Fleet Finishes, which are covered by this guarantee.

A copy of this warranty is included with the proposal.

RUST PROOFING:

Rust proofing shall be applied during the assembly process. The only area to be rust proofed is the entire underside of cab. All other areas are to be painted.

LETTERING:

All gold leaf lettering and striping, and fire department seal, shall be 23-Karat computer generated gold leaf. Lettering and striping shall be of a design that matches existing Watertown Fire Department apparatus. All lettering shall be 23-Karat with shading.

SCOTCHLITE STRIPE:

A ¼" wide white reflective stripe equally spaced above and below a 3 ½" stripe shall be provided around the perimeter of the apparatus. The stripe shall be applied on a minimum of 50% of each side of the unit, and 25% on the front of the unit.

REAR CHEVRONS:

Retro reflective chevrons shall be applied to the rear of the apparatus covering at least 50 % of the rear facing vertical surface. Each stripe shall be a single color alternating between red

WATERTOWN FIRE DEPARTMENT

and yellow. Each stripe shall be 6 inches in width. Each stripe shall slope downward at a 45 degree angle away from the center line of the apparatus.

CAB PAINT BREAK TRIM:

A chrome style trim shall be applied to the paint break between the white and red on the chassis.

WATERTOWN FIRE DEPARTMENT

**TOWN OF WATERTOWN
WATERTOWN, CONNECTICUT 06795**

BID PROPOSAL

**Watertown Fire Department
Fire Apparatus – Custom Fire Pumper and Equipment
BID OPENING: 11:00 a.m. Tuesday, March 21, 2022**

**TO: Donna L. Ford, Purchasing Agent
Town of Watertown
Town Hall
61 Echo Lake Road
Watertown, CT 06795**

The undersigned, as bidder, agrees to furnish and deliver one (1) new custom Fire Pumper and Equipment and declares that no person or persons, other than those named herein, are interested in this Proposal; that this Proposal is made without collusion with any person, firm, or corporation; that he has carefully examined the location of the proposed work; that no person or persons acting in any official capacity for the Town is directly or indirectly interested therein or in any portion of the profit thereof; and that he proposes and agrees, if this Proposal is accepted, to execute the Form of Contract with the Town; to provide all necessary equipment, tools, labor and delivery and to do all work and furnish all materials specified in the manner and time therein prescribed, and according to the requirements of the Town as therein set forth, and that he will take in full payment therefor, the following unit prices and lump sums, to wit:

FIRM _____
Name

Street

City State Zip Code
NAME _____
Please Print
TELEPHONE NUMBER _____
FAX NUMBER _____
EMAIL ADDRESS _____
SIGNED _____ DATE _____

WATERTOWN FIRE DEPARTMENT

PROPOSAL

Cab & Chassis

Manufacturer: _____ Model : _____

Year: _____ Time to Delivery: _____

Net cost complete per specifications \$ _____

Have you enclosed prints and/or drawings? yes no

Have you submitted this proposal in duplicate? yes no

Have you taken any exceptions or have you deviated from our printed specification and if so, are such suggested changes clearly noted on the page provided for exceptions to specifications?

yes no

Payment terms proposed (use separate sheet if required):

WATERTOWN FIRE DEPARTMENT

EXCEPTIONS TAKEN TO SPECIFICATIONS:

(Please duplicate this blank page as required)

Page: _____

Heading: _____

Description: _____

WATERTOWN FIRE DEPARTMENT

Page: _____

Heading: _____

Description: _____

WATERTOWN FIRE DEPARTMENT

RECEIPT OF ADDENDA

ADDENDUM #

SIGNATURE

DATE

- 1. _____ / /
- 2. _____ / /
- 3. _____ / /
- 4. _____ / /

NAME OF BIDDER: _____

OFFICIAL ADDRESS: _____

PHONE NUMBER: _____

BY: _____ TITLE: _____

(Please Print)

DATE: _____

SIGNATURE: _____

WATERTOWN FIRE DEPARTMENT

PROPOSED SUBCONTRACTORS

FIRM _____
Name

Street

City State Zip Code

CONTACT _____ TELEPHONE _____
Please Print

TYPE OF WORK TO BE PERFORMED _____

.....

FIRM _____
Name

Street

City State Zip Code

CONTACT _____ TELEPHONE _____
Please Print

TYPE OF WORK TO BE PERFORMED _____

.....

WATERTOWN FIRE DEPARTMENT

FIRM _____

Name

Street

City

State

Zip Code

CONTACT _____ TELEPHONE _____

Please Print

TYPE OF WORK TO BE PERFORMED _____

WATERTOWN FIRE DEPARTMENT

REFERENCES

Please list a minimum of three references of similar work performed within the last three years.

FIRM _____

Name

Street

City

State

Zip Code

CONTACT _____ TELEPHONE _____

Please Print

TYPE OF WORK TO BE PERFORMED _____

.....

FIRM _____

Name

Street

City

State

Zip Code

CONTACT _____ TELEPHONE _____

Please Print

TYPE OF WORK TO BE PERFORMED _____

.....

WATERTOWN FIRE DEPARTMENT

FIRM _____

Name

Street

City

State

Zip Code

CONTACT _____ TELEPHONE _____

Please Print

TYPE OF WORK TO BE PERFORMED _____

WATERTOWN FIRE DEPARTMENT

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____
_____ as Principal, and _____ as
Surety, are hereby held and firmly bound unto _____ as OWNER in the
penal sum of _____ for the payment of which, well
and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns. Signed,
this _____ day of _____, 20___. The Condition of the above obligation is such
that whereas the Principal has submitted to _____ a certain BID,
attached hereto and hereby made a part hereof to enter into a contract in writing, for the

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and the year first set forth above.

_____(L.S.) _____
Principal Surety
By: _____

IMPORTANT - Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

WATERTOWN FIRE DEPARTMENT

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____, hereinafter called Principal and
(Corporation, Partnership, or Individual)

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

(Name of Owner)

(Address of Owner)

hereinafter called OWNER, in the penal sum of _____ Dollars,
\$(_____) in lawful money of the United States, for the payment of which sum well and
truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these
presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a
certain contract with the OWNER, dated the ____ day of _____, 20____, a copy of which is
hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the
undertakings, covenants, terms, conditions, and agreements of said contract during the original term
thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to
the Surety and during the one year guaranty period, and if he shall satisfy all claims and demands
incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs
and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the

WATERTOWN FIRE DEPARTMENT

OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in ____ counterparts each one of which shall be deemed an original, this ____ day of _____, 20__.

ATTEST:

	Principal
(Principal) Secretary (SEAL)	By _____(s)

(Witness as to Principal)	(Address)
(Address)	
	Surety

ATTEST:

(Surety) Secretary (SEAL)	
(Witness as to Surety)	By _____
(Address)	Attorney-in-Fact
	(Address)
	NOTE:

Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND
IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

WATERTOWN FIRE DEPARTMENT

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____, hereinafter called Principal and
(Corporation, Partnership, or Individual)

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

(Name of Owner)

(Address of Owner)

hereinafter called OWNER, in the penal sum of _____ Dollars,
\$(_____) in lawful money of the United States, for the payment of which sum well and
truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these
presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain
contract with the OWNER, dated the ____ day of _____, 20__, a copy of which is hereto
attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the
undertakings, covenants, terms, conditions, and agreements of said contract during the original term
thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to
the Surety and during the one year guaranty period, and if he shall satisfy all claims and demands
incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs

WATERTOWN FIRE DEPARTMENT

and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in ____ counterparts each one of which shall be deemed an original, this ____ day of _____, 20__.

ATTEST:

_____ (Principal) Secretary (SEAL)	_____ Principal
_____ (Witness as to Principal)	By _____ (s)
_____ (Address)	_____ (Address)
_____ (Address)	_____ (Address)

ATTEST:

_____ (Surety) Secretary (SEAL)	_____ Surety
_____ (Witness as to Surety)	By _____ Attorney-in-Fact
_____ (Address)	_____ (Address)
_____ (Address)	_____ (Address)

NOTE: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.