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 Annex, 424 Main Street, Watertown, Connecticut, until **11:00 a.m. Tuesday, January 7, 2014** at which time and place they will be publicly opened and read aloud for furnishing one new current model aerial ladder truck 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](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.

Carol Z. Roman  
Purchasing Agent  
Town of Watertown
INFORMATION FOR BIDDERS

TOWN OF WATERTOWN
WATERTOWN, CONNECTICUT 06795

Watertown Fire Department
Fire Apparatus – Aerial Ladder Truck

BID OPENING: 11:00 a.m. Tuesday, January 7, 2014

PROPOSALS RECEIVED
All bids must be in a sealed envelope and received prior to 11:00 a.m. Tuesday, January 7, 2014 at the office of the Purchasing Agent, 424 Main Street, 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.
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). 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, 424 Main Street, 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.

**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, January 7, 2014**. 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 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 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.

**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.

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 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:
NOTE 1: If Bidder is only a vendor 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 Carol Z. Roman, Purchasing Agent at (860) 945-5260 or via email at roman@watertownct.org.
TOWN OF WATERTOWN  
WATERTOWN, CONNECTICUT  

TECHNICAL SPECIFICATIONS  

Watertown Fire Department  
Fire Apparatus – Aerial Ladder Truck  

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 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.

Apparatus will be weighed after delivery with 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.

Apparatus must comply with the axle loading laws in the State of Connecticut.

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.

NFPA REQUIREMENT:  
The apparatus shall be built and meet all current NFPA 1901, 2009 Edition Standards.

HEIGHT:  
The vehicle height is not to exceed 150 inches (12 Feet, 6 Inches).
**LENGTH:**
The vehicle length is not to exceed 565 inches (47 Feet, 1 Inch).

**SERVICE CENTER:**
The dealership supplying the apparatus must maintain a full service, repair and warranty center. The service center is desired to be located within 50 miles of the Watertown Fire Department. The service center must be owned and operated by the dealership, which must be an established business entity.

It is the intent of the Watertown Fire Department to inspect each bidder’s service center, personnel and mobile service units. Service of this vehicle is of the utmost importance to the Town of Watertown and the ability to provide quality and timely service will be considered in the award.

To insure the purchaser of a source for service and parts over the anticipated life of the apparatus, apparatus manufacturer shall maintain a factory service, fabrication/manufacturing, painting, and testing facility within 50 Miles of the Town of Watertown.

To insure that each bidder has the ability to properly and expeditiously service units, the Watertown Fire Department will conduct the following inspection:

- Each bidder shall bring their mobile service unit to the Watertown Fire Department for inspection.
- The vehicle must be brought to the Department by an EVT and ASE certified mechanic employed full time by the local dealership supplying the apparatus.
- The mobile service unit shall have with it the registration for the vehicle, the dealership insurance certificate showing workers compensation and garage liability coverage and the State of Connecticut Dealer License. All documents shall be in the name of the dealership.

The service center shall have the following minimum qualifications;
- Full CAD computer system for the design of apparatus
- Minimum of ten (10) years of continuous ownership and management.
- Certified EVT and ASE mechanics
- Certified in house body painter and fabricator.
- Certified warranty center for the chassis being supplied
- One (1) fully equipped and staffed in-house mobile service unit.
- Facility must include heated indoor storage/repair area.
- MIG welder and cutting torches.
- PPG certified service center
Digital camera for warranty repairs
- Capability of servicing large fire apparatus (aerials, tankers and pumpers), indoors with cabs fully tilted and aerial devices removed from their beds.
- Plasma Cutter
- 24 hour – 365 days per year emergency on site service
- Hydraulic hose coupling system with fittings and hose in house

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.

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.

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 subjected 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 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.

A qualified delivery engineer representing the company building the apparatus shall deliver 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 fire fighting equipment, shall be available. One (1) copy will be delivered with the apparatus and the other held at the service center facility.

**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 MPH 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.

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 may be cause for rejection.

Failure to comply with changes necessary to conform to any clause of the specifications within Thirty (30) Days may 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. A copy of the original Bid Document must be returned with the Yes/No compliance column filled in.

Computer run-off sheets are not acceptable as Contractor Specifications.

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 our 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. 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.

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 three (3) inspection trips to his factory by three (3) people; the cost of these trips shall be born by the builder.
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 may 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 either at the owner’s facility or at the manufacturer’s facility dependent at the sole discretion of the owner, 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, aerial ladder system, cascade breathing air system, the apparatus and all equipment. Delivery shall be made by a factory 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 and this must include at least one weekend day, or as instructed by the 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. 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 Gladiator 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 2014 or current 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.

APPARATUS TYPE
The apparatus shall be an aerial vehicle designed for emergency service use. The apparatus shall be equipped with a ladder, elevating platform or water tower that shall be rear mounted thus providing the following vehicle benefits:
  - Improved mobility vs. mid-ship mounted units, due to shorter overall travel length and wheelbase.
  - Increased compartment space, hose load, and water capacity in the body, resulting from ladder being raised to clear the cab.
  - Shorter vehicle wheelbase.
  - Shorter overall length of vehicle.

ANGLES OF APPROACH & DEPARTURE
The min angle of approach shall be 14 degrees, the min angle of departure shall be 11 degrees.
VEHICLE TYPE
The chassis shall be manufactured for use as a straight truck type vehicle and designed for the installation of a permanently mounted apparatus behind the cab. The apparatus of the vehicle shall be supplied and installed by the apparatus manufacturer.

AXLE CONFIGURATION
The chassis shall feature a 6 x 4 axle configuration consisting of a tandem rear drive axle set with a single front steer axle.

GROSS AXLE WEIGHT RATINGS FRONT
The front gross axle weight rating (GAWR) of the chassis shall be 23,000 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 62,000 pounds.

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

CAB STYLE
The cab shall be a custom, fully enclosed, LFD model with a flat 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 roof skin shall be 0.13 inch thick; the rear wall skin shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.

The exterior width of the cab shall be 99.40 inches wide with a minimum interior width of 91.00 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 55.00 inches 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 63.38 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 51.00 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 shall be 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 11.25 inches deep X 31.13 inches wide. The intermediate step shall measure approximately 8.38 inches deep X 32.13 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 10.38 inches deep X 20.44 inches wide. The intermediate step shall measure approximately 10.20 inches deep X 21.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.80 inches.

**OCCUPANT PROTECTION**

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

The system components shall include:

- Driver steering wheel airbag
- Driver knee air bags 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 – which can detect 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 knee airbag, officer side knee airbag, and advanced seat belts for each occupant in the cab.

The APS frontal impact system shall be independently tested to ensure occupant injury criteria does not exceed injury criteria defined in Federal Motor Vehicle Safety Standard (FMVSS) 208. Frontal impact into a rigid barrier at 25 mph shall be conducted by an independent third party test facility using belted 95th percentile Hybrid II test dummies.

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.

The APS side impact system shall be independently tested to ensure occupant injury criteria does not exceed injury criteria defined in Federal Motor Vehicle Safety Standard (FMVSS) 214. Side impact from a moving barrier at 17 mph shall be conducted by an independent third party test facility using belted 50th percentile ES-2re test dummies.

**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 cab fascia shall include a classic box style, 304 stainless steel front grille. The grille shall measure 55.45 wide X 33.50 inches high X 1.50 inches deep. The upper portion of the grille shall be hinged to provide service access behind the grille.

The grille shall include a minimum free air intake of 750.00 square inches.

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

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

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

All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

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

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

**CAB PAINT PRIMARY/LOWER COLOR**  
The lower paint color shall be PPG FBCH 72704 ALT red.

**CAB PAINT SECONDARY/UPPER COLOR**  
The secondary/upper paint color shall be PPG FBCH 2185 white.

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

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

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

**CAB PAINT INTERIOR**  
The visible interior cab structure surfaces shall be painted with a Zolatone #20-72 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.

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 unhindered by most obstacles encountered, such as guard rails along interstate highways.

**CAB INSULATION**
The cab ceiling and walls shall include 1.00 inch thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

**LH EXTERIOR 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. The compartment shall be accessible from the outside of the cab through an Amdor roll up door. The compartment shall have a clear door opening of 14.50 inches wide X 37.50 inches high. 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. The compartment shall include four (4) pieces of aluminum Unistrut. Two (2) pieces of aluminum Unistrut shall be welded to both the forward and rearward compartment walls.

**LH EXTERIOR MID EMS COMPARTMENT INTERIOR ACCESS**
The left hand exterior EMS compartment shall include access from inside the cab. The compartment shall be accessible from the inside of the cab via an aluminum hinged door painted cab interior color with one (1) non-locking latch. The interior access door shall face the rear of the cab and shall feature a clear door opening of 14.50 inches wide X 32.00 inches high.

**LH EXTERIOR MID EMS COMPARTMENT LIGHTING**
There shall be one (1) Amdor Luma-Bar™ LED strip light installed to illuminate the exterior mid EMS compartment on the left side of the cab above the wheel well. The strip light shall be approximately 31.50 inches long.
LH EXTERIOR 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 EXTERIOR 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. The compartment shall be accessible from the outside of the cab through an Amdor roll up door. The compartment shall have a clear door opening of 15.00 inches wide X 41.00 inches high. 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. The compartment shall include four (4) pieces of aluminum Unistrut. Two (2) pieces of aluminum Unistrut shall be welded to both the forward and rearward compartment walls.

RH EXTERIOR MID EMS COMPARTMENT INTERIOR ACCESS
The right hand exterior EMS compartment shall include access from inside the cab. The compartment shall be accessible from the inside of the cab via an aluminum hinged door painted cab interior color with one (1) non-locking latch. The interior access door shall face the rear of the cab and shall feature a clear door opening of 14.50 inches wide X 32.00 inches high.

RH EXTERIOR MID EMS COMPARTMENT LIGHTING
There shall be one (1) Amdor Luma-Bar™ LED strip light installed to illuminate the exterior mid EMS compartment on the right side of the cab above the wheel well. The strip light shall be approximately 31.50 inches long.

RH EXTERIOR 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.

EXTERIOR MID EMS COMPARTMENT EXTERIOR FINISH
The mid EMS compartment surfaces that are exposed to the interior of the cab shall be painted with a Zolatone #20-72 silver gray texture finish.
EXTERIOR MID EMS COMPARTMENT INTERIOR FINISH
The interior of the mid EMS compartment shall be painted with a Zolatone #20-72 silver gray texture 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) Amdor Luma-Bar™ H20 LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be approximately 12.00 inches long.

LH EXTERIOR COMPARTMENT INTERIOR FINISH
The interior of the left hand exterior compartment shall have a Zolatone #20-72 silver gray texture 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) Amdor Luma-Bar™ H20 LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be approximately 12.00 inches long.
RH EXTERIOR COMPARTMENT INTERIOR FINISH
The interior of the right hand exterior compartment shall have a Zolatone #20-72 silver gray texture finish.

CAB STRUCTURAL WARRANTY
The cab structure shall be warranted for a period of ten (10) years or one hundred thousand (100,000) miles which ever may occur first. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided 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 tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5.

ELECTRICAL SYSTEM
The chassis shall include a single starting electrical system which shall include a 12 volt direct current Weldon brand of 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.
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.

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
- 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.

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.
**AUXILIARY ACCESSORY POWER**
An auxiliary set of power and ground studs shall be provided and installed behind the rocker switch panel. The power and ground stud shall be circuit protected with a 60 amp breaker. The studs shall be 0.38 inch diameter and capable of carrying up to a 60 amp battery direct load.

**ADDITIONAL ACCESSORY POWER**
An additional 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 load switched with the master power switch.

**EXTRA ACCESSORY POWER**
One (1) extra set of power and ground studs shall be provided and installed behind the officer seat with a 60 amp fuse. The studs shall be 0.38 inch diameter capable of carrying up to a 60 amp load and shall be wired battery direct. The studs shall include an additional 4.00 feet of wire.

**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 master power switched. The studs shall include an additional 4.00 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.

**ENGINE**
The chassis engine shall be a Cummins ISX15 engine. The ISX15 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 600 horse power at 1800 RPM and shall be governed at 2100 RPM. The torque rating shall feature 1850 foot pounds of torque at 1200 RPM with 912 cubic inches (14.9 liter) of displacement.

The ISX15 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 2013 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.
The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand Citgard 500, or equivalent SAE 15W40 CJ4 low ash engine oil which shall be utilized for proper engine lubrication.

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

**CAB ENGINE TUNNEL**
The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade 0.19 of an inch thick aluminum alloy plate. The tunnel shall be a maximum of 46.50 inches wide X 29.00 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 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 master switch is activated and the transmission is in neutral with the parking brake set. The device shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall 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.
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/high virtual button through the Vista display and control screen. The multiplex system shall remember and default to the last engine brake control setting when the vehicle is shut off and re-started.

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

FLUID FILLS
The front of the chassis shall accommodate fluid fill for the engine oil through the grille. This area shall also accommodate a check for the engine oil. The transmission, powers 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.

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

**ENGINE PROGRAMMING IDLE SPEED**
The engine low idle speed will be programmed at 700 rpm.

**ENGINE FAN DRIVE**
The engine cooling system fan shall incorporate a thermostatically controlled, Horton clutched type fan drive.

When the clutched fan is disengaged it shall facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure.

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

The cooling system shall 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 eleven (11) blade fan with a fiberglass fan shroud.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements, and allows for expansion and recovery of coolant into a separate integral expansion chamber.

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

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

**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.

**ENGINE COOLANT**
The cooling package shall include Extended Life Coolant (ELC). 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.

**ENGINE COOLANT FILTER**
An engine coolant filter with a shut-off valve for the inlet and outlet shall be installed on the chassis. The location of the filter shall allow for easy maintenance.

Proposals offering engines equipped with coolant filters shall be supplied with standard non-chemical type particulate filters.

**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.
COOLANT HOSES
The cooling system hoses shall be silicone heater hose with rubber hoses in the cab interior. The radiator hoses shall be formed silicone coolant hoses with formed aluminized steel tubing. All heater hose, silicone coolant hose, and tubing shall be secured with stainless steel constant torque band clamps.

ENGINE AIR INTAKE FILTER AND RESTRICTION W/REPLACEABLE ELEMENT
The engine air intake system shall include an ember separator air intake filter which shall be located in the front of the cab behind the right hand side fascia.

The engine shall also include an air intake filter which shall be bolted to the frame and located under the front of the cab on the right hand side. The system shall utilize a replaceable dry type filter which ensures dust and debris remains safely contained inside the housing during operation via leak-tight seals. The service cover shall be located on the bottom of the housing, eliminating the chance of contaminating the air intake system during air filter service.

The air flow distribution and dust loading shall be uniform throughout the high-performance filter element, which shall result in pressure differential for improved horsepower and fuel economy. The air intake ember separator shall be mounted within easy access via a hinged panel behind the right hand side headlight module. 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.

AIR INTAKE PROTECTION
A light duty skid plate shall be supplied for the engine air intake system below the right front side of the cab. The skid plate shall provide protection for the air intake system from light impacts, stones, and road debris.

ENGINE EXHAUST SYSTEM
The exhaust system shall include a diesel particulate filter (DPF), a diesel oxidation catalyst, and a selective catalytic reduction catalyst (SCR) 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 injected into the system through the decomposition tube between the DPF and SCR.
The system shall utilize 0.07 inch thick stainless steel exhaust tubing between the engine turbo and the DPF. Zero leak clamps seal all system joints between the turbo and DPF.

The DPF, the decomposition tube, and the SCR canister 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 shall be mounted below the frame in the inboard position with the SCR canister in line rearward of the DPF.

**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. The backside of the access door shall include a label that states “DEF Fluid only – 6 Gallon Capacity.”

**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.

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

**TRANSMISSION**
The drive train shall include an Allison model EVS 4000 torque converting, automatic transmission which shall include electronic controls and an output retarder.
The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters which shall offer 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 3.51:1
2nd 1.91:1
3rd 1.43:1
4th 1.00:1
5th 0.74:1
6th 0.64:1 (if applicable)
Rev 4.80:1

**TRANSMISSION MODE PROGRAMMING**
The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth and sixth speeds shall be programmed as over drive speeds and 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 227 vocational package in consideration of the duty of this apparatus for rescue. 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.

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.
Complies
Yes  No

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**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.

**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 RETARDER CONTROL**
The Allison transmission retarder shall be engaged with the first one-third at 0% throttle and the remaining two-thirds shall be modulated by brake pedal actuation. The system shall include a retarder on/off virtual button on the Vista display and control screen. The engagement of the retarder shall activate the brake lights. The retarder shall be inactive during pump mode.

**TRANSMISSION RETARDER CAPACITY LEVEL**
The transmission retarder shall be programmed so the maximum retardation shall be at the high capacity level.

**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 oil drain plug.

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

**LH PTO**
A ten (10) bolt standard duty clutched drive PTO shall be 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 277-XDFJP-B5RA heavy duty transmission driven PTO shall be installed which provides torque ranges from 250 to 335 lb. ft.

**RH PTO**
A ten (10) bolt standard duty PTO shall be installed on the transmission. Installation shall include mounting of the PTO and wiring the unit with a control switch if required for the PTO model.

**RH PTO MODEL**
A ten (10) bolt Chelsea model 277-XDFJP-B5RA heavy duty transmission driven PTO shall be installed. The clutched shifted PTO shall provide torque ranges from 250 to 335 lb. ft.

**PTO LOCATION**
The dual transmission driven power take offs (PTO) shall be mounted, one (1) in the 8:00 o’clock position and one (1) in the 1:00 o’clock position.
**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.

**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 modifiable constant limits
- Output speed is within customer modifiable constant limits
- Park brake set

The right hand power take off shall be controlled by park brake. 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.

**PTO CLEARANCE**
The cab floor shall include an addition into the cab interior to provide additional clearance for the power take off on the transmission in the one o’clock position. The pocket shall be constructed of 0.19 thick bright embossed aluminum tread plate and shall measure approximately 2.50 inches tall X 20.00 inches wide X 30.00 inches long.

**DRIVELINE**
All drivelines shall be heavy duty metal tube and equipped with Spicer 1810 series universal joints for the main drivelines, and 1710 series for the inter-axle shaft. 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®.
**DRIVELINE GUARDS**
Two (2) driveline guard loops shall be provided and installed to support the driveline shafts for routine maintenance and in the event of a driveline component failure.

**FUEL FILTER/WATER SEPARATOR**
The fuel system shall have a Racor S3238 fuel filter/water separator with a thermostatically controlled integral heater as a primary filter. The fuel filter shall have a drain valve and a see through cover to allow visual inspection of fuel and filter condition. The Racor S3238 shall be a 10 micron filter capable of handling a maximum flow rate of 150 gallons per hour.

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

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

**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.

**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 COOLER**
An aluminum cross flow air to fuel cooler shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel cooler shall be located behind the rear axle.
FUEL TANK
The fuel tank shall have a capacity of sixty-eight (68) gallons and shall measure 35.00 inches in width X 17.00 inches in height X 29.00 inches in length. The baffled tank shall be made of 14 gauge stainless steel. The exterior of the tank shall be painted with an anti-corrosive exterior metal treatment finish.

The 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 stainless steel 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 FILL PORT
The fuel tank fill ports shall be even with the left and right fill port located in the middle position of 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.

FRONT AXLE
The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-23. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle. The weight capacity for the axle shall be rated to 23,000 pounds. This rating shall require special approvals from the wheel manufacturers.

FRONT AXLE WARRANTY
The front axle shall be warranted for two (2) years with unlimited miles under the general service application.
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 heavy duty shock absorbers shall be provided and installed as part of the front suspension system.

The 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 heavy duty shock absorbers shall be tuned to provide higher damping forces.

FRONT SUSPENSION
The front suspension shall include a ten (10) leaf spring pack in which the longest leaf measures 53.38 inch long and 4.00 inches wide. The springs shall be shot peened for long life and include a military double wrapped front eye. The springs shall be bolted in place with M20 10.9 bolts and have replaceable rubber bushings in the spring eyes. The spring capacity shall be rated at 23,000 pounds.

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

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

POWER STEERING PUMP
The hydraulic power steering pump shall be a Vickers V20F and shall be gear driven from the engine. The pump shall be a fixed displacement vane type.

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.
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 85 with an assist cylinder.

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

REAR AXLE
The rear axle shall be a Meritor model RT-58-185 tandem drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 63,000 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 0.56 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 WARRANTY
The rear axle shall be warranted for two (2) years with unlimited miles under the general service application.

REAR AXLE DIFFERENTIAL LUBRICATION
The rear axle differential shall be lubricated with oil.

REAR WHEEL BEARING LUBRICATION
The rear axle wheel bearings shall be lubricated with oil.
REAR AXLE DIFFERENTIAL CONTROL
The tandem axle chassis shall include an inter-axle differential lock, which will allow both axles to be engaged as drive axles. 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 inter-axle differential control.

A driver controlled differential lock shall be installed on one of the tandem rear axles. 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 driver controlled differential lock shall be controlled by a separate locking rocker switch on the switch panel. The light on the switch shall illuminate with positive engagement of the differential control.

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

REAR SUSPENSION
The tandem axle shall feature a Raydan Air-Link AL-600 air suspension. The Air-Link AL-600 shall feature a unique air ride and walking beam suspension design which combines a super smooth ride with durability. The suspension has only two (2) moving parts for long wear and low maintenance cost. The rear tandem suspension shall have 56.00 inch axle centers.

Dual air height control valves shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load.

The rear suspension shall be run flat capable at reduced speeds.

The rear suspension capacity shall be rated at 54,000 to 62,000 pounds.

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

FRONT TIRE
The front tires shall be Goodyear 425/65R-22.5 20PR "L" tubeless radial G296 MSA mixed service tread.
The front tire stamped load capacity shall be 22,800 pounds per axle with a speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch and an intermittent speed rating of 75 miles per hour up to the stamped load.

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

The tires must be the latest available DOT date.

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

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

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

The tires must be the latest available DOT date.

**REAR AXLE RATIO**
The rear axle ratio shall be 6.14:1.

**TIRE PRESSURE EQUALIZATION SYSTEM**
There shall be a voucher provided with the chassis for Crossfire dual tire equalization system provided on both sets of dual tires on the rear axle. The Crossfire pressure system shall equalize and monitor tire pressure through the valve which is mounted between the dual tires. This shall bolt easily to the drive axle end allowing air to flow freely from one tire to the other, maintaining equal tire pressure and load distribution. The Crossfire system shall maximize tire life, decrease rolling resistance for increased fuel mileage and improve stability braking and overall safety.

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

Complies
Yes  No
TIRE PRESSURE INDICATOR
There shall be a RealWheels Tire Watch polished stainless steel electronic LED valve caps installed on the front wheels that shall illuminate with a red LED when tire pressure drops 8 psi. The valve caps shall be self-calibrating and set to the pressure of the tire upon installation.

FRONT WHEEL
The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch LvL One™ polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoa’s Dura-Bright® finish with XBR technology as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

REAR WHEEL
The rear wheels shall be Alcoa hub piloted, heavy duty, 22.50 inch X 9.00 inch LvL One™ polished aluminum wheels with Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

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

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

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

The lug nut covers, baby moons, and high hats shall be RealWheels® brand constructed of 304L grade, non-corrosive stainless steel with a mirror finish. Each wheel trim component shall meet D.O.T. certification.
**WHEEL GUARDS**
The rear dual wheels shall include a plastic isolator approximately 0.04” installed between the inner and outer wheel hub to help prevent corrosion caused by metal to metal contact. There shall also be a plastic isolator between the axle hub and the wheels on both front and rear axles.

**BRAKE SYSTEM**
A rapid build-up air brake system shall be provided. The air brakes shall include a three (3) air tank, four (4) reservoir system with a total of 6220 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 six (6) sensor, six (6) modulator Anti-lock Braking System (ABS) shall be installed on the front and tandem rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

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

A momentary rocker style switch shall be provided and properly labeled “mud/snow”. When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light and the light on the rocker switch shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.
**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 shall be accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

In addition to the mechanical rear brake engagement, the front service brakes will also engage via air pressure, providing additional braking capability.

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

The parking brake actuation valve shall be mounted 6.00 inches to the left of center of the dash within easy access of the driver.

**REAR BRAKE SLACK ADJUSTERS**
Gunate rear brake automatic slack adjusters shall be installed on the axle.

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

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

AIR GOVERNOR
An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be located on the air dryer bracket on the left frame rail behind the battery box.

AUXILIARY AIR RESERVOIR
One (1) auxiliary air reservoir with a 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
A heated, automatic moisture ejector with a manual drain provision shall be installed on the wet tank of the air supply system. Automatic moisture ejectors with a manual drain provision shall be installed on all remaining reservoirs of the air supply system.

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.

**WHEELBASE**
The chassis wheelbase shall be approximately 240.00 inches.

**REAR OVERHANG**
The chassis rear overhang shall be approximately 92.00 inches.

**FRAME**
The frame shall consist of triple side rails and cross members forming a ladder style frame. The side rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep X 0.38 inches thick, with an inner channel 9.44 inches high X 3.13 inches deep X 0.38 inches thick, and a second inner channel, 8.55 inches high X 2.75 inches deep X 0.25 inches thick which shall be provided extending from the rear of the cab to the forward rear suspension cross member. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. The triple rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,921,500 inch pounds and have a minimum section modulus of 35.65 cubic inches. The frame shall measure 35.00 inches in width.

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.

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

The frame and cross members shall carry a lifetime warranty to the original purchaser.

**FRAME WARRANTY**
The frame and cross members shall carry a limited lifetime warranty to the original purchaser.
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 powder coated black prior to any attachment of components.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-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.

The chassis under carriage consisting of frame, axles, driveline running gear, air tanks and other chassis mounted components shall be painted the primary/lower cab color. Paint shall be applied prior to airline and electrical wiring installation.

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" high and 104.50 inches wide.

FRONT BUMPER EXTENSION LENGTH
The front bumper shall be extended approximately 12.50 inches ahead of the cab.

FRONT BUMPER EXTENSION FRAME WIDTH
The front bumper extension frame shall feature an overall width of 48.25 inches.

FRONT BUMPER APRON
The 12.50 inch extended front bumper shall include an apron constructed of 12 gauge polished stainless steel tread plate.

The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.
MECHANICAL SIREN
The front bumper shall include an electro mechanical Federal Q2B™ siren, which shall be streamlined, chrome-plated and shall produce 123 decibels of sound at 10.00 feet. The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances.

MECHANICAL SIREN LOCATION
The siren shall be recess mounted on the driver side of the front fascia of the bumper, in the outboard position.

MECHANICAL SIREN ACCESSORIES
The front of the siren shall include (2) stainless steel flat bars approximately 1.00 inch wide by 19.00 inches long. Each bar shall be placed vertically on the right and left side of the siren face wrapping around towards the back of the siren into the bumper extension offering protection to the siren.

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, one (1) on the right side of the bumper in the inboard position relative to the right hand frame rail and one (1) on the left side of the bumper in the inboard position relative to the left hand frame rail.

AIR HORN RESERVOIR
One (1) air reservoir, with a 2084 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
The bumper shall include one (1) Cast Products Inc. model SA4301, 100 watt speaker which shall be recess mounted within the bumper fascia. The speaker shall measure 6.20 inches tall X 7.36 inches wide X 3.06 inches deep. The speaker shall include a flat mounting flange which shall be polished aluminum.
**ELECTRONIC SIREN SPEAKER LOCATION**
The electronic siren speaker shall be located on the front bumper face on the right side outboard of the frame rail in the far outboard position.

**FRONT BUMPER TOW HOOKS**
Two (2) heavy duty tow hooks, painted to match the chassis frame, shall be installed in a rearward position out of the approach angle area, bolted directly to the side of the chassis frame with grade 8 bolts.

**TOW FORK PROVISION**
Two (2) heavy duty tubular steel towing forks shall be welded to the underside of the frame drop at the front of the chassis. The tubes shall be shaped like an upside down “U” to act as a designated hookup point to accept a tow bar from a service vehicle and shall allow a disabled vehicle to be lifted and towed without doing damage to the bumper or bumper mounted options.

**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.

**CAB TILT ALARM**
A Preco Matic model 1059 audible alarm shall be installed and shall automatically activate when the cab tilt is actuated acting as a notification and warning.

**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 WINDSHIELD**
The cab windshield shall have a surface area of 2969.88 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.

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
The cab shall be equipped with a ceiling mounted combination defrost / heating and air-conditioning system mounted above the engine tunnel in a central location.

The system shall offer sixteen (16) adjustable louvers. Six (6) of the louvers shall face forward towards the windshield, offering 45,000 BTU of heat at 320 CFM for defrosting. The system shall include six (6) rearward facing louvers to direct air for the crew area and four (4) for driver and officer comfort. The HVAC system shall be designed to produce 60,000 BTU of heat and 32,000 BTU of cooling. The HVAC cover shall be made of aluminum which shall be coated with a customer specified interior paint, or protective coating.

All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.
The air conditioner lines shall be a mixture of custom bent zinc coated steel fittings and Aero-quip GH 134 flexible hose with Aero-Quip EZ-Clip fittings.

**CLIMATE CONTROL DRAIN**
The climate control system shall include a venturi pump for water management. The venturi pump drain shall remove condensation from the air conditioning system.

**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 Zolatone #20-72 silver gray texture finish.

**AUXILIARY CLIMATE CONTROL REAR CREW**
One (1) 53,500 BTU heater shall be provided and installed in the rear section of the crew cab under the center forward facing seat riser. The fan controls shall be located on the heater unit.

The auxiliary heater system hoses shall be silicone with stainless steel constant torque clamps approved for use with silicone hose. The auxiliary heater system shall include one (1) seasonal shut-off valve. The valve shall be supplied at the front of the right hand corner of the cab. The cab must be tilted to access the shut-off valve.

**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 on the left side of the cab, mid-roof.

**A/C COMPRESSOR**
The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32,000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.
**CAB CIRCULATION FANS FRONT**
The cab shall include two (2) all metal 6.00 inch air circulation fans installed in the outer front cab corners. Each fan shall be controlled by an individual toggle switch on each fan. The fans can be used to help defog the windshield or to increase air circulation for passenger comfort.

**UNDER CAB INSULATION**
The underside of the cab tunnel surrounding the engine and the underside of the entire cab floor shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments.

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

The engine tunnel insulation shall measure approximately 0.75 inch thick including a vertically lapped polyester fiber layer, a 1.0 lb/ft² PVC barrier layer, an open cell foam layer, and a moisture and heat reflective foil facing reinforced with a woven fiberglass layer. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The 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 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat, hold in place fastening heads. In addition, the insulation on the underside of the cab floor shall have an expanded metal overlay to assist in retaining the insulation tight against the cab.

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

**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. 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.

**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.
AUXILIARY POWER POINT REAR CREW
The cab interior shall include 2.00 feet of coiled wiring for one (1) 12 volt cigarette lighter type receptacle to be installed on the forward facing seat box in the crew area by the body builder. The receptacle wiring shall be connected to the batteries. A power point receptacle with mounting housing shall be shipped loose with the chassis. The final installation shall provide a power source for 12 volt electrical equipment.

STEP TRIM
Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of 14 gauge 304 stainless steel with indented perforations. The perforations shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The stainless steel material shall have a number 7 mirror finish. 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 in 0.08 inch thick 3003-H22 embossed aluminum tread plate.

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.

UNDER CAB ACCESS DOOR
The cab shall include an access door in the left crew step riser constructed of embossed 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 SCUFF PLATE
There shall be stainless steel scuff plate along the door jam to protect the painted surface from damage should the seat belt buckle come in contact with the door jam.

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 1.00 inch in width shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes. 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 TRIM VINYL COLOR
The cab interior vinyl 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.
CAB PAINT INTERIOR DOOR TRIM
The inner door panel surfaces shall be painted with Zolatone #20-72 silver gray texture finish.

HEADER TRIM INTERIOR PAINT
The metal surfaces in the header area shall be coated with Zolatone #20-72 silver gray texture finish.

TRIM CENTER DASH INTERIOR PAINT
The entire center dash shall be coated with Zolatone #20-72 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 Zolatone #20-72 silver gray texture finish.

TRIM RIGHT HAND DASH INTERIOR PAINT
The right hand dash shall be painted with Zolatone #20-72 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 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 four (4) switches. There shall be three (3) across the top of the panel with one (1) below. Two (2) of the top row of switches shall be rocker type and the left one (1) shall be the windshield wiper/washer control switch. The lower switch shall be a rocker type switch.
A rocker switch with a blank legend installed directly above shall be provided for any position not designated by a specific option. The non-designated switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

**SWITCHES RIGHT PANEL**
The right dash panel shall include 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), an indicator light in the instrument panel, an indicator light in the switch panel, and an audible alarm.

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 audible alarm shall remain active until all occupied seats have the seat belts fastened.

**SEAT MATERIAL**
The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.

**SEAT COLOR**
All seats supplied with the chassis shall be black in color. All seats shall include red seat belts.

**SEAT DRIVER**
The driver's seat shall be an H.O. Bostrom Firefighter Sierra model seat. The seat shall feature eight-way electric positioning. The eight positions shall include up and down, fore and aft with 8.00 inches of travel, back angle adjustment and seat rake adjustment. The seat shall feature integral springs to isolate shock.
The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

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

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

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

**SEAT BACK DRIVER**
The driver’s seat shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest.

**SEAT MOUNTING DRIVER**
The driver’s seat shall be installed in an ergonomic position in relation to the cab dash.

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

The driver’s seating area APS shall include:
- Advanced seat belt system
- Large side curtain airbag
- Knee airbags
- Steering wheel airbag
**SEAT OFFICER**
The officer’s seat shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat shall be a non-adjustable type seat.

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

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

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 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.
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
- Large side curtain airbag
- Knee airbags

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

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

**SEAT 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 Firefighter series. The seat shall feature a tapered and padded seat back and cushion. The bottom cushion shall be hinged and compact in design for additional room and shall remain in the stored position until occupied.
The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

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

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

**SEAT BACK FORWARD FACING 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 shall be mounted in the furthest outboard position facing the front of the cab.

**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
- Side curtain airbag

**SEAT FORWARD FACING CENTER LOCATION**
The crew area shall include two (2) forward facing center crew seats with both located at the center of the rear wall.

**SEAT CREW FORWARD FACING CENTER**
The crew area shall include a seat in the forward facing center position which shall be a H.O. Bostrom Firefighter series. 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 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
referred 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 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
- Side curtain airbag
SEAT FRAME FORWARD FACING
The forward facing center seating positions shall include a full width, enclosed style seat frame located and installed at the rear wall. The seat frame shall span the available space on the rear wall. The seat frame shall be 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The seat box shall be painted with the same color as the remaining interior.

SEAT 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 Zolatone #20-72 silver gray texture.

HELMET STORAGE SHIPLOOSE QUANTITY
The ship loose items shall include eight (8) helmet storage brackets.

HELMET STORAGE SHIPLOOSE
The ship loose items shall include Ziamatic model UHH-2-C helmet storage designed to meet current NFPA regulations. The UHH-2-C shall securely fasten fire helmets to flat cab surfaces. The UHH-2-C utilizes a helmet hook and an adjustable strap to accommodate nearly any helmet size or configuration including helmets with a ratcheting device that protrudes below the helmet. The helmet storage bracket shall be chrome plated.

WINDSHIELD WIPER SYSTEM
The cab shall include a dual arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers which shall be affixed to a radial wet arm. The system shall include a single motor which shall initiate the arm in which both the left hand and right hand windshield wipers are attached, initiating a back and forth motion for each wiper. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver’s position.
**ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR**
The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the yellow “Check Message Center” indicator light on the instrument panel shall illuminate and the message center in the dual air pressure gauge shall display a “Check Washer Fluid Level” message.

**CAB DOOR HARDWARE**
The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of 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. The 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 RH EMS COMPARTMENT**
The right 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.

**GRAB HANDLES**
The cab shall include one (1) 18.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The assist handle shall be made of 14 gauge 304-stainless steel and be 1.25 inch diameter to enable easy grabbing with the gloved hand. 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.

**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 14 gauge 304 polished stainless steel.

**MUD FLAPS FRONT**
The front wheel wells shall have mud flaps installed on them. The mud flaps shall extend from the outer edge of the wheel well to the inner edge of the wheel well to provide additional protection from road spray.

**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) Interstate 31-XHD 1000 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541. The cables shall have encapsulated ends with heat shrink and sealant.

**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 and encapsulated at the ends with heat shrink and sealant.

The battery terminals shall not be utilized for auxiliary connections. The only acceptable auxiliary connections shall be for the cross over link from the left bank to the right bank, power for jumper studs and starter cables. All other auxiliary connections will use remote studs mounted in the battery box area. There shall be four (4) remote studs labeled as Common Power, Common Ground, Clean Power, and Clean Ground.
**BATTERY JUMPER STUD**
The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

**ALTERNATOR**
The charging system shall include a 360 amp Niehoff 12 volt alternator. The alternator shall include an ignition excited external regulator.

**BATTERY CONDITIONER**
A Kussmaul 35/10 battery conditioner shall be supplied. The battery conditioner shall provide a 35 amp output for the chassis batteries and a 10 amp battery saver output. 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.

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

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

**Amp Draw Reference List:**
- Kussmaul 1000 Charger - 3.5 Amps
- Kussmaul 1200 Charger - 10 Amps
- Kussmaul 35/10 Charger - 10 Amps
- 1000W Engine Heater - 8.33 Amps
- 1500W Engine Heater - 12.5 Amps
- 120V Air Compressor - 4.2 Amps
**ELECTRICAL INLET LOCATION**
An electrical inlet shall be installed on the left hand side of the cab ahead of the front door.

**ELECTRICAL INLET CONNECTION**
The electrical inlet shall be connected to the battery conditioner and the air pump.

**ELECTRICAL INLET COLOR**
The electrical inlet connection shall include a red cover.

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

**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 housing above and outboard of the front warning and head lamps.

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

**SIDE TURN/MARKER LIGHTS**
The sides of the cab shall include two (2) LED round side marker lights which shall be provided just behind the front cab radius corners.

**MARKER AND ICC LIGHTS**
In accordance with FMVSS, there shall be five (5) LED cab marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level.

**HEADLIGHT AND MARKER LIGHT ACTIVATION**
The headlights and marker lights shall be controlled via a virtual button on the Vista display. There shall be a virtual dimmer control on the Vista display to adjust the brightness of the dash lights.

**GROUND LIGHTS**
Each door shall include an NFPA compliant LED ground light mounted to the underside of the cab step below each door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted.
for extended life. The ground lighting shall be activated by the opening of the door on the respective cab side, when the parking brake is set and through a virtual button on the Vista display and control screen.

**STEP LIGHTS**
The middle step located at each door shall include a recess mounted 4.00 inch round LED light which shall activate with the opening of the respective door.

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

**ENGINE COMPARTMENT LIGHT**
There shall be two (2) incandescent NFPA compliant lights mounted under the engine tunnel for area work lighting on the engine. The lights shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The lights shall activate automatically when the cab is tilted.

**SIDE SCENE LIGHTS**
The side of the cab shall include two (2) Whelen 900 series 9SC0ENZR model scene lights, one (1) each side which shall be surface mounted with a chrome bezel. The Whelen lights shall offer LED lighting at a gradient 32-degree angle.

**SIDE SCENE LIGHT LOCATION**
The scene lighting located on the left and right sides of the cab shall be mounted in the upper forward portion of the cab between the front and rear crew doors.

**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.

**INTERIOR OVERHEAD LIGHTS**
The cab shall include a two-section, red and clear Weldon LED dome lamp located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 7.00 inches in length X 3.00 inches in width with a black colored bezel. The clear portion of each lamp shall be activated by opening the respective
door and via the multiplex display and both the red and clear portion can be activated by individual push lenses on each lamp.

An additional incandescent three (3) light module with dual map lights shall be located over the engine tunnel which can be activated by individual switches on the lamp.

**AUXILIARY DOME LIGHT REAR CREW**
The cab shall include two (2) 7.00 inch LED auxiliary dome lights on the headliner inboard of the outer forward facing crew seat positions. The lights shall include clear lenses. These lights shall be activated by the rear doors only.

**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.

**SPOTLIGHT**
The officer position shall include one (1) 12 volt Optronics KB-4003 hand-held spotlight which shall be mounted to the right of the engine tunnel. The spotlight shall provide 400,000 candlepower of illumination and shall include a 10.00 foot coil cord and a momentary push button switch.

**DO NOT MOVE APPARATUS LIGHT**
The front headliner of the cab shall include a flashing red Whelen 500 Series 5mm 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 5.40 inches long X 1.70 inches wide X 0.90 inches high and 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.

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

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

**HEADLIGHT FLASHER SWITCH**
The flashing headlights shall be activated through a virtual button on the Vista display and control screen.

**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. 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 M6 Super LED front warning lights in the left and right outboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

**OUTBOARD FRONT WARNING LIGHTS COLOR**
The warning lights mounted on the cab front fascia in the outboard position shall be red.

**FRONT WARNING SWITCH**
The front warning lights shall be controlled through 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.

INTERSECTION WARNING LIGHTS COLOR
The intersection lights shall be red.

INTERSECTION WARNING LIGHTS LOCATION
The intersection lights shall be mounted on the side of the bumper.

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. The lights shall be mounted to the sides of the cab within a chrome bezel.

SIDE WARNING LIGHTS COLOR
The warning lights located on the side of the cab shall be red.

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

AUXILIARY SIDE WARNING LIGHTS
The cab side shall include an auxiliary set of Whelen 500 series 1.63 inch tall X 5.00 inch wide TIR6™ Super-LED® warning light, one (1) each side, which shall feature multiple flash patterns including steady burn.

AUXILIARY SIDE WARNING LIGHTS COLOR
The auxiliary warning lights located on the side of the cab shall be red.

AUXILIARY SIDE WARNING LIGHTS LOCATION
The auxiliary warning lights on the side of the cab shall be mounted behind the rear crew door in the lowest available position.

ADDITIONAL SIDE WARNING LIGHTS
The cab side shall include an additional set of Whelen series 900 Super LED 7.00 inch tall X 9.00 inch wide warning lights, one (1) each side, which shall offer fourteen (14) flash patterns plus a steady burn for solid colors and twenty (20) flash...
patterns plus a steady burn for split colors. The lights shall be surface mounted within a chrome bezel.

**ADDITIONAL SIDE WARNING LIGHTS COLOR**
The additional warning lights located on the sides of the cab shall be red and clear with a clear lens.

**ADDITIONAL SIDE WARNING LIGHTS LOCATION**
The warning lights on the side of the cab shall be mounted behind the rear crew door in the highest position available.

**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.

**LIGHTBAR PROVISION**
There shall be four (4) light bars installed on the cab roof. The light bar installation shall include mounting and wiring to a control switch on the cab dash.

**CAB FRONT LIGHTBAR**
The lightbar provisions shall be for two (2) Whelen brand Freedom FNMINI lightbars mounted on the left and right side of the front cab roof, each at a 30-degree angle. Each lightbar shall be 24.00 inches in length. Each lightbar shall feature three (3) red LED lights and one (1) clear LED light. The clear lights shall be disabled with park brake engaged. The cables shall exit the lightbars on the outer end of each lightbar.

**CAB SIDE LIGHTBAR**
There shall be two (2) Whelen brand Freedom FNMINI lightbars mounted one (1) on the left and one (1) right side of the cab roof parallel to the side of the cab above the left and right rear doors. The lightbars shall be NFPA compliant, and shall feature three (3) red LED lights and one (1) clear LED light per lightbar. The clear lights shall be disabled when the park brake is engaged.

**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.
TRAFFIC CONTROL
There shall be one (1) GTT (Global Traffic Technologies) Opticom model 792H high priority traffic control optical emitter, mounted in the center 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.

INTERIOR DOOR OPEN WARNING LIGHTS
The interior of each door shall include one (1) red 4.00 inch diameter Truck-Lite LED warning light located on the door panel. Each light shall activate with a flashing pattern when the respective 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.

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.

AIR HORN ACTIVATION
The air horn activation shall be accomplished by the steering wheel horn button for the driver and a right hand side Linemaster model SP491-S81 foot switch for the officer. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.
MECHANICAL SIREN ACTIVATION
The mechanical siren shall be actuated by two (2) Linemaster model SP491-S81 foot switches mounted in the front section of the cab for use by the driver and officer. A siren brake shall be provided on the Vista display.

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

BACK-UP ALARM
A Preco-Matic model 1059 dual function, dual sound backup alarm shall be installed at the rear of the chassis with an auto-adjusting output level of 87 dB to 112 dB. The alarm shall automatically activate when the transmission is placed in reverse.

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

The instrument panel shall contain the following gauges:

One (1) electronic speedometer shall be included. 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.

One (1) electronic tachometer shall be included. The scale on the tachometer shall read from 0 to 3000 RPM.

One (1) two-movement gauge displaying primary system, and secondary system air volumes and integral LCD odometer/trip odometer shall be included on the lower portion of the LCD. The scale on the air pressure gauges shall read from 0 to 150 pounds per square inch (PSI). The air pressure scales shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate a low air pressure, as well as a message on the LCD screen. The odometer shall display up to 9,999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD shall display Transmission Temperature in degrees Fahrenheit on the upper portion of the LCD. The LCD screen shall also be capable of displaying certain diagnostic functions.
One (1) four-movement gauge displaying engine oil pressure, coolant temperature, fuel level, voltmeter, and an indicator bar displaying Diesel Exhaust Fluid (DEF) LED bar shall be included. The scale on the engine oil pressure gauge shall read from 0 to 120 pounds per square inch (PSI). The engine oil pressure scale shall be linear to operate with an accuracy of 1 degree of the measured. A red indicator light in the gauge shall indicate a low engine oil pressure, as well as a message on the LCD screen. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (F). The coolant temperature scale shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate high coolant temperature, as well as a message on the LCD screen. The scale on the fuel level gauge shall read from empty to full as a percentage of fuel remaining. An amber indicator light shall indicate low fuel at 25% tank level. The scale on the voltmeter shall read from 10 to 16 volts with a red indication zone on the gauge showing critical levels of battery voltage. A red indicator light shall indicate high or low system voltage, as well as a message on the LCD screen. The scale on the DEF LED bar will consist of four (4) LEDs displaying levels in increments of 25% of useable DEF in green. Upon decreasing levels, the indicator bar will change colors to notify the driver of decreasing levels of DEF and action will be required. An amber indicator light shall indicate low levels of DEF, as well as a message on the LCD screen and an audible alarm.

The instrument panel shall include a light bar that contains the following LED indicator lights and produce the following audible alarms in applicable configurations:

**RED LAMPS**

Stop Engine-indicates critical engine fault
Air Filter Restricted-indicates excessive engine air intake restriction
Park Brake-indicates parking brake is set
Seat Belt Indicator-indicates when a seat is occupied and corresponding seat belt remains unfastened
Low Coolant-indicates engine coolant is required

**AMBER LAMPS**

MIL-indicates an engine emission control system fault
Check Engine-indicates engine fault
Check Trans-indicates transmission fault
High Transmission Temperature-indicates excessive transmission oil temperature
ABS-indicates anti-lock brake system fault
HEST-indicates a high exhaust system temperature
Water in Fuel—indicates presence of water in fuel filter
Range Inhibit—indicates a transmission operation is prevented and requested shift request may not occur.
Check Message—Turn Signal On
Check Message—Door Ajar
Check Message—Cab Ajar
Check Message—ESC Active
Check Message—No Engine Data
Check Message—No Transmission Data
Check Message—No ABS Data
Check Message—No Data All Communication With The Vehicle Systems Has Been Lost
Check Message—Check Engine Oil Level
Check Message—Check Washer Fluid Level
Check Message—Check Power Steering Fluid Level
Check Message—Low Transmission Fluid Level
Check Message—Check Coolant Level

GREEN LAMPS
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 active
OK to Pump—indicates the pump engage conditions have been met
Pump Engaged—indicates the pump is currently in use
Auxiliary Brake—indicates secondary braking device is active

BLUE LAMP
High Beam Indicator

WHITE LAMP
Wait to Start—indicates active engine air preheat cycle

AUDIBLE ALARMS FROM GAUGE PACKAGE
High Trans Temp
High or Low Voltage
Check Engine
Check Transmission
Stop Engine
Low Air Pressure
Fuel Low
Water in Fuel
ESC
High Coolant Temperature
Low Engine Oil Pressure
Low Coolant Level
Air Filter Restricted
Extended Left and Right Turn Remaining On
Cab Ajar
Door Ajar
ABS System Fault
Seatbelt Indicator

**EXTERNAL AUDIBLE ALARM**
Air Filter
Cab Ajar
Door Ajar
Check Engine
Stop Engine
Low Air Pressure
Water in Fuel
ABS System Fault
Seatbelt Indicator

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

**AUXILIARY SPEEDOMETER**
The dash shall include an auxiliary analog speedometer.

**RADIO**
A Jensen radio with weather band, AM/FM stereo receiver, a front panel mini stereo input jack, and four (4) speakers shall be installed in the cab. The radio shall be installed in the left hand overhead position. The speakers shall be installed inside the cab with two (2) speakers recessed within the headliner of the front of the cab just behind the windshield and two (2) speakers on the upper rear wall of the cab.

**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 Audiovox Voyager heavy duty rearview camera system shall be supplied. One (1) box shaped camera shall be shipped loose for OEM installation in the body to afford the driver a clear view to the rear of the vehicle, a second box shaped camera shall be supplied above the front door on the officer side of the cab and a third box shaped camera on the driver side above the front door.

The cameras shall be wired to two (2) Weldon single Vista displays located, one (1) on the driver dash and one (1) on the officer dash. The rear camera display shall activate when the vehicle’s transmission is placed in reverse. The side camera display shall activate when the respective side turn signal is activated. The camera system display can also be activated through the Vista display panel.

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. 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.

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.

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 to the vehicle owner.
The software should be validated to be compatible with the following RP1210 interface adapters:

- Dearborn Group DPA4 Plus
- Noregon Systems JPRO® DLA+
- Cummins INLINE5
- Cummins INLINE6
- NexIQ™ USB-Link™

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

**WARRANTY**

The chassis manufacturer shall provide a limited parts and labor warranty to the purchaser of the custom built cab and chassis for a period of thirty-six (36) months, or the first 50,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the end user. The limited warranty may be transferred to subsequent owners during the warranty period.

**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) Digital copies of the Engine Owner’s manual
- (2) Digital copies of the Transmission Operator’s manual
- (2) Hard copies of the Engine Operation and Maintenance manual with CD

**ENGINE SERVICE MANUALS**

There shall be two (2) printed hard copy sets of the engine service reference manuals which shall be provided with the chassis.

**TRANSMISSION SERVICE MANUALS**

There shall be two (2) printed hard copy sets of the transmission service manuals included with the chassis.

**CAB/CHASSIS AS BUILT WIRING DIAGRAMS**

The cab and chassis shall include two (2) digital copies of wiring schematics and option wiring diagrams.
AS BUILT FUEL PLUMBING DIAGRAM
The cab and chassis shall include one (1) digital copy of the as built fuel system plumbing diagram.

ADDITIONAL ITEMS TO BE MOUNTED IN THE CHASSIS
One (1) Custom fabricated EMS/Storage cabinet shall be supplied and installed between the two mid compartments against the engine tunnel. The cabinet shall be painted to match the interior of the chassis. It shall have a black mesh next installed on the front of it to hold the items in place.

Five (5) Streamlight Orange LED Fire Vulcans with 12 volt charging bases shall be supplied and installed, four (4) in the rear and one (1) on the engine tunnel near the officer. Exact locations to be determined.

One (1) Fire Department supplied six bank portable radio charging rack shall be installed. Location to be determined.

One (1) Fire Department supplied single bank portable radio charger shall be installed next to the officer. Exact location to be determined.

BODY SPECIFICATION

CUSTOM AERIAL BODY CONSTRUCTION
The apparatus body and support structure shall be designed to allow for chassis flexing during road travel and aerial operations. The main body shall consist of a driver and curb side compartment assemblies and a rear body assembly, combined with structural components to achieve optimized longevity.

In order to eliminate distortion created during the welding process, all welds shall be stitch type, utilizing wire feed process. However, welding shall not be employed in a manner that prevents the ready removal of the body for service or repairs.

BODY MOUNTING
Structural and formed steel body mounts shall be welded to the aerial ladder torque box assembly.

The body support structure mounts shall be constructed from formed and structural channels and angles, tubing and gussets. The support structure shall be welded to the compartment assemblies. All bolted area shall be reinforced by gussets for additional surface area to distribute the compartment weight.
The left and right side body compartments and the rear body assembly shall be bolted to the torque box, thru the body support structures. The body mounting shall use only stainless steel fasteners.

The body compartment assembly shall be mounted to the torque box at a minimum of six (6) locations. The body mounts shall utilize rubber isolators and/or pads to prevent chassis torsional loading and vibration from being transmitted to the body.

**BODY FABRICATION**
All enclosed compartments shall be ventilated through the use of punched louvers to allow exterior/interior air circulation.

All compartment floors shall be one-piece design with a lower door opening flange bent to produce a sweep out design. A step up flange at the door opening shall not acceptable, due to difficulties in cleaning and entrapped water in the recessed area.

The top surface of all side compartment assemblies shall be fully enclosed with the compartment base material prior to the installation of any protection panels. Aluminum diamond plate protection panels that are used as the only primary compartment top shall be unacceptable and shall be rejected.

Each body compartment assembly shall be manufactured from 1/8" and 3/16" aluminum, using modern sheet metal fabrication techniques to ensure maximum longevity and corrosion resistance.

**EXHAUST HEAT DEFLECTOR**
A stainless steel heat deflector shall be provided over the exhaust piping where the exhaust piping passes below the apparatus body.

**COMPARTMENTATION DETAIL**
The approximate compartment sizes and locations shall be as follows:

**FORWARD TRANSVERSE COMPARTMENT**
A 50" wide outside dimension compartment shall be provided between the chassis cab and the main body, extending full apparatus width over the chassis frame. The minimum compartment inside dimensions shall be 43.75" wide x 76.75" high, each side x 25.75" deep in the lower section, each side and transverse in the upper section over the chassis frame. The minimum door opening on each side of the apparatus shall be 41.25" wide x 68.125" high with roll up style door.
**DRIVER SIDE**
There shall be a compartment above the front outrigger, 23.875" wide x 27.25" high x 25.375" deep. The minimum door opening shall be 23.675" wide x 24.625" high with a lift-up door.

There shall be a compartment behind the front outrigger, 36.875" wide x 76.75 high x 25.75" deep. The minimum door opening shall be 34.125" wide x 68.125" high with a roll-up door.

There shall be a compartment above the front wheel well, 55.50" wide x 46.625" high x 25.75" deep. The minimum door opening shall be 52.75" wide x 38.00" high with a roll-up door.

There shall be a compartment above the rear wheel well, 55.50" wide x 28.125" high x 24.875" deep. The minimum door opening shall be 52.75" wide x 19.50" high with a roll-up door.

There shall be a compartment ahead of the rear outrigger, 44.25" wide x 58.25" high x 24.875" deep. The minimum door opening shall be 41.50" wide x 49.625" high with a roll-up door.

**DRIVER SIDE REAR**
There shall be a compartment located at the rear, driver's side, 12.50" wide x 24.875" high x 12.50" deep. The minimum door opening shall be 12.50" wide x 24.875" high with a vertically hinged door.

**CURBSIDE**
There shall be a compartment above the front outrigger, 23.875" wide x 27.25" high x 25.375" deep. The minimum door opening shall be 23.675" wide x 24.625" high with a lift-up door.

There shall be a compartment behind the front outrigger, 36.875" wide x 76.75 high x 25.75" deep. The minimum door opening shall be 34.125" wide x 68.125" high with a roll-up door.

There shall be a compartment above the front wheel well, 55.50" wide x 46.625" high x 25.75" deep. The minimum door opening shall be 52.75" wide x 38.00" high with a roll-up door.
There shall be a compartment above the rear wheel well, 55.50" wide x 28.125" high x 24.875" deep. The minimum door opening shall be 52.75" wide x 19.50" high with a roll-up door.

There shall be a compartment ahead of the rear outrigger, 44.25" wide x 58.25" high x 24.875" deep. The minimum door opening shall be 41.50" wide x 49.625" high with a roll-up door.

**CURB SIDE REAR**
There shall be a compartment located at the rear, curbside, 12.50" wide x 24.875" high x 12.50" deep. The minimum door opening shall be 12.50" wide x 24.875" high with a vertically hinged door.

**HINGED COMPARTMENT DOORS**
Equipment compartments not requiring roll-up doors shall be furnished with flat overlap style door or doors.

Outer door panel shall be constructed from 3/16" aluminum with inner door panel of 1/8" aluminum. Compartment door seals shall be closed cell rubber and attached to the perimeter of the door opening to seal the compartment against wet conditions.

Overlap door hinges shall be full-length polished stainless steel piano type with 1/4" stainless steel pin. Hinges shall be bolted to the body and to the doors.

**DOOR LATCHES**
All compartment door latches shall be Overheard #206 with Hansen stainless steel bent "D" ring outer latch assembly. The compartment door latches shall be dual catch slam action type. The second door of a double door compartment shall have an internal slam-action latch.

**DOOR STAYS, HORIZONTALLY HINGED**
Automatic, gas-filled cylinder type, door stay arms shall be provided - two (2) per horizontally hinged door. The stay arms shall cushion door movement.

**ROLL-UP COMPARTMENT DOORS**
The apparatus body shall be provided with Amdor shutter type roll-up compartment doors. The compartment doors shall be constructed from aluminum double wall smooth back extrusions. Each slat of the door individually replaceable to reduce repair costs and down time of the vehicle and furnished with snap-in reusable end shoes.
Integral hinge seals between each slat of the compartment door shall prevent vibration of the compartment door and assist in preventing dirt and water from entering the compartment.

One piece extruded aluminum tracks shall be installed on each side of the compartment door assembly to eliminate the space between the compartment side walls and the door assembly. The side extrusions shall also provide the side slide tracks of the door assembly for smooth operation without binding.

A drip rail with dynamic top seal shall be provided along the top edge of the compartment door. In addition, a bottom bar seal shall be installed to provide a fully weatherproof compartment.

A full width stainless steel lift/latch bar shall be provided on the door assembly with a bar catch installed on each side of the side track extrusion sections.

Each roll-up compartment door shall have a painted finish to match the exterior body color Red with the exception of the rear ground ladder storage access door which shall remain smooth aluminum.

OUTRIGGER CONTROL STATION DOOR
A polished stainless steel door shall be provided each outrigger control station. Each door shall be furnished with a trigger latch.

AIR CYLINDER STORAGE COMPARTMENTS
Spare air cylinder storage compartments shall be recessed into the apparatus body. Each compartment shall include a hinged, cast aluminum door with trigger style latch, circular inner compartment tube, and rubber floor mat.

A nylon air bottle safety strap shall be installed in each of the air bottle storage compartments.

Air cylinder storage compartments shall be provided as follows:
- One (1) forward and two (2) between the tandem axle, driver's side wheel well panel.
- One (1) forward, two (2) between the tandem axle and one (1) rear of the curb side wheel well panel.
**ADDITIONAL AIR CYLINDER STORAGE**
There shall be a storage rack on each side of the transverse compartments located in the lower section below the frame rails. Each rack shall hold a minimum of 7 cylinders each.

**FUEL FILL**
A Cast Products aluminum fuel fill pocket with brushed finish cast aluminum hinged access door, trigger latch assembly, and spring loaded opener shall be provided and installed on the left side of the body panel, rear of the rear wheel well. The door shall be labeled for "Diesel Fuel".

**REAR BODY MODULE**
The rear access step structure shall be fabricated as an integral part of the rear body panel support structure to reduce deflection of the rear step under load, and shall provide structural support for the body compartment assemblies.

A upper rear deck shall be integrated into the rear support structure. The deck shall be covered with polished stainless steel grip diamond plate to serve as an extended walking surface to support 500 pounds and mounting for the rear warning and scene lighting.

An Amdor aluminum roll-up door shall be provided at the center rear of the apparatus to assist in keeping dirt from drafting into the rear ground ladder/storage area and restrict ground ladder movement. A full width stainless steel lift/latch bar shall be provided on the door assembly with a bar catch installed on each side of the side track extrusion sections.

A 12 gauge polished stainless steel diamond plate deck extending beyond the rear body bulkhead shall be provided for mounting of warning and non-warning lights.

**WATERWAY INLET**
A stainless steel recessed box shall be installed within the rear body panel to prevent the inlet from extending out past the rear body panel.

A liquid filled water pressure gauge shall be located near the rear inlet within the recessed area.

A 1-1/2" drain valve shall be provided beneath the turntable with control located below the rear inlet.
A flush mounted 4" diameter LED illumination light with separate On/Off switch shall be installed within the recessed box to illuminate the rear inlet area.

**WHEELWELL LINERS**
Each rear wheel well of the body shall have a one-piece full width wraparound wheel well liner with extended radius highly polished, stainless steel fenderette. The wheel well liner shall be bolted to the body to permit easy removal for service and maintenance. Ample clearance shall be provided between the tire and wheel well liner for the use of tire chains.

**MUD GUARDS**
Heavy-duty mud guards shall be provided behind the rear wheels, overlapping each side of the tires.

**BODY TRIM PANELS**
All stainless steel diamond plate installed on the apparatus body shall be "bright finish" with a minimum 12 gauge thickness. For corrosion resistance, the diamond plate shall not be installed prior to paint as described in the painting section of this specification.

Stainless steel diamond plate shall be installed on the front wall of the forward body compartments and the top of the side compartment assemblies, flanged out 60 degrees to form a drip edge over the compartment doors.

The entire rear surface of the apparatus shall be smooth aluminum for application of the rear NFPA-1901 Chevron striping.

**RUB RAILS**
Protective rub rails shall be provided on each side of the apparatus, along the lower edges of the body below the compartment doors. The rub rails shall be fabricated of 1" x 1" polished stainless steel tubing with tapered UHMW end caps.

The rub rails shall protrude beyond the outer surface of the apparatus body to protect it while loading and unloading firefighting equipment.

**HANDRAILS**
The handrails shall be constructed of 1-1/4" diameter heavy duty polished extruded aluminum tubing with three (3) fully replaceable rubber grip inserts with polished chrome-pled brass mounting brackets.
A straight handrail shall be installed on the forward side of each rear "A"-frame style stairway. The handrails shall be a minimum of 44" long.

Two (2) looped handrails shall be installed on each A-frame type stairway at the rear of the apparatus body, one (1) each side for access to the turntable.

**TURNTABLE ACCESS STEPS**
An "A" frame type step arrangement shall be provided each rear body corner for access to the turntable. The step assemblies shall be constructed with a minimum of five (5) open grate aluminum steps, approximately 17" wide.
A fold-down step shall be built into the body below each A-frame stairway. The step shall serve to provide easier access, when the unit is raised upon its outriggers.
An over-center design assembly shall be provided to hold the step in the stowed position. The step assembly shall be wired to the "compartment open" light in the cab to indicate when the step is not stowed.

**OUTRIGGER COVERS**
Highly polished stainless steel outrigger covers shall be provided. The outrigger covers shall be no wider than 15 inches so as not to prohibit extension of the outrigger between parked cars.

**OUTRIGGER PAD STORAGE SLIDES**
Four (4) auxiliary outrigger pad storage slide assemblies to hold one (1) auxiliary outrigger pad with locking device shall be provided. The storage slides shall be located under the apparatus, Two (2) each side as close to the outriggers as design allows. The slides shall be constructed of U.H.M.W. nylon assemblies with body material mounting angles.

**CASCADE SYSTEM CYLINDER STORAGE AREA**
A Cascade System air cylinder storage area shall be provided in the center of the apparatus body, ahead of the turntable. The area shall be approximately 44.00" wide x 108" long x minimum 25.00" deep in size. The storage area shall be utilized for mounting of air cylinders that will be utilized with a vehicle supplied and installed Cascade System. The storage area shall be covered with aluminum treadplate with the cylinders located in the center section of the body.

A 3/16" aluminum diamond plate floor with aluminum under structure shall be provided in the open storage area. The flooring shall be reinforced to support the weight of the Cascade System air cylinders.
There shall be a black solid vinyl cover fabricated by D&S Custom Covers and mounted to cover the open center section of the body.

**CASCADE SYSTEM**
One (1) mobile cascade system shall be supplied. It shall consist of a two (2) position filling station for SCBA cylinders, four (4) ASME 6,000 psig cascade bottles, one (1) four bank air control panel and four (4) 15’, HP 6000 psig hoses. The 6000 psig bottles will be installed in the center of the apparatus ahead of the turn table as described above. The filling station will be installed in a compartment to be determined.

**GROUND LADDER STORAGE**
Ground ladders shall be stored vertically in the enclosed center ladder storage area within the plate style torque box under the turntable support structure, unless otherwise noted.

The interior ladders shall store on full length .250" fiberglass slides with access from the rear of the apparatus.

**GROUND LADDER LOCK**
A heavy-duty stainless steel hinged ground ladder lock assembly shall be provided the lower rear edge of the ladder banking to prevent the ladder from moving fore and aft. A spring loaded manual catch shall be provided on each end of the ladder lock. The drop down flap shall be labeled to reflect the ground ladder lengths when in the closed position.

**PIKE POLE STORAGE**
Pike pole storage shall be provided in the rear storage area with access through the rear ground ladder access door, unless otherwise noted. Pike poles shall be stored in individual, properly labeled, 2.25” diameter aluminum tubes.

**REAR TOW DEVICES**
Two (2) rear heavy duty steel tow plates shall be provided, one (1) each side, welded directly to the chassis torque box frame. The tow plates shall be 1” thick with 3” hole in the center of the plate. The tow plates shall be painted to match the torque box frame color.

**12 VOLT ELECTRICAL SYSTEM COMPONENTS (MULTIPLEX BODY)**
The electrical system and its equipment shall comply with all FMVSS requirements, including Federal Motor Carrier Safety Regulations (FMCSR) and shall also confirm to all the applicable SAE recommended standards and practices, whether or not
specifically referenced in this document while complying with the subparagraphs herein. All electrical and electronic components shall be selected to minimize electrical loads. All electrical components and wiring shall be readily accessible through access panels for checking and maintenance. All switches, indicators, and consoles shall be located and installed in a manner that facilitates easy removal and servicing. All exterior housings of lamps, electronic devices, and fixtures shall be corrosion resistant and weatherproofed. The electrical system for this vehicle shall be the most technologically advanced system available for emergency vehicles.

The body power distribution shall be accomplished by using a solid state power control unit. These units shall be solid-state and not employ electromechanically relays, breakers, solenoids or other internal components that wear or reduce the body’s electrical life. These power distribution units shall provide multiple control and management of the electrical power provided by the chassis electrical system and assist in the critical maintenance of the vehicle batteries. Power distribution units shall be positioned in the vehicle to minimize the length of wire runs to the devices they control. They shall be installed in the body bulkhead areas and not be exposed to shifting equipment. Easily removal access panels shall be provided for service access.

The electrical system shall be a Weldon Technologies, Inc. V-Mux Multiplex System for the body. The electrical system shall provide multiple switching and interlocks to turn on outputs from two or three switch locations making control of specific devices more operationally efficient.

The system shall have the capability to shed extraneous electrical loads from any power distribution units output at the eight (8) different voltage levels. This feature shall provide micro-management of necessary electrical loads during acute or transitory electrical system failures.

The system shall be designed to survive extreme temperature conditions from -40°F to +185°F. The system shall be sealed against environmental conditions of moisture, salt and fluids and shall be protected against over voltage and reverse polarity conditions.

Troubleshooting and service shall be accomplished by attaching a PC Diagnostics interface and viewing the messages across the communications node on a laptop computer. Each node shall be capable of being queried for voltage levels and indicate where in the system a voltage drop has occurred. Status of all inputs and outputs shall be determined through the PC interface.
The wiring shall be permanently color coded to identify wire function. Wires shall be permanently heat ink embossed with both number and function codes. The function codes shall be the “descriptive” name of the circuit served. The number code shall be the exact purpose of that circuit. This number code shall be completely referenced in a detailed wiring schematic provided with the vehicle.

Wiring installed in the manufacturing process shall be routed in conduit or high temperature loom with a rating of 300 degrees Fahrenheit where necessary to protect it. All added wiring shall be located in accessible, enclosed and protected locations. All conduits, looms and wiring shall be secured to the body cable straps in order to prevent sagging and movement resulting in chafing, pinching, snagging or any other damage. These cable straps shall be secured to a “welded” stud provided as required throughout the harness run to provide security. All apertures on the vehicle shall have grommets and be properly sealed for passing wiring and conform to SAE 1292. All items used for protecting or securing the wiring shall be appropriate for the specific application and be standard in the automotive, aircraft, marine or electronic hardware.

The body wiring shall be provided with “centralized” ground points. These shall be easily accessible for service. These centralized ground points shall utilize solid connection studs for reliability. The wiring harness shall incorporate a master ground wire to connect to these grounding studs. The internal connections for the ground wires where they feed into this master ground wire shall be an ultrasonic connection. Where they connect to the ground stud the connection shall be a machined crimped, epoxy sealed ring terminal.

Wiring connections from the wiring harness to various components or electrical assemblies shall be made through the use of either machine crimped, epoxy sealed ring terminals or self-sealing Deutsche connectors.

**ELECTRICAL WIRING-BODY**

All body wiring shall be number and color coded for ease of identification. Electrical connectors shall be of the crimp type.

An electrical DC distribution panel board compartment assembly shall be located in the driver's side front outrigger opening. The panel board shall be accessible through the outrigger fixed panel. The panel board shall provide DC electric to the electrical circuits associated with the apparatus body wiring. All body electrical circuits shall be protected by correctly sized thermal circuit breakers.
COMPARTMENT LIGHTS
Amdor LED-Strip lighting shall be provided on the interior of each compartment. Each compartment shall be provided with a minimum of two (2) lights one (1) each side of the door opening. The lights shall be mounted to allow maximum light coverage.

Two (2) Amdor LED-Strip compartment lights with automatic door switch shall be provided in the enclosed ground ladder storage area.

The lights shall be controlled by a switch in each compartment opening and wired to the compartment open light in the cab.

STEP LIGHTS - TURNTABLE ACCESS
A LED Step light shall be installed each rear access area to illuminate the steps leading to the aerial turntable. The lights shall be activated when the lower step is in use position.

DECKING, COMPARTMENT
Black Turtle Tile self-draining interlocking vinyl tiles, with beveled edge caps, shall be provided on the floor, shelves and trays of each enclosed compartment.

SHELVING
Ten-(10) shelves shall be provided. The shelves shall be constructed of 3/16" smooth aluminum plate. The front and rear edges shall be formed up 2". Adjustable shelves shall be mounted on adjustable track type channels to provide height adjustment with simple standard hand tools.

Exact shelf locations shall be agreed upon at the pre-construction meeting.

ADJUSTABLE SHELF TRACK
Adjustable shelf track shall be provided in the compartments for future mounting of vertically adjustable shelves or trays.

TOOL PANELS, SWING-OUT HINGED
Two-(2) swing-out hinged tool panels shall be installed one-(1) in the enclosed left side L-3 and right side R-3 compartments above the front wheel of the rear tandem axle.
Each tool panel shall be fabricated from unpainted 1/4" aluminum plate with a DA sanded finish. The tool panels shall be vertically hinged and swing out from the compartment back wall. A spring loaded slam latch shall be provided at the front of the compartment to hold the panels in the stowed position.

**SLIDE-OUT TOOL BOARD**
One (1) slide-out tool board shall be fabricated and installed in the traverse front compartment. It shall have the capability of sliding out either side of the body. It shall have a positive locking mechanism that shall allow it to stop at certain points so that the toll board doesn’t have to be fully extended if need be. It shall have the capability of mounting on both sides. Each side panel shall be constructed of unpainted smooth ¼” aluminum with a DA finish.

**SLIDE-OUT FLOOR MOUNTED TRAYS**
Two (2) 500 lb. Slide-out trays shall be fabricated and supply. Each tray shall be mounted on a slide-out mechanism with the capability of 100 % extension. The trays shall be constructed of 3/16" smooth aluminum plate. The edges shall be formed up 2" on all sides.

**BODY WARNING LIGHTS**
Two-(2) Whelen L-31 Super LED red lens beacons shall be installed on the upper rear corners of the apparatus body.

Four-(4) Whelen M6 series red lens LED lights shall be installed two-(2) each side on the outrigger covers. Lamps shall be installed with Whelen M6FC chrome plated flanges.

Two-(2) Whelen M6 series red lens LED lights shall be installed on the lower rear of the apparatus below the tail light. Lamps shall be installed in the four (4) light housing.

**ICC LIGHTING-BODY**
Two-(2) Truck-Lite amber LED combination turn/clearance lights shall be mounted on the body sides between the rear tandem axles one-(1) each side. Each light shall be provided with a reflector style lens assembly. These lights shall be wired to the turn signal control circuit, four-way flasher circuit, and the headlight switch circuit in the cab.

Two-(2) Dialight Series 15 red LED clearance lights and two-(2) Arrow red reflectors shall be mounted below the rear of the apparatus, one-(1) each side.
Five-(5) Dialight Series 15 red LED clearance lights and two-(2) Arrow red reflectors shall be mounted below the rear of the apparatus.

Two-(2) Britax LED red/amber clearance shall be mounted at the lower rear corner of the body, one-(1) each side.

The headlight switch shall activate the apparatus clearance lights.

**REAR STEP LIGHTS**
There shall be two-(2) clear lens LED step lights installed at the rear of the body to help illuminate the rear tailboard area in compliance with NFPA 1901.

**UNDERBODY LIGHTS**
Eight-(8) clear LED underbody work-lights shall be installed under the body around the perimeter of the vehicle, in compliance with NFPA1901. The lights shall be strategically placed to illuminate the immediate ground area around the unit. These under body lights shall be switchable but automatically activate when the cab doors are opened.

**DECK LIGHTS**
There shall be two-(2) 6" Unity AG-S chrome plated rear deck lights, with Whelen #P46WLC LED flood light bulbs installed one (1) each side at the rear of the aerial body. These lights are individually switched at the light.

**LICENSE PLATE LIGHT**
One-(1) LED license plate light and bracket shall be installed on the left side rear of the apparatus with the light to be wired to come on with the headlights.

**STOP, TURN, AND BACK-UP LIGHTS**
Install Whelen M6 series lights in Whelen M6FCV4 chrome quadruple lamp bezels, one-(1) each side on the lower rear body corners. Each bezel shall be mounted with closed cell neoprene molding around the full perimeter contact surface area of the body to seal out moisture and eliminate electrolysis. The tail lamps shall be installed in the following descending order:

- **TOP** Red LED Stop/Tail Light (M6BTT)
- **UPPER CENTER** Amber LED Arrow Turn Signals (M6T)
- **LOWER CENTER** Clear LED Back-Up (M6BUW)
- **BOTTOM** Red LED Warning Light (M6R)
**HYDRAULIC GENERATOR**
A Harrison Model 10.0MAS 10,000-watt hydraulic driven 120/240-volt generator shall be installed on the apparatus. Generator shall produce single-phase power at 60 HZ.

The system shall utilize one of the chassis transmission PTO outlets to power a pressure compensated hydraulic pump assembly. The hydraulic output of the hydraulic pump assembly shall power the modular hydraulic motor-generator assembly.

All connections to this module (hydraulic and electrical) shall be easily removable for fast removal of the unit from its mounting location. Hydraulic hose fittings shall be provided between the hydraulic pump and the generator assembly.

The design shall incorporate the maximum protection from the effects of oil contamination that is available. All hydraulic, electrical, and electro-mechanical components utilized in the system shall be performance matched.

**POWER TAKE-OFF**
There shall be a hot shift PTO installed to power the generator.

**GENERATOR MOUNTING LOCATION**
The generator shall be located in the forward center section of the body with access through the removable generator cover on the top center section of the body.

**GENERATOR COVER**
A generator cover, fabricated of polished stainless steel grip diamond plate, shall be installed above the generator. The top of the generator cover shall be hinged allowing access to the generator and be reinforced to allow personnel to stand on top of the cover. There shall be removable expanded aluminum panels installed on the sides of the cover to promote airflow and allowing additional access to the generator.

**GENERATOR PERFORMANCE DISPLAY**
The generator shall be equipped with a Fire Research compact FROG-D display to monitor generator performance. The display unit shall include bright red digital LED's to show generator voltage, amperage draw on lines 1 and 2, and frequency in hertz. The display shall also include a "Mode" switch that will show total generator run-time in hours, and the current generator systems oil temperature. The FROG-D shall be located adjacent to the circuit breaker panel, and easily seen by the operator.
LINE VOLTAGE ELECTRICAL SYSTEM REQUIREMENTS
The specified line voltage power unit shall be installed with strict compliance with NFPA 1901 guidelines, and all associated components and equipment to be installed shall comply with NFPA 70 and applicable standards of the National Electrical Codes. Line voltage electrical system equipment and materials used with the system shall all be listed, properly installed in accordance with the manufacturer's instructions, and only in the manner for which they have been listed.

SYSTEM INSTALLATION AND WIRING
The generator system shall include proper grounding and bonding as required in NEC "Portable and Vehicle Mounted Generators". Non-grounded systems shall not be used. Only stranded or copper conductors shall be used for grounding and bonding purposes. An operator instruction plate, and generator rated performance specification plate, shall be permanently installed at the circuit breaker control panel.

Wiring shall be properly installed from the circuit breaker panel to all specified 120/240 volt accessories, including permanent circuit identification and rating specifications as applicable. Wiring materials used for the specified accessories shall be either THHN type in non-metallic liquid tight flexible conduit, or heavy duty SO copper cable. Either type of wiring shall be rated for 600 volts at not less than 194 degrees Fahrenheit.

LINE VOLTAGE TESTING REQUIREMENTS
The line voltage electrical system and associated equipment shall be thoroughly tested, and the testing shall verify electrical polarity, and that all wiring connections have been properly made. In addition, the system shall undergo a thorough operational test under full-load of the generator manufacturer's continuous duty power rating.

All system testing shall be performed when the apparatus is completed, and in accordance with the requirements of NFPA 1901.

CIRCUIT BREAKER PANEL
A circuit breaker panel shall be installed in the left front compartment and shall be wired to the line voltage power supply. The breaker box shall include a main breaker and up to 12 single pole circuit breakers, each of which shall be properly sized to suit the specified line voltage lights and accessories. The face of the circuit breaker control panel shall be permanently labeled with the circuit name or function designation of each individual breaker.
**ELECTRICAL RECEPTACLES**
Two-(2) receptacles with weatherproof spring loaded covers shall be installed one-(1) each side in the forward section of the rear fender panels.

The receptacles shall be furnished with NEMA L5-20, 120-volt 20-amp 3-prong twist lock configuration.

**120/240 VOLT ELECTRICAL RECEPTACLES IN COMPARTMENT**
Two-(2) receptacles with weatherproof spring loaded covers shall be installed inside the circuit breaker enclosed body compartment on the left side of the apparatus.

One (1) receptacle shall be furnished with NEMA L5-20, 120-volt 20-amp straight blade configuration with protective cover.

One-(1) 30-amp 3-prong twist lock 240-volt NEMA L6-30 outlet shall be installed in the breaker panel compartment left side of the apparatus. The outlet shall include a weatherproof box and spring loaded cover, and shall be wired to a separate 240-volt circuit breaker.

**ELECTRICAL RECEPTACLES INTERIOR CAB**
Two-(2) receptacles with weatherproof spring loaded covers shall be installed in the rear crew cab area. The location of the receptacles shall be determined at the pre-construction conference. The receptacles in the cab shall be wired to the generator and the 120 volt shore line connection. The receptacles shall be furnished with 20 amp GFI duplex outlets.

**CABLE REELS (2), 120VAC, 20 AMP**
Two-(2) Hannay electric rewind cord reels shall be installed on the apparatus and wired to the onboard 120 VAC power source through appropriately sized circuit breakers. This installation shall include 200 feet of yellow 10/3 SO cable with a 20 amp NEMA L5-20 female receptacle on each reel. The reel rewind functions shall be controlled by individual push button rewind switches in convenient locations. In compliance with NFPA 1901 Standards each reel shall have a permanently mounted tag listing the reel rating specifications and capacities.

The cord reels shall be located one-(1) in the Left Side L-1 compartment above the front outrigger and one-(1) in the Right Side R-1 compartment above the front outrigger.
ROLLERS, CORD REEL W/BALL STOP
The electric rewind cord reels shall each have a 4-way stainless steel roller assembly installed to ease deployment and retraction while helping to prevent damage to the cable. Additionally there will be a ball stop installed near the cord end to help protect the cable end and prevent the cable from being over wound on the reels.

ELECTRICAL JUNCTION BOX 120VAC
At the end of the cord shall be a direct wired, to each Akron Brass model EJB-PP Junction Box with two (1) 20 amp GFI duplex outlet, 1 20 amp duplex outlet and two (2) 20 amp twist-lock outlets. The junction box will have rubber feet and be powder coated yellow and backlit faceplate. Included shall be an Akron Brass model EJB-VMT-TP aluminum diamond plate vertical mounting bracket providing quick-release deployment, for each junction box.

120 VOLT SWIVEL BASE LED LIGHTS
Two-(2) Whelen Pioneer Plus model # PFP2AC, Dual Panel LED120-volt floodlights with a swivel base shall be installed, one-(1) each side of the apparatus. On-off switching shall be controlled at the circuit breaker panel.

PAINTING - GENERAL REQUIREMENTS
The final finishing of the apparatus shall be performed to the highest standards of the fire apparatus industry.

All removable components and accessories shall be fitted to the body and then removed prior to final finishing ensuring paint has been applied under all components and accessories.

Care shall be taken during paint preparation to properly fill all surface imperfections. Welded seam areas shall be ground flush and metal finished. Bare metal surfaces shall be etched chemically to insure proper adhesion. The primer shall be sanded to assure a smooth surface for painting.

The cab and body shall be finished using PPG urethane enamel paint for a high gloss and hard finish.

SINGLE COLOR BODY PAINT
The exterior of the apparatus body shall be painted using a single color to match the cab primary color, PPG FBCH 72704 ALT Red.
**COMPARTMENT INTERIOR FINISH**
The interior of all compartments shall have a light gray Zolatone finish.

**BODY UNDERCOATING**
The body shall be thoroughly prepared and sprayed with a rust inhibiting undercoating. Areas to be sprayed shall include the backsides and undersides of all compartments. All sub-structure under the body shall be undercoated thoroughly.

**RJ MARX COMPUTER GENERATED LETTERING**
There shall be up to sixty-(60) computer generated letters that match the fire departments existing apparatus shall be applied to the apparatus as directed by the fire department.

The following Gold Leaf lettering with shading and highlight shall be applied in the following locations:
- Front of chassis above grille – “WATERTOWN” (2.5” Letters)
- Front Cab Corners “T-1” (4.5” Letters)
- Cab Front Doors – 16 ¾” x 12 3/8” Custom FD Patchs
- Cab Rear Doors – “TOWER 1” (Tower will be arched down.) (4.625” Letters)
- Cab Sides – 12” x 15” Waving American Flags

The following Red lettering with Blue shade shall be applied in the following locations:
- Rear Roll-up Door – “WATERTOWN” (4.625” Letters)
- Rear Roll-up Doors – “T-1” (7.5” Letters)

All lettering is on file at RJ Marx www.rjmarx.com

**AERIAL LETTERING**
Both sides of the aerial device shall be lettered with the Fire Department’s name. Up to thirty six-(36) large blue 3M # 76 reflective letters shall be included.

**SCOTCHLITE STRIPE**
There shall be a Scotchlite reflective stripe installed around the perimeter of the apparatus in compliance with NFPA 1901 and as directed by the fire department. The stripe shall be 4” wide and will run horizontal across the front of the cab, sides of the cab and on each side of the body to match the fire departments existing apparatus. Additionally, there shall be 96 square inches of reflective material applied to the inside of each cab door.
REFLECTIVE CHEVRON
There shall be a reflective chevron covering a minimum of 50% of the rear of the apparatus body. This chevron shall consist of 6” wide alternating color reflective stripes sloping down away from the centerline of the apparatus body at a 45-degree angle. This design and materials shall be in compliance with NFPA 1901, 2009 Edition; article 15.9.3.2

The chevron striping colors shall be reflective Red and Fluorescent Yellow.

ELEVATING PLATFORM SPECIFICATIONS

INTENT OF AERIAL SPECIFICATIONS
The intent of these specifications is to describe a telescoping aerial ladder of the true ladder type. It shall consist of a steel 1000 lb. payload platform, three (3) steel ladder sections with a pre-piped telescoping waterway, a steel turntable, torque box, and outriggers.

It is also the intent of the purchaser to secure a fire service proven piece of apparatus which is manufactured in the United States.

It is not the intent of the purchaser to deviate from this requirement; therefore, ladders attached to booms (whether solid or lattice) or articulating arms shall not be considered as meeting these specifications or the intent of these specifications.

CONSTRUCTION STANDARDS
The ladder shall be designed such that stresses produced at 2 x DL (Dead Load) + 2 x RL (Rated Load Capacity) shall not exceed material yield strength and a one and one-half to one (1.5:1) stability factor, in compliance with the intent of the NFPA Standards for aerial fire apparatus.

The capabilities shall be established in the unsupported configuration; and all ladder sections, turntable, torque box, outriggers, etc. shall be thoroughly strain gauge tested in addition to complete computer modeling analysis. The Bidder shall provide written certification, signed by a third-party Registered Professional Engineer, certifying that the unit meets this requirement.

HEIGHT
The minimum height of the aerial ladder platform at 80 degrees elevation and full extension shall be 100 feet. This shall be measured by a plumb line from the top surface of the platform handrail to the ground.


**REACH**
As horizontal reach is often more important than vertical height, the minimum horizontal reach shall be 91 feet. This shall be measured from the center line of rotation to the front edge of the platform handrail.

**WELDMENT FIXTURES**
To ensure the highest levels of quality and ultimate safety, all weldments (outrigger, torque box, turntable, ladder sections, pins, bushing, etc.) shall be manufactured by the bidder. All raw materials shall be vendor certified. As discussed in the Aerial Apparatus Certification section, each weldment shall be third party certified prior to assembly.

To ensure tolerances between parts and part interchangeability, all weldments shall be manufactured in fixtures. To further ensure weld integrity all weldments, the fixtures must be able to rotate to enable the weldment to be welded in the number 1 flat welding position, resulting in maximum weld penetration in the welded material.

**AERIAL APPARATUS CERTIFICATION - (TYPE I)**
The aerial device shall be tested and certified by a third-party testing company in compliance with the National Fire Protection Association (NFPA) Standard No. 1911 (latest edition) during construction and before shipment.

All welding on the aerial device shall meet American Welding Society (AWS) D1.1 Structural Welding Code.

The following tests shall be conducted by personnel holding a Level II Certification in accordance with ASNT #CP-189 recommend practices:
- Nondestructive testing methods shall be incorporated into the inspection to detect defects and improperly secured parts.
  - Magnetic particle inspection shall be conducted on all parts of the ladder, turntable torque box and outriggers before assembly to assure the integrity of the weldments and to detect any discontinuities.
  - Ultrasonic inspection shall be used to detect any flaws in pins, bolts, and other critical mounting components.
- Functional tests, load tests, stability tests and visual structural examinations shall be performed. These tests shall determine any unusual deflection, noise, vibration, or instability characteristic of the unit.

Upon completion of the preceding inspections, the third-party testing company shall issue a Certificate of Inspection - (Type I) indicating that all specified standards have been satisfied.
TESTING CRITERIA
The manufacturer of the aerial device shall provide a written statement signed by a Registered Professional Engineer certifying the aerial's ability to perform the following tests.

The following stability requirements shall be met by the aerial apparatus when it is in a service-ready condition. Items such as water, hose, ground ladders, loose equipment, etc. shall be removed. Items mounted on the aerial device shall remain mounted.

1-1/2:1 Stability Test - A test of the apparatus shall be performed that the ladder sections are so designed and powered to support a load representing 150% of the manufacturer's rated payload capability at maximum horizontal reach and rotated.

1-1/3:1 Stability Test - A test of the apparatus shall be performed that the ladder sections are so designed and powered to support a load representing 133% of the manufacturer's rated payload capability at maximum horizontal reach and rotated with the vehicle on a slope of 5 degrees downward in a direction most likely to cause overturning.

A time test of the apparatus shall be performed to raise the platform from the bedded position, extended to full height and rotated through a 90 degree turn smoothly and without undue vibration in not over 150 seconds.

A water tower test of the apparatus shall be performed to test the ability to discharge 1,000 gallons per minute, 90 degree to the ladder, with the ladder at full extension, 30 degrees elevation.

LOAD CRITERIA CERTIFICATION
Each bidder shall supply a written statement from a Registered Professional Engineer certifying that the structural safety factor based on rated capabilities have been achieved. This statement shall be based on the following definitions:

DL = Dead load stress induced by structure and permanently attached components (psi).

RL = Rated capacity load stress induced by vertical payload (1000 pound minimum).
WL = Water reaction stress induced by nozzle reaction and weight of water at 1000 GPM per nozzle one (1) at 90 degrees either side of ladder centerline.

Fy = Yield strength of steel (psi).

The ladder shall be certified to the following criteria:

With no water flowing, and full rated vertical tip load (1000 pound minimum) in worst position (0 degrees elevation with ladder at full extension), for ladder stress: 2 x DL plus 2 x RL is less than or equal to Fy

With the ladder at a 45 degree elevation angle at full extension and with water flowing and full rated vertical tip load (500 pound minimum) with monitor in worst position for ladder stress (1000 GPM minimum): 2 x DL plus 2 x RL plus WL is less than or equal to Fy

**LADDERPLATFORM CRITERIA AND STANDARDS**

The following ladder/platform load capacities shall be established with the truck level; the outriggers fully extended and lowered to relieve the chassis weight from the axles. The capacities shall be based upon 360 degree continuous rotation. The ratings shall be based on average weight of personnel on ladder at 250 pounds each.

**LADDERPLATFORM CAPACITIES**

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<thead>
<tr>
<th>Elevation</th>
<th>Base Section</th>
<th>Mid Section</th>
<th>Fly Section</th>
<th>Platform</th>
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<td>-6 to 20</td>
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<td>21 to 30</td>
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<td>31 to 40</td>
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<td>51 to 60</td>
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<td>61 to 80</td>
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**WATER TOWER OPERATION**

The following capacities shall be based upon continuous 360 degree rotation and up to full extension:

1) The water tower system shall be capable of flowing 1,500 GPM in all permitted ladder and nozzle positions.
2) The water tower system shall be capable of flowing 2,000 GPM in all ladder position with the nozzle in the following positions: With ladder above 45 degrees, nozzle range shall be 45 degrees above or below horizontal or with ladder below 45 degrees, nozzle range shall be from horizontal to 45 degrees below horizontal.

**WATER TOWER OPERATION**

<table>
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**OPERATION ON GRADES**
The aerial shall be capable of being operated in any plane with the aerial turntable being up to 3-1/2 degrees out of level without any reduction of rated capabilities. For slope conditions with the turntable being from 3-1/2 degrees to 8.0 degrees out of level, capabilities shall be reduced by 50%. Operation beyond this limit shall be at the operator's discretion.

**AERIAL DEVICE MOUNTING**
The aerial device shall be rear-mounted on the truck chassis with aerial ladder facing forward over the chassis cab.

A steel ladder rest shall be provided to support the ladder in the travel position. The ladder rest shall be bolted to the chassis frame as close to the front axle as design allows. Stainless steel bedding plates shall be attached to the ladder base section to protect the ladder paint when the unit is in the travel position.

**TUBE STYLE TORQUE BOX**
An independent steel pled (tube) style torque box weldment shall be installed with four (4) outriggers. The plate (tube) style torque box shall be constructed of four (4) high strength steel plates with reinforcements welded to form a box type design which shall enclose the ground ladders within the structure. An open-base structure of steel tubing welded to the plate style torque box at the top rear shall provide support for the turntable bearing plate.
The ground ladders shall be stored through the rear of the torque box with the first ground ladder mounted approximately of 42" above the ground, allowing for easy loading and removal.

The tube style torque box weldment shall transfer all aerial loads into the outriggers, thus preventing damage to the chassis frame and body. The torque box shall be bolted to the chassis frame side rails with 3/4" SAE Grade 8 bolts and nuts. Units that utilize frame/torque box style chassis shall not be acceptable due to the inability of the replacement of the chassis in the event of vehicle damage to the chassis.

**RESCUE RINGS**
A rescue tie-off ring shall be provided on each vertical outrigger tube assembly. The rings shall be 3/4" diameter steel with swivel attachments, welded to the exterior vertical outrigger tube assembly. Each ring shall be rated to 2000 pound capacity.

**OUTRIGGERS**
Four (4) independently controlled out-and-down type outriggers shall be provided, capable of maximum stability within an 18' stance across the outriggers.

Each jack cylinder shall have a 5" internal diameter (bore), 3-1/2" external diameter chrome plated cylinder rod with a 36-3/4" stroke. The outriggers shall have the capability to obtaining 20" of ground penetration for set-up on uneven terrain.

Jack cylinders shall be equipped with dual, integral counterbalance holding valves which shall maintain cylinder position in the event of hydraulic system failure.

To protect the rod all times from the possibility of nicking or scarring, the jack cylinder shall be mounted with the rod end attached to the top of the outer jack tube.

To minimize side loading and subsequent seal failure of the vertical jack cylinder, a 2.62" wide load bearing nylatron wear band shall encircle the jack cylinder barrel, providing load distribution over a 360 degree plane.

For ease of maintenance, the outer jack tube shall be designed so that the cylinder can be removed from the top.

The extension of the horizontal beams shall be accomplished by an extension cylinder which as a 3" internal diameter (bore), 2" diameter cylinder rod, and a 65-1/2" stroke.
All cylinders shall be fully enclosed within telescoping jack boxes to protect the cylinder rods against damage which may occur while on the fire ground.

Five (5) slide pads shall be provided for each outrigger assembly to provide smooth operation and to extend the life of the outrigger.

**OUTRIGGER PADS**
The outrigger pads shall be floating, self-leveling pads fabricated with ½” thick steel plate providing 154 square inches of contact per outrigger. These 14” diameter steel pads use a double knuckle design to connect to the outrigger allowing the pad to be self-leveling for total contact with uneven terrain for optimum load distribution.

**AUXILIARY OUTRIGGER PADS**
Four (4) auxiliary outrigger pads shall be provided for additional load distribution on soft surfaces. Each pad shall be fabricated of 3/8” x 24” x 24” 6061-T6 high strength aluminum alloy and shall have a handle for easy use of the 576 square inch flat pad.

Each of the auxiliary outrigger plates shall be provided with a receiver constructed of aluminum structural angle material which shall allow the outrigger plate to be pre-positioned on the outrigger foot plate to prevent manual alignment of the outrigger and the auxiliary pads during set-up.

**OUTRIGGER LEVELING INDICATORS**
Two (2) bubble type leveling indicators shall be provided at the rear of the apparatus, one (1) each side to assist in outrigger set-up and leveling of the apparatus.

**OUTRIGGER DEPLOYMENT WARNING ALARM**
An outrigger deployment warning device shall be provided to warn personnel in the vicinity of the apparatus that the outriggers are in motion. Whenever an outrigger control handle is utilized, the device shall produce a pulsing tone, separate and distinctive from that of other audible warning systems provided on the apparatus. When the outrigger control device is released to its neutral position, the signal shall cease. The warning device shall have a two-position switch to enable the dB level to be raised or lowered.

**OBSTRUCTION DETECTION & DISPLAY SYSTEM (O.D.D.S.)**
A system shall be installed to assist the apparatus driver in avoiding obstructions that would interfere with the full extension of the outrigger beams. The system shall consist of multiple sensors installed at each outrigger location and a display panel mounted within clear view of the driver in the apparatus cab.
During the approach or upon arrival at an emergency scene, the system is activated with a rocker type on/off switch provided on the display panel. The sensors at each outrigger will identify obstacles within a predetermined zone directly in front of each outrigger. Once activated, the system will provide continuous updates to the display using red indicators to identify an obstruction and green indicators to identify a clear path for outrigger setup.

SAFETY FEATURES

The outrigger system shall provide the following safety features:

- A system to ensure that all outrigger beams area fully extended before the jack cylinders can be lowered.
- An outrigger interlock system to prevent raising of the aerial prior to all outriggers' being in firm contact with the ground. Green indicator lights shall be provided at the outrigger control stations to indicate circuit completion.
- A momentary override safety switch to allow operator discretionary placement of an outrigger jack with the beam at less than full extension.
- A ladder cradle/outrigger interlock system shall be provided to prevent the lifting of the aerial from the nested position until the operator places all jacks in the load supporting configuration. A limit switch at the ladder rest shall prevent operation of the outriggers once the aerial has been elevated from the nested position.

For the safety of personnel and equipment, no exceptions shall be allowed to this interlock system.

OUTRIGGER CONTROLS

Two (2) illumined outrigger control stations shall be provided the rear most corners of the body, one (1) each side.

For safety, ease of deployment and operational speed, the outrigger controls shall be of the hydraulic proportional type with manual overrides immediately accessible. The operator shall deploy each outrigger from its corresponding side of the apparatus. And to ensure safe deployment at all times, the controls shall not be obstructed in anyway, which would limit operator visibility of the outrigger in operation.

Each outrigger shall be independently controlled in both in/out and up/down modes to allow vehicle set-up in restricted areas or on uneven terrain. However, it shall not be possible to lower the jacks unless all outrigger beams have been fully extended or the operator actuates the momentary override switch to allow discretionary placement of an outrigger beam.
The following features shall be provided at each control station, clearly identified and suitably illuminated for ease of operation: Fast Idle Switch (Each Side), Momentary Safety Switch, Outrigger Control Handles, "Outrigger Deployed" Indicators and Emergency Power Unit Switch (EPU).

**AERIAL LADDER SECTION CONSTRUCTION**

Ladder section design objective shall complement the support of heavy or uneven platform loads low angles of elevation, or full extension.

The ladder tower ladder shall consist of three (3) high strength steel sections, designed to be strong yet as light as possible. The design objective shall be to provide the highest strength-to-weight ratio possible in order to provide the highest levels of performance.

Performance shall be defined and compared between bidders as follows:

- Platform and aerial payloads - both wet and dry
- Water flowing capabilities in all directions, all positions, with the highest possible payloads, and with one (1) or two (2) streams of water
- The ability to perform conditions 1 and 2 (above) in adverse conditions such as high winds and icing
- Maximum payload required in either a wet or dry condition to cause the front off-side jack to lose contact with the ground with the ladder positioned 0 degrees elevation and 90 degrees to the side of the truck at full extension.
- The amount of pressure and flow required to lift a fully extended ladder and platform when loaded to or beyond capacity.

Each section shall be fabricated in fixtures as described under weldments, assuring uniformity, re-place ability, or changeability, and shall be welded in accordance with American Welding Standards (AWS) criteria by certified welders. Each section shall be trussed diagonally, vertically, or horizontally as required, but all diagonal and vertical braces shall be pre-cut and installed to intersect at a point that is the center line of the horizontal top handrail to reduce the possibility of any tangent loads being imposed on the braces.

Each section shall be equipped with 1-1/4" diameter rungs, placed at not greater than 14-inch centers for ease of climbing. All sections shall be K-braced between all rungs to minimize side deflection of the aerial.

Ladder rungs shall be covered with replaceable rubber covers that shall be serrated for traction and held in place with a weather resistant adhesive and metal clips. Due to high maintenance cost and difficulty in replacement of anti-slip rung surface and
the inability to provide a safe surface during icing conditions, ladder designs that do not utilize rubber rung covers shall not be acceptable.

The overlap areas shall have added stiffness by utilizing a combination of diaphragm plates and tubing.

To assure the level of quality desired by the purchaser, each ladder section shall include the following:

1. Base Section - All rails, including the lower rung rail, shall be permanently sealed from the atmosphere. The base ladder section shall include a triangulated lifting configuration.

To add strength above the rungs and improve resistance to spreading caused by overlap stresses between the base and mid-sections, a series of no less than fourteen (14) internal axial stress reinforcements shall be provided in each rung rail for a total of twenty-eight (28). The purpose of these reinforcements shall be to improve the through section characteristics of the rung rail above the rungs.

Each reinforcement shall be fabricated using high strength steel and shall be 6” in length, 3/4” in width, and 3-1/2” in depth at the top and 1-1/2” in depth at the bottom. They shall be placed along the full length of the base rail and spaced according to expected stresses with the closest spacing occurring in the outer overlap zone between the base and mid section which shall be at approximately 102” from the end of the base section.

The torsional rigidity of the base section shall be further enhanced by the installation of structural members that shall run parallel with and below the base section rungs, even with the bottom of the base members. The addition of these members shall form an improved box truss that shall increase torsional rigidity.

2. Mid Section - All rails, including the lower rung rail, shall be permanently sealed as described for the base section.

3. Fly Section - The tip of the fly section shall be specifically designed to carry the platform. The design shall incorporate a cushioning feature that is capable of absorbing shock stresses caused by over-the-road travel.
HANDRAIL DIMENSION

<table>
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<tr>
<th>Ladder Section</th>
<th>Height</th>
<th>Width</th>
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<tbody>
<tr>
<td>Base</td>
<td>25.00&quot;</td>
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</tr>
<tr>
<td>Mid</td>
<td>22.00&quot;</td>
<td>30.00&quot;</td>
</tr>
<tr>
<td>Fly</td>
<td>21.00&quot;</td>
<td>24.00&quot;</td>
</tr>
</tbody>
</table>

BASE SECTION NAMEPLATES
A painted white aluminum nameplate (14" high x 120" long) shall be provided and bolted on the ladder base section for the Fire Department's name. On the opposite side of the ladder base, the stokes basket storage box shall be used for the fire department's name.

PLATFORM SPECIFICATIONS
The aerial platform shall be constructed of high strength steel tubing, angles, and channels. The handrails, floor and support structure shall be assembled to enable each component to be unbolted from each other for ease of replacement should a component of the platform be damaged.

SUPPORT STRUCTURE FRAMEWORK
The support structure framework of the platform shall be a steel weldment consisting of channel and tubing for strength and rigidity. The slave leveling cylinders shall attach to this structure from the ladder fly section, thus keeping the platform level at all times.

Four (4) heavy duty rubber bumpers shall be installed under the platform to prevent damage to the platform when the unit is placed on the ground or on the edge of a building. The bumpers shall be bolted directly to the structural framework of the platform.

PLATFORM COVERINGS
For maximum safety, the operator in the platform shall be protected by rigidized stainless steel protective shields. The shields shall be provided on the sides of the platform, behind the gates, the side and front surface of each front corner gate, front of platform and the entire underside of platform.
**FLOOR**
The floor of the platform shall have a total internal (inside handrail) area of 18.80 square feet, with a 9" external step for a combined total area of 29.00 square feet. The floor shall be an open-type non-slip grating, thus preventing the accumulation of water on the platform floor.

The floor shall be a one-piece assembly which extends out past the platform handrail structure 8.00" on each side and 9.00" at the forward gate corners, making transfer in and out of the platform easier.

For safety of transfer to or from the platform, the platform floor and outside platform step shall be on the same level. The two (2) front corners of the floor shall be cut at a 27 degree angle, allowing the platform to be maneuvered closer to buildings.

**HANDRAIL STRUCTURE**
In compliance with the NFPA Standard, a forty-two inch (42") high continuous, unbroken handrail shall be provided on all four sides of the platform to prevent personnel from falling from the platform.

The railing shall be constructed so that no opening below it is greater than 24".

A four-inch (4") high kick-plate shall be provided around the floor of the platform except the area at the front corner gates which shall remain floor level to prevent tripping.

Each front corner of the platform shall be equipped with an inward swinging spring loaded gate assembly for access to the platform. The gate openings shall have a minimum size of 19.75"wide by 40.5"high.

Handrails shall be provided off the rear of the platform to bridge the gap between the platform and the ladder for safe transfer when the ladder is raised to high elevations. The handrails shall be designed to pivot within 10" of the fly section handrails.

**PLATFORM/LADDER ACCESS GATE**
A gate shall be provided between the platform and the fly ladder section. The gate shall be spring-loaded and shall automatically return to the closed position at all times. The gate shall push upward and/or inward to the platform from the fly section. The gate shall not move if pushed against from inside the platform. A pin type lock assembly shall be installed which shall lock the gate in the stored position for additional safety.
**PLATFORM LEVELING SYSTEM**

A platform leveling system shall be provided and so designed that the platform, together with its rated payload, can be supported and maintained level in relation to the turntable, regardless of the elevation of the ladder.

Platform leveling shall be accomplished by hydraulic circuitry that is independent from the main hydraulic system with an interconnecting control valve.

The leveling of the platform shall be accomplished by the following two (2) systems working together.

1. **Dual master/slave hydraulic cylinder** - The leveling of the platform shall feature a dual master/slave system with each side capable of maintaining the platform level. Two (2) 3" bore master cylinders shall be mounted between the turntable and the ladder base section; and two (2) 3" bore slave cylinders shall be mounted between the ladder fly section and the platform. Master/slave cylinders shall be equipped with spherical swivel bushings to extend cylinder seal life and provide a non-rigid, cushioned suspension of the platform.

   As the platform is raised or lowered, hydraulic fluid shall be transferred between the master and slave cylinders, thus maintaining the platform level. The slave cylinder shall be mounted outside of the platform for maximum platform space utilization.

2. **Auto-leveling system** - An automatic level sensing device, located in the platform, shall be provided to ensure that the platform is always level. The leveling system shall provide the following safety features:

   a. The leveling system shall be so designed that with the platform raised to its maximum elevation, the platform slave cylinders shall be fully retracted, thus making tipping of the platform impossible should a hydraulic failure occur.

   b. Leveling cylinders shall have hydraulic holding valves to prevent the platform from tipping should the hydraulic lines be severed.

   c. The slave cylinders shall be mounted outside the platform for maximum utilization of space and for safety of personnel from moving cylinders.

**PLATFORM MOUNTING**

The platform shall be suspended from the tip of the fly section in a manner that provides a cushioning effect when the vehicle encounters road irregularities. The steel platform support weldment shall be pinned to the end of the fly; and the
hydraulic cylinders shall be attached at a point below the pinning point and to the fly section behind the pinning point to create a load absorbing triangle which utilizes the cushioning effect of the cylinders in the design.

SAFETY BELT CONNECTIONS
Four (4) stainless steel safety belt connection U-bolts shall be installed in the handrail of the platform to enable connection of ladder safety belts. Two (2) loops shall be located in the front top handrail and two (2) at the upper rear of the platform.

LIFTING ARMS
Lifting arms shall be provided for the aerial platform which shall make it possible to raise and lower items such as stokes basket, tools, equipment, etc. from the platform by the use of a hoist and/or descent device, while allowing the aerial to remain stationary at the scene if necessary. Maximum lifting capability shall be 500 lbs. (250 lbs. per arm).

Combined loading of lifting arms and platform shall not exceed total platform load limitations.

STEEL LIFTING EYES
Two (2) welded steel lifting eyes shall be installed under the platform one (1) each side of the platform centerline. Each eye shall be of the "U" shape design and attached directly to the support structure of the platform. The lifting eyes shall have a capacity of 500 lbs. each or a combined capacity of 1000 lbs.

Any weight attached to the lifting eyes must be subtracted from the capacities indicated in the platform capacity load chart located in the platform.

RESCUE STRETCHER HOLDERS
Two (2) heavy duty detachable "U" shaped rescue stretcher holders shall be provide for the platform. The stretcher holders shall allow the placement, securing and support of the stretcher across the handrails the front area of the platform. The rescue stretcher holders shall slide into storage brackets at either the lower rear platform area or the platform storage compartment.

RESCUE LADDER BRACKETS
Brackets shall be provided for use each side of the platform, capable of holding up to a 16 foot roof ladder securely in place. The ladder shall be secured by the ladder rungs.
The roof ladder or the mounting brackets shall not restrict operations of the platform monitors or platform interior space.

The complete system shall withstand a 500 pound load while maintaining a minimum two to one (2:1) safety factor. There shall be a latching arrangement to secure the ladder in a vertical position at all times.

**PLATFORM EQUIPMENT STORAGE COMPARTMENTS**
Two (2) aluminum diamond plate compartments with a total of 7.5 cubic feet of storage shall be attached to each exterior rear corner of the aerial ladder platform. The compartments shall be sectioned off and provided with a separate access doors. Each door shall be furnished with a push-to-release door latch.

The compartment shall provide storage for possible equipment, like a fire axe, 100 feet of 1-3/4" fire hose and/or SCBA face masks. All equipment that is to be furnished for the above compartments shall be listed under separate sections of the specifications.

**PLATFORM CLEARANCE LIGHTS**
Five (5) amber LED clearance lights shall be provided on the platform structure. Two (2) of the lights shall be installed on the outside edges, one (1) each side and a cluster of three (3) shall be installed in the center of the forward angled section of the structure. The lights shall be wired to the clearance light switch or the headlight switch in the cab dash panel.

**ELEVATION SYSTEM**
Two (2) double-acting lift cylinders shall provide smooth, precise elevation from minus 6 degrees to plus 80 degrees. Lift cylinders shall be attached to a lifting beam which distributes equal force to each side of the ladder base section. The lifting beam shall apply all lifting forces in a plane parallel to the vertical center line of the base and side rails.

The elevation cylinders shall be pinned to the front structure of the turntable weldment and within the upper section of the triangulated lifting structure, one (1) each side of the ladder.
Elevation cylinders shall have a 7" internal diameter (bore); 5" cylinder rod diameter and a 78" stroke. The elevation cylinders shall be equipped with integral (on the cylinder) holding valves to prevent the unit from falling should the charge lines be severed at any point within the hydraulic system. A hydraulic holding valve shall be provided in the elevation circuit to retain the aerial ladder in its bed when the vehicle is in motion.

The elevation cylinders shall be provided with both rod and piston "hydraulic cushions". The cushions shall serve to decelerate the cylinder near the end of its stroke resulting in a smooth stop at full cylinder stroke.

**ROTATION SYSTEM**

A 40.29" diameter external tooth mono race bearing shall be provided for 360 degree continuous rotation in either direction. The bearing shall have a minimum rated moment of 523,000 ft. lbs. To ensure proper bearing installation and long service life, surfaces of both the open base bearing plate and the turntable bearing plate shall be milled. Units that do not have milled bearing surfaces shall not be acceptable.

The bearing shall be bolted to the turntable and bolted to the open base support plate, using seventy-one (71) 7/8" diameter Grade 8 bolts. A planetary drive gear box, powered by a hydraulic motor, shall provide precision rotation control throughout 360 degrees of rotation. A spring-applied, hydraulically-released disc type brake shall be furnished to provide positive braking of the turntable assembly against reactionary forces such as water flow and gravity.

The turntable rotation bearing shall be easily accessible for lubrication and re-torquing of bolts from the turntable side, for ease of access.

Access to the turntable bearing bolts which requires the removal of the ground ladders and/or the ground ladder slide assemblies, during bolt re-torquing process shall not be acceptable.

**ROTATION LIMITING SYSTEM**

An aerial ladder rotation limiting system shall be provided to notify and prevent the operator from rotating the aerial ladder into a restricted position due to a "short-set" outrigger configuration. The system shall enable the operator to place the aerial ladder in a 180 degree rotation to the opposite side of the apparatus than that of the "short-set" outriggers only. Indicator lights shall be provided on the turntable control console to indicate outrigger not deployed status.
In order to rotate the aerial ladder with an outrigger "short-set", the aerial interlock override control momentary switch located in the turntable control console shall require to be continuously activated while rotation of the aerial is in process. The system shall be capable of rotating the ladder slightly past the centerline of the apparatus on the "short-set" side to enable bedding of the ladder within the travel support structure without system cutout.

EXTENSION/RETRACTION SYSTEM
A full hydraulic powered extension and retraction system of the ladder shall be provided through dual hydraulic cylinders and cables, each capable of operating the ladder in the event of failure of one of the systems.

The extension cylinders shall have a 3-1/4" internal diameter (bore) with 1-1/2" diameter double rod and 155" stroke. The extension/retraction cylinders shall be equipped with integral (on the cylinder) holding valves to prevent the unit from falling should the charge lines be severed any point within the hydraulic system.

The extension cylinders shall be provided with both rod and piston "hydraulic cushions". The cushions shall serve to decelerate the cylinder near the end of its stroke resulting in a smooth stop at full cylinder stroke. Each double rod cylinder shall be installed with both rod ends attached to the base section, permitting the cylinder barrel to travel fore and aft through the length of the base section. The extension cylinders shall be so designed that the cylinder rods are in tension at all times thus eliminating the possibility of bending or buckling of the cylinder rods.

Cylinders in excess of 25 feet with the rod extended, or that require the attachment of the rod to the mid-section, shall not be desirable for two (2) reasons that are not consistent with the level of quality desired.

- Rod attachment to the mid-section requires that the lower rung rail cannot be sealed from the atmosphere and therefore long-term corrosion cannot be adequately controlled.
- The cylinder shall be subjected to the buckling forces caused by normal ladder deflection.

Cables attached to the base and mid ladder sections shall be routed over sheave wheels on the base section and cylinder barrel.

This cabling arrangement shall act as a stroke multiplier to provide full-power ladder extension and retraction. Extension of the ladder sections shall be accomplished by the movement of the cylinder barrel toward the turntable end of the base section, thus providing better weight distribution when the ladder is extended.
Retraction of the ladder sections shall be accomplished by movement of the barrel toward the outboard end of the base section, thus providing better weight distribution between front and rear axles of the apparatus when stowed in the travel position. Dual extension/retraction cables shall have a minimum static safety factor of 5:1 and shall be of the following diameters: Mid-Section Extension: 1/2" / Mid-Section Retraction: 7/16" / Fly Section Extension: 7/16" / Fly Section Retraction: 3/8".

**LADDER SLIDE MECHANISM**
All ladder slide pads shall consist of ultra-high molecular weight (UHMW) synthetic material with a sliding coefficient of friction of 0.05. Slide pads shall be used on both upper and lower bearing surfaces and to control side sway of the sections.

**EXTENSION INDICATOR**
The base section handrails shall be provided with red Scotch-Lite reflective striping and numbers to indicate the extension of the aerial device. The stripes and numbers shall be spaced to indicate each 10 feet of aerial extension beyond the fully retracted position. An additional stripe shall be provided between the numbered stripes to indicate each 5 feet of aerial extension.

**HYDRAULIC SYSTEM**
The hydraulic system shall provide power in as efficient a manner as possible. The system shall use a piston type load sensing pump and shall be capable of operating under any red load condition and aerial position: normal engine idle (slow idle) or governor controlled fast idle. The piston pump shall be capable of generating sufficient flows to allow multiple function operation without significant loss of speed.

For size and weight considerations, a 60 gallon (maximum) oil reservoir is desired. The reservoir shall be equipped with a gated drain line; and a gated suction line shall be provided between the oil reservoir and the hydraulic pump. The reservoir shall have a magnetic rod, a drain plug, an oil level sight glass and an easily accessible fill cap.

The system shall be equipped with both a pressure and a return line filter of no greater than 10 micron in mesh size. Filters shall be equipped with easily visible dirt alarms. Both filters shall be protected by bypass circuits to protect the system from extreme contamination caused by the breakdown of a neglected filter and subsequent release of previously trapped particles into the system.
The hydraulic system cylinders shall be sized and rated in accordance with previously described structural safety factors.

All hydraulic hoses and steel lines used in the system shall have 4:1 safety factor based upon burst pressure. Hoses shall be of the steel braided, rubber covered type and shall be properly sized to reduce heat build-up during prolonged periods of operation.

The system shall not be dependent upon an auxiliary cooler to control system temperature.

The system shall be capable of generating full rated flow capacities at no more than 1500 rpm. Each function shall be protected by a system relief valve and/or individual circuit relief valves, preset at the factory. Maximum preset system pressure shall be 2750 psi.

A three-function hydraulic proportional valve bank shall control ladder functions. The valve shall be located at the turntable with direct linkage controls. Three (3) aerial control actuators shall be located at the aerial control station to provide "Raise/Lower"; "Extension/Retraction" and "Swing Left/Right" functions.

The hydraulic system shall be capable of simultaneous outrigger functions or simultaneous aerial functions.

**COMBINATION HYDRAULIC, WATER AND ELECTRIC SWIVEL**

Hydraulic power to the turntable hydraulic circuits shall be provided through a three-port, high pressure hydraulic swivel permitting 360 degrees continuous rotation of the turntable.

Water shall be transferred to the aerial waterway by means of a 5" internal diameter water swivel, permitting 360 degree continuous rotation.

Electric power to the turntable electric circuits shall be comprised of a minimum of twenty-six (26) ring collector assembly, permitting 360 degree continuous rotation of the turntable.

**12 VOLT EMERGENCY HYDRAULIC SYSTEM**

The apparatus shall be equipped with a 12 volt emergency hydraulic power system. The emergency system shall be electrically driven from the truck batteries and shall be capable of limited ladder functions to stow the ladder and outriggers in case of primary hydraulic pump failure.
Two (2) spring loaded switches shall be provided, one (1) on each side outrigger control station, to activate the emergency power unit.

**POWER TAKE-OFF (PTO)**
The apparatus shall be equipped with a Muncie "Clutch-Shift" PTO driven by the chassis drive train. The PTO shall be furnished with a "Drag" shaft brake feature. A red indicator light shall be located in the cab next to the PTO switch to show when the PTO is engaged.

The PTO shall only engage with the chassis spring brake set and the transmission in neutral (or drive if the fire pump is engaged) to prevent unintentional movement of the chassis during hydraulic system operation.

**TURNTABLE TREADPLATE**
A steel tubing support structure shall be welded to the turntable bearing plate, to support the turntable diamond plate.

A 96" wide x 95" long semicircular aluminum diamond plate shall be furnished around the turntable weldment. The diamond plate shall be furnished with a 1-1/2" lip on all sides. The operator's position on the turntable shall have least 5sqft of standing and working area near the control pedestal to meet the latest NFPA 1901 Standard.

An aluminum diamond plate access step shall be provided at the heel of the ladder. The vertical surface of the heel pin step to the rear face of the turntable shall not be less than 22 inches to obtain maximum room at the base of the aerial ladder.

Non-slip aluminum grating shall be inserted into the turntable walking surfaces and the heel pin step.

**SAFETY RAILING - TURNTABLE**
Forty-two inch (42") high safety railing shall be provided the sides and rear of the turntable. The safety railing shall be constructed of 1-1/4" diameter heavy duty stainless steel knurled tubing. Brackets shall be polished stainless steel type. A vinyl covered safety chain shall be provided across each corner opening with chrome plated snap style clips.
RADIO COMPARTMENT
One (1) two-way radio compartment shall be installed at the turntable control console for storage of one (1) customer supplied and installed radio system. Exact details of the radio to be installed shall be discussed at the pre-construction meeting for correct compartment size. A 12 volt hot and ground connection shall be provided to the compartment for connection to the radio.

CRADLE ALIGNMENT INDICATORS
Aluminum arrows with red Scotch-Lite coating shall be provided on the turntable surface, and on the apparatus body to indicate the alignment of the aerial ladder with the ladder travel cradle. The indicators shall be suitably illuminated for night time operation.

CRADLE ALIGNMENT INDICATOR LIGHTS
Amber indicator lights shall be provided at the turntable console and in the platform to indicate the alignment of the aerial ladder with the ladder travel cradle to assist the operator while bedding the aerial device.

AERIAL CONTROL STATION - TURNTABLE CONSOLE
An aerial control console shall be located on the driver's side of the apparatus when the aerial is in the travel position to reduce damage from overhanging tree limbs. The components shall be clearly identified and suitably illuminated for ease of operation.

Dead-man Foot Switch: A switch to safeguard against accidental movement of the aerial ladder. The aerial ladder function controllers shall remain inactive while the foot switch is not depressed.

Master Electrical Power Switch: A two (2) position, push/pull power switch shall be provided on the control panel. The switch shall be wired so that electric platform controllers are activated when the master switch is in the "ON" position, and electrical power is deactivated when in the "OFF" position.

Ladder Function Controllers: Three (3) ladder function controllers located on the turntable control console to provide elevation, extension, and rotation operational control of the aerial device. These controls shall be arranged to permit the operator to regulate the speed of these operations within the safe limits as determined by the manufacturer.

Fast Idle Switch: A toggle switch located on the control panel to activate the Engine Fast Idle.
Platform Auxiliary Leveling Switches: A guarded switch located on the control panel to hydraulically re-level the platform as needed. A mushroom switch located on the control panel to deactivate the auxiliary platform leveling system.

Load Chart: The manufacturer's load chart, installed within view from the operator's console and properly illuminated for easy reference by the operator. The load chart shall indicate the manufacturer's recommended safe aerial loading and capacity weights at all angles of elevation and all extensions of the ladder.

Elevation Angle Indicator: A bubble-type indicator mounted in clear view of the operator to indicate the aerial device's angle of elevation.

Rung Alignment Indicator: A light located on the control panel to indicate that aerial ladder rungs are properly aligned for safe climbing.

Outrigger "Not Deployed" Indicator Light: A red indicator light shall be provided on the turntable console that shall be illuminated while the outriggers are not in a load supporting position. The light shall turn off once the outriggers are properly locked in position.

Hydraulic Oil Pressure Gauge: A 5000 psi hydraulic oil pressure gauge shall be provided and installed to indicate the overall pressure of the hydraulic system.

CONTROL CONSOLE COVER
A hinged metal cover with non-glare exterior black finish shall be provided for the T/T control console.

AERIAL CONTROL - PLATFORM CONSOLE
The platform control console shall the rung alignment indicator, outrigger not-deployed indicator, aerial function controllers, speed selection switch, a fast idle switch and a momentary safety switch.

Located near the console shall be the operators load chart, elevation angle indicator and intercom controls.

The console shall have three (3) fixed attachment platform locations, left or right rear corners or the front center of the platform. The console box shall be connected at each location by means of a multi-pin bayonet connector.
Ladder function controllers shall be grouped in an identical manner as those at the turntable console for simplicity of operation. The controls shall be so designed that the turntable controls shall override those at the platform even if the aerial device is being operated from the platform console. All features shall be clearly identified and suitably illuminated for ease of operation.

**AERIAL ELECTRICAL SYSTEM (NON MULTIPLEX)**

Electrical power for the aerial device shall be drawn from the chassis electrical system and routed through major segregated circuits and into an electric collector ring assembly. The circuits shall provide power for the aerial device controls, indicators, and interlocks; other circuits shall power auxiliary equipment such as lights, intercom, etc.

The electric collector ring assembly shall provide power for electrical ground, ladder control functions, 12 and 120 volt systems. The collector rings shall be enclosed in a sealed, weatherproof housing to prevent corrosion.

All aerial device wiring shall be multi-conductor, copper 16 gauge (minimum), color-coded, with thermosetting cross-linked polyethylene insulation. All aerial device wiring shall be in pre-engineered harnesses with each circuit identified by number and color code. Harness connections shall be through locking, weatherproof, guided pin connectors.

**ENGINE, FAST IDLE ACTUATOR**

A fast idle actuator system shall be provided to raise the engine RPM to a pre-set level for proper aerial operation. For the safety of personnel and equipment, the fast idle system shall not activate unless the interlock systems have been applied, the chassis spring brakes are set and the transmission is in neutral or in drive, when the fire pump is engaged.

The aerial device shall not be dependent upon the fast idle circuit to perform any rated task.

**AERIAL HOUR METER**

An hour meter shall be installed and wired to the aerial PTO to record hours of hydraulic pump operation. The hour meter shall aid in scheduling preventative maintenance as outlined in the Operator's Manual.
AUDIBLE LOAD ALARM WITH GAUGE AND LIGHTS
An audible alarm with color coded gauge and with a dB level no less than 90 shall be provided the turntable control console to alert the operators should the load limitations of the ladder be exceeded. The alarm shall only notify the operator of the condition but in no way restrict the further operation of the ladder.

Two (2) Whelen #800 amber color strobe lights shall be located at the end of the base section, one (1) each side, wired to the load gauge to indicate an unsafe condition. The gauge shall indicate the load on the aerial ladder and provide a continuous readout of the load relative to the rated capacity of the aerial ladder.

TURNTABLE WORK LIGHTS
Four (4) 12 volt LED work lights shall be recess mounted on a downward angle in the rear step of the turntable to illuminate the turntable diamond plate area.

OUTRIGGER LIGHTS
Two (2) Truck-Lite 7” diameter, red, flashing LED lights shall be mounted on each inner vertical surface of the outer jack box structure. One (1) light shall face forward while the second light faces rearward.

One (1) Truck-Lite 4” diameter, white LED, ground illumination light shall be located beneath each extending outrigger beam box to illuminate the ground area for night operation.

All outrigger lights shall be activated by the "Ladder Power" switch in the cab to eliminate the need to activate additional switches before starting aerial operations.

COMMUNICATION SYSTEM
An Atkinson two-way communication system shall be furnished between the tip of the fly section and the turntable control station. The communication control box, which includes "Talk" and "Listen" volume controls and a "Push to Talk" button, shall be located at the turntable control console. A "hands-off" speaker which requires no operator attention shall be located in the bucket..

PLATFORM SPOTLIGHT AND FLOODLIGHT
One (1) Unity AG6 spotlight and one (1) floodlight shall be mounted on the front of the platform, one (1) each side. The lights shall be 12 volt, 6" diameter, with One (1) Whelen #P46WLC LED flood bulb and one (1) Whelen #P46FLC LED Spot bulb. "On/Off" switches shall be provided on each light. The lights shall be mounted below handrail height, so as not to increase overall height of the vehicle.
AERIAL SPOTLIGHTS - REAR LADDER BASE HANDRAIL
Two (2) Unity AG6 spotlights shall be mounted the rear of the base ladder section, one (1) on each handrail. The spotlights shall be capable of swiveling a 180 degree arc to direct light up the inside or outside of the ladder walkway. The lights shall be 12 volt, 6” diameter, with Whelen #P46FLC spot bulbs and "On/Off" switches on each light. The lights shall be mounted below handrail height, so as not to increase overall height of the vehicle.

RUNG ILLUMINATION LIGHTS
The aerial ladder shall be furnished with permanently installed ladder illumination. The lights shall face inwards on side of the base and fly ladder sections. The lights shall be positioned in such a way that the light shall give the maximum safety for personnel during night climbing. Under no circumstances shall the lights be mounted so that they become an obstruction.

The lights shall be blue LED strip style for maximum night time illumination.

The lights shall be controlled by a switch on the turntable control console.

PLATFORM WARNING LIGHTS
Five (5) Whelen M7R Series, Super-LED□ lights shall be installed on the front and corners of the platform in M7FC chrome flanges. The lights shall be mounted below the platform floor, one (1) red each side facing diagonally, and three (3) red facing forward. The lights shall meet NFPA upper zone A requirements.

The lights shall be activated by the roof warning light switch.

120 VOLT CIRCUIT TO THE PLATFORM
Two (2) 20 amp electrical circuits utilizing 12 gauge 5 conductor electrical cable shall be provided to the platform. The circuits shall be wired from an enclosure below the turntable through the collector ring assembly.

Two (2) Woodhead NEMA L5-20 three-prong, twist lock receptacles with environmental covers shall be provided, one (1) each side of the platform.

PLATFORM MOUNTED CABLE REEL
One (1) Woodhead #92433 spring loaded rewind cable reel shall be installed the rear outside left hand corner of the platform. The reel shall be finished with a powder coated safety yellow finish. The cable reel shall be wired directly to one (1) of the 120 volt platform electrical circuits. A four side roller guide shall be provided to assist in the payout and rewinding the cable onto the reel.
The cable reel shall be provided with fifty (50') feet of 12/3 yellow safety cable wired to the internal collector ring assembly. One (1) NEMA L5-20 twist lock female plug and cable ball stop shall be installed at the end of the cable.

**LED FLOODLIGHTS REAR OF PLATFORM**
Two (2) Whelen PFP1AC 75 watt 5,500 lumens LED Floodlights shall be mounted at the rear of the platform, one (1) each side. The lights shall be installed atop telescopic poles and directly wired to the 120 volt system. An "On/Off" switch shall be provided on each light.

**LED FLOODLIGHTS UNDER PLATFORM**
Two (2) Whelen PFP1AC 75 watt 5,500 lumens LED Floodlights shall be recess mounted under the platform, one (1) each side of center. The lights shall be installed with swivel bases and directly wired to the 120 volt system. An "On/Off" switch shall be provided at the turntable control console and in the platform.

**BREATHING AIR SYSTEM**
A breathing air system shall be routed to the aerial ladder platform. Two (2), 6000 psi ASME air cylinders, 509 cu. in. with current hydrostatic test stampings, shall be securely mounted on the ladder base section, one (1) each side. The air cylinders shall be interconnected to a pressure regulator located on the left air cylinder. A shut-off valve on each cylinder shall allow the use of air from either cylinder.

Air from the cylinders shall be routed through a lower cylinder mounted pressure regulator, which shall reduce cylinder pressure to airline pressure, to the platform via reinforced synthetic air hose. The platform, the air shall be filtered through an airline filter and an upper platform mounted pressure regulator to be further reduced from airline pressure to air mask pressure.

Each cylinder shall be lettered "Breathing Air" with a label indicating "High Pressure 6000 PSI Breathing Air" per NFPA 1901 recommendations.

**BREATHING AIR STATION - TURNTABLE**
A breathing air station, connected to the breathing air system, shall be provided at the turntable operator's console.

An airline filter and pressure regulator shall be provided at the turntable to reduce airline pressure to air mask pressure. One (1) Hansen quick connect coupling, easily accessible to the turntable operator, shall be provided.
**LOW AIR PRESSURE WARNING SYSTEM**
A Class 1 low air pressure warning system shall be provided to indicate the amount of air remaining in the breathing air system. The lower station shall provide a visual low pressure warning when air capacity is less than 25% of maximum and an audible alarm when air pressure is less than 20% of maximum. The upper station shall provide an audible alarm when the air volume is less than 20% of maximum.

**BREATHING AIR OUTLETS**
Two (2) Hansen quick connect couplings shall be provided, one (1) each side of the platform.

**AIR REFILL HOSE**
A twenty-five foot (25’) high pressure refill hose shall be provided for refilling the air cylinder without having to remove the cylinder from its mounting.

**WATERWAY INLET**
The aerial waterway shall be capable of being supplied by an external water source with intake the rear of the apparatus. Five inch (5") waterway piping shall be provided from the front of the torque box to the water swivel beneath the turntable. The pipe at the front of the torque box shall be capped with a grooved adapter and flat plate assembly for future use. Six inch (6") stainless steel waterway piping shall be provided from piping tee under the water swivel to the inlet at the center rear of the apparatus. The inlet shall be reduced to 5" at the rear inlet connection.

A liquid filled water pressure gauge shall be located near the auxiliary aerial inlet.

One (1) 1-1/2" drain valve shall be provided beneath the turntable with control located below the rear auxiliary aerial inlet.

A 5" NPT-F x 5" NST-M chrome plated adapter with screen shall be provided on the waterway exterior inlet.

A 5" NST-F x 5" Storz 30°Elbow adapter shall be installed on the NST adapter.

A 5" Storz blind cap shall be provide on the inlet adapter.

**ROTATION SWIVEL**
Water shall be transferred to the aerial waterway by means of a 5" internal diameter, water swivel which is part of the combination hydraulic/water/electric swivel.
**HEEL PIN SWIVEL**
A swivel elbow located at the heel pins of the ladder shall permit water tower operation throughout the aerial device's full range of elevation.

**WATER SYSTEM FRICTION LOSS**
The aerial ladder and its waterway system shall be capable of flowing 1000 GPM 100 psi nozzle pressure full elevation and extension. The friction loss (total system loss less head loss) shall not exceed 100 psi 1000 GPM flow with the ladder full horizontal extension. The pressure reading for friction loss measurement shall be taken at the base of the monitor and at a point below the waterway swivel.

**TELESCOPIC WATERWAY**
A single anodized aluminum telescopic waterway shall be provided, mounted beneath the center of the aerial ladder. The telescopic waterway shall consist of a 5" base section tube, 4-1/2" mid section tube, and 4" fly section tube.

**PLATFORM WATER SYSTEM**
A water swivel shall connect the fly section waterway to the platform waterway. The water swivel shall permit water tower operations throughout the aerial device's full range of elevation. Two (2) 3.00" ID aluminum pipes shall transfer water from the swivel to two (2) 4" gear-operated butterfly valves on the front of the platform. A deck gun shall bolt onto each of the butterfly valves by means of an 8-bolt mounting flange. The butterfly valves shall enable the deck guns to be shut down for use of the hand lines.

A shower nozzle, located beneath the platform and with direct linkage control from inside the platform, shall be provided for heat protection of platform personnel. A pressure relief valve set at 165 psi shall be located beneath the platform.

**REMOTE CONTROLLED MONITOR**
An Elkhart Model #8294-04 "Scorpion" electrically controlled deck pipe monitor shall be mounted the front of the platform. The electrical line to the nozzle shall be equipped with a disconnect plug to permit quick changeover to straight bore tips.

An Elkhart #SM-2000E 3.5" electrically controlled nozzle (500-2000 GPM X-Stream) shall be installed on the deck gun.

**MANUALLY CONTROLLED MONITOR**
An Elkhart model #8294-02 manually controlled Scorpion two (2) hand wheel deck pipe monitor shall be mounted the front of the platform.
An Elkhart #SM-2000 3.5” manually controlled nozzle shall be installed on the deck gun.

**MONITOR FUNCTION SWITCHES**
Function switches shall be provided on the turntable control console and the monitor to remotely control the electronic monitor specified.

**PLATFORM MOUNTED STACK TIPS**
Two (2) sets of Elkhart model #ST-194 Elk-O-Lite stack tips shall be installed in the platform adjacent to the monitor mounting. An Elkhart model #S-320 screw type mounting plate shall be installed to hold the tips while not in use.

**PLATFORM MOUNTED SHAPER TUBE**
Two (2) Elkhart model #282A Elk-O-Lite shaper tube shall be installed in the platform adjacent to the monitor mounting. An Elkhart model #S-320 screw type mounting plate shall be installed to hold the shaper tube in place while not in use.

**PRECONNECT PLATFORM HOSE TROUGH, INTERIOR FRONT**
One (1) 1-1/2” gated discharge, equipped with male National Standard Threads (NST), shall be located in the waterway piping at the front inside of the platform floor to the rear of the handrail structure. The pre-connect shall be provided with a 2” quarter turn manual valve assembly with an elbowed outlet facing a trough at the front interior section of the platform.

The hose trough shall be capable of holding 25' of 1-3/4” diameter fire hose with nozzle attached and shall have a slatted floor to enable water drainage.

**PLATFORM DISCHARGES (2)**
There shall be two-(2) 2-1/2” gated discharges located at the front of the platform. These discharges shall terminate with 2-1/2” Male NST couplings and 2-1/2” FNST x 1-1/2” MNST reducer caps and chains.

**WATERWAY RELIEF VALVE**
A 2-1/2” preset pressure relief valve shall be installed in the aerial waterway piping system. The relief valve shall be capable of protecting the waterway system by relieving pressure through the dumping of water to the ground.

**FLOWMETER (TURNTABLE)**
A Class 1 Flow minder shall be installed on the turntable control console to provide a visual display of the ladder water system flow (GPM).
AXE MOUNTING IN PLATFORM
Mounting provisions shall be provided inside the platform storage compartment for an axe. One (1) 8lb, Fire Hooks pick-head axe shall be supplied.

MOUNTING FOR PIKE POLE IN FLY SECTION
Mounting brackets shall be provided on the inside of the handrail on the left side of the fly section for one (1) pike pole.

MOUNTING FOR ROOF LADDER IN FLY SECTION
Roof ladder mounting brackets shall be provided on the inside of the right side handrail of the ladder fly section.

STOKES BASKET STORAGE WITH AERIAL NAMEPLATE
A Stokes basket storage box, measuring 28" high x 10" wide x 90" long, shall be mounted on the aerial ladder base section, right side. The stokes basket box shall be equipped with a stainless steel hinge and aluminum diamond plate lid with two (2) quarter turn latches. The outer panel of the storage box shall be constructed with smooth aluminum sheet and shall be used for the aerial ladder nameplate.

SPECIAL TOOLS
The following special tools shall be provided for re-torqueing of specified bolts as recommended by the manufacturer of the aerial device: Extensions, adapters, and sockets (as required), hydraulic oil test kit, custom hydraulic test/air bleeder kit, two (2) tubes of specified aerial lube, one (1) high pressure filter element and one (1) return filter element.

PAINTING - AERIAL DEVICE
Before any painting, all weldments such as the outrigger beams, torque box, turntable, and ladder sections shall be shot peened to work-harden and stress relieve the exterior surface of all weldments and to ensure removal of any surface imperfections to ensure superior paint adhesion to the metal.

The entire painting system shall utilize a single manufacturer's paint for compatibility between primers and finished coats. All painting shall be done in atmosphere controlled spray booths. All seams between adjoining pieces that are not continuously welded shall be caulked to inhibit corrosion.

Before assembly, in preparation for final painting, the outrigger beams, torque box, turntable and ladder sections shall be thoroughly cleaned, conforming to good painting practices. The weldments shall then be primed with Epoxy Primer.
The aerial ladder sections shall then be coated with a polyurethane primer sealer. After which, they shall be sprayed with two (2) coats of PPG Polyurethane #2185 white paint.

The torque box and outrigger beams shall be painted with enamel paint, allowing easy touch-up after extended use. The torque box shall be sprayed black enamel and the outrigger beams silver enamel.

**SCOTCH-LITE OUTRIGGER BEAM STRIPING**
Each outrigger beam assembly shall be striped with Scotch-Lite reflective material. The stripes shall be applied to provide a safe appearance when the beams are extended. The color of the stripes shall be white, and the width of each stripe shall be two inches (2”).

**OPERATOR INSTRUCTIONS, CAUTION, AND WARNING SIGNS**
The manufacturer shall supply and affix various operator instruction, caution, and warning signs to the front, sides, rear and inside of the apparatus. The warning signs shall meet the general guidelines of ANSI Z35.1 (Specification for Accident Prevent Signs).

**WARRANTY, AERIAL DEVICE, (2) YEARS**
Coverage includes hydraulic system (gauges, hoses, seals, valves, lift cylinders, hydro/electric swivel and motors [rotation and extension/retraction]); electrical system (switches, wiring, intercom, lights, cables, and cord reels); device components (rotation bearing, slide pads, extension/retraction cables); waterway components (couplings, plumbing, swivel, and controls).

**ON-SITE PREVENTATIVE MAINTENANCE & OPERATIONAL TRAINING PROGRAM**
The successful bidder shall provide an on-site program for training of Fire Department personnel. This program shall be designed to assure complete understanding of all aspects of the aerial device in the operating environment. After the unit has been accepted, the successful bidder shall supply a factory trained, qualified Field Service Technician for three (3) days.

The training program shall be designed to instruct the individual who has never utilized an aerial device of this type before. The individual will be thoroughly taught the operating systems of the aerial device, including emergency operation. Introductory service skills utilizing the vehicle shall also be taught.
**TRAINING PROGRAM**

To instruct Fire Department personnel in the operation, preventative maintenance and care of the aerial device, this training program shall be oriented towards a hands-on approach utilizing the new apparatus.

1. Review personnel training level and determine specific training requirements.

2. Explain operations of the entire aerial device. Each participant shall actually use the aerial and be taught the necessary steps for safe operation.

3. Troubleshooting will be emphasized and reinforced continually throughout the training period.
4. Preventative maintenance procedures shall be set up and definite schedules developed to assure proper maintenance of the aerial device.

5. Instruction in the use of tools and how to replace minor assemblies, as applicable. Equally important in this training will be when to call appropriate personnel for assistance.

6. How to order parts through the local service center by utilizing parts manual.

**SERVICE**

Due to the importance of keeping this vital piece of firefighting apparatus in service with a minimum of down time, the manufacturer of the aerial device shall maintain a network of service centers with factory-trained personnel. The local service center shall be located within a 50 mile radius of Watertown Fire Department, Watertown, CT. The manufacturer of the aerial device shall also have a separate facility for service of units so as not to conflict with production operations. The manufacturer of the aerial device shall also have factory personnel on 24-hour call for emergencies.

**MANUALS - AERIAL DEVICE**

The following manuals pertaining to the aerial device shall be provided at the time of apparatus delivery.

A) Two (2) sets of Operator's Manuals which shall include the following sections: Operating instructions, troubleshooting guide, bolt re-torquing criteria, maintenance instructions, vendor service manuals, and hourly maintenance check lists.

B) Two (2) sets of Parts Manuals which shall include exploded view drawings with individual parts identified by part number and common descriptions.
C) Two (2) sets of wiring diagrams for the aerial device shall be provided with the completed apparatus.

D) Two (2) sets of hydraulic diagrams for the aerial device shall be provided with the completed apparatus.

**DELIVERY**
The apparatus shall be delivered to the location designated by the Purchaser.

**WARRANTY, BODY (3) YEAR**
Warranty coverage includes fire pump panel and controls; foam system and controls; foam system plumbing; body emergency lighting and controls; hinged and rollup compartment doors; body trim; body lighting and controls; body electrical systems; hydraulic ground ladder rack and controls.

**WARRANTY, BODY STRUCTURE AND CORROSION (10) YR**
Warranty coverage includes compartments and body panels; hinged compartment doors; fire pump closure; body frame and sub-frame, if applicable. Excludes surface corrosion caused by chips or scratches.

**WARRANTY, BODY PAINT, (7) YEARS**
Coverage includes all factory-painted exterior body surfaces. Warranted against orange peel; peeling/delaminating; cracking or checking; loss of gloss due to cracking, checking, or hazing. Excludes lack-of-gloss issues on vehicles painted with low gloss colors and any damages to the paint or painted surface such as chips and scratches.

**WARRANTY, AERIAL DEVICE PAINT, (7) YR, UNLIMITED HOURS**
Warranted against fading, cracking, checking, lack of adhesion, or material defect.

**WARRANTY, AERIAL DEVICE STRUCTURE/CORROSION (20) YRS/UNLIMITED**
Coverage includes aerial device, torque box, outriggers and stabilizers. Excludes surface rust or corrosion caused by chips or scratches.

**OPERATORS and MAINTENANCE MANUALS**
Each apparatus shall include operation and service documents compliant with section 4.19.2.1 of the current edition of NFPA 1901.
AERIAL DEVICE WARNING LABELS
All aerial device warning and safe operation labels shall be permanently installed on
the completed apparatus in accordance with NFPA 1901.

TESTING
The apparatus pump shall be thoroughly tested by a certified, independent Third
Party Testing Organization such as Underwriter's Laboratories, in accordance with
the appropriate requirements of the latest edition of NFPA, Standard for Automotive
Fire Apparatus.

Upon delivery, the Purchaser may elect to duplicate any or all of these tests. The
manufacturer shall include all required certification forms in the delivery package.

In event the apparatus fails to meet on-site delivery testing, second trials may be
arranged within 30 days following first test failure. Such subsequent trials shall be
final and conclusive and failure to meet these requirements shall be cause for
rejection.

Failure to make changes deemed necessary by the Purchaser to make apparatus
comform to any clause of the specifications within 30 days after notice to the
manufacturer shall also be deemed cause for rejection of the apparatus. Permission
to keep or store the apparatus by the Purchaser during the testing and re-testing
period, if agreeable with manufacturer shall not constitute acceptance of the
apparatus.

GROUND LADDERS
Two-(2) Alco-Lite PRL-16, 16' aluminum, solid beam, roof ladders shall be
provided. One (1) shall be mounted in the aerial fly section and one (1) shall be
mounted in the main body ground ladder storage area.

One-(1) Alco-Lite PRL-20, 20' aluminum, solid beam, roof ladder shall be provided.

Two (2) Alco-Lite PEL-24, 24' 2-section, solid beam, aluminum extension ladders
shall be provided.

One-(1) Alco-Lite PEL-35, 35' 2-section, solid beam, aluminum extension ladder
shall be provided.

One-(1) Alco-Lite CJL-14, 14' aluminum combination ladder shall be provided.

One-(1) Alco-Lite FL-10, 10' aluminum folding ladder shall be provided.
PIKE POLES
Two-(2) Duo-Safety 6FP, 6' fiberglass handle pike poles shall be provided with the apparatus.

Two-(2) Duo-Safety 8FP, 8' fiberglass handle pike poles shall be provided with the apparatus.

Two-(2) Duo-Safety 12FP, 12' fiberglass handle pike poles shall be provided with the apparatus.

PIKE POLE IN FLY
One-(1) Duo-Safety 8FP, 8' fiberglass handle pike pole shall be provided with the apparatus and installed in the aerial ladder fly section mounting brackets specified.

WHEEL CHOCKS
Two-(2) Ziamatic #SAC-44 folding wheel chocks with underbody mounting brackets shall be installed under the compartment forward of the left rear wheels.

POMPIER BELTS
Four-(4) Gemtor #531 Pompier Life Safety Belts, shall be provided with the apparatus. These belts shall be compliant with NFPA 1983 Standard on Life Safety Rope and Equipment for Emergency Services.

COMPARTMENT MOUNTED EQUIPMENT HANGERS
Heavy duty formed stainless steel equipment hangers shall be located in one (1) body compartment to be determined at the pre-construction meeting. The hangers shall be utilized to hold Ropes, Extension Cords, Ladder Belts, etc.

TOOL BOX IN COMPARTMENT
One (1) tool box with a minimum of eight-(8) slide out drawer assemblies shall be installed in a body compartment to be determined at the pre-construction meeting. The tool box shall have larger size drawers in the lower section of the box and small size drawers in the upper section of the box.

BACK PACK WET VACS
Two (2) Salvage Master by Honeywell, Back-Pack 120 volt wet vacs shall be supplied with the apparatus. They shall be mounted in a location to be determined.
NFPA EQUIPMENT
All NFPA 1901 equipment that is required for this apparatus, which is not listed in this proposal, is the responsibility of the fire department to provide.

OPTIONS:

Option # 1 - ROTO-RAY WARNING LIGHT
A Roto-Rays® warning light shall be provided on the cab. The Roto-Rays light shall consist of three (3) round chrome heads, each equipped with an LED light. The lights shall be two (2) red and one (1) clear. The Roto-Rays light shall be installed on the top center portion of the cab grille using a custom bracket.

When activated, the entire light head assembly shall rotate at 200 RPM.

The Roto-Rays® front warning light(s) shall be separately controlled through a virtual button on the Vista display and control screen.

Option # 2 – FIRE BELL
A Chrome cast formed firemen’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.

The bell is to be mounted on the right hand side of the bumper apron.

NOTE: It is understood that if this option is taken the bumper extension shall change from 12.50” to 21.00”

Option # 3 – CHANGE BODY ALUMINUM TO STAINLESS STEEL
Cost to change the apparatus body (only) from Aluminum to Stainless Steel

Option # 4 – EXTENDED WARRANTIES
- Cost to change to a 5 year Bumper to bumper Warranty
- Cost to add a 10 year Waterway warranty
**Option # 5 – Two (2) ELKHART STINGERS MOUNTED ON THE BODY**

Two (2) Elkhart Stinger removable monitors with stack tips shall be supplied and installed one each on each side of the body. They will be plumbed to a 3” Elkhart electric valve with 3” stainless steel plumbing. There shall be an inlet located on each side to supply the each gun. Each inlet shall have a 2 ½” NST swivel with screen and cap. Two (2) remote mount bases shall be supplied with the monitors. Each base shall have a 5” Storz inlet. Bases shall be mounted in the body, location to be determined. The locations of the inlets and the electronic control for the valves are to be determined.

**Option # 6 – TRADE-IN FOR PRESENT TRUCK**

To accept as a trade-in the present Watertown Fire Department “Tower 1”. The truck is a 1992 LTI / Simon Duplex Rear Mounted 85 foot Telescoping Ladder Platform with aluminum body, diesel generator and a 4-bottle cascade SCBA filling system. The truck is currently certified and in-service at our Headquarters Station, 935 Main Street, Watertown CT 06795 and can be seen by contacting Chief Larry Black @ 860-945-5220
PLEASE

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

YOUR COOPERATION IS APPRECIATED
TOWN OF WATERTOWN
WATERTOWN, CONNECTICUT 06795

BID PROPOSAL

Watertown Fire Department
Fire Apparatus – Aerial Ladder Truck

BID OPENING: 11:00 a.m. Tuesday, January 7, 2014

TO: Carol Z. Roman Purchasing Agent
   Town of Watertown
   Town Hall Annex
   424 Main Street
   Watertown, CT 06795

The undersigned, as bidder, agrees to furnish and deliver one (1) new current model aerial ladder apparatus 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 deliver 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 __________________________
PROPOSAL

Cab & Chassis
Manufacturer: _______________________________ Model: __________________________
Year: ___________ Time to Delivery: ___________________________________________

Apparatus Body
Manufacturer: _______________________________ Model: ________________________
Aerial Platform
Manufacturer: _______________________________

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

Optional Equipment, suggested additions, deletions or alternate items proposed:
1. Roto-Ray Warning Light $ __________________
2. Fire Bell $ __________________
3. Change Body Aluminum to Stainless Steel $ __________________
4. Extended Warranties
   Change to 5 Yr Bumper to Bumper $ __________________
   Add 10 Yr Waterway Warranty $ _________________
5. Two (2) Elkhart Stingers Mounted to Body $ __________________
6. Trade in Allowance $ __________________
7. ___________________________ $ _______________
8. ___________________________ $ _______________
9. ___________________________ $ _______________
10. ___________________________ $ _______________
11. ___________________________ $ _______________
12. ___________________________ $ _______________
13. ___________________________ $ _______________
14. ___________________________ $ _______________
15. ___________________________ $ _______________

Payment terms proposed (use separate sheet if required):
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
EXCEPTIONS TAKEN TO SPECIFICATIONS:
(Please duplicate this blank page as required)

Page: ________________  Heading: ________________

Description:________________________________________________________

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Page: ________________  Heading: ________________

Description:________________________________________________________

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RECEIPT OF ADDENDA

ADDENDUM #    SIGNATURE    DATE

1. _______________________________    ___/___/___
2. _______________________________    ___/___/___
3. _______________________________    ___/___/___
4. _______________________________    ___/___/___

NAME OF BIDDER: _________________________________________________

OFFICIAL ADDRESS: _______________________________________________

PHONE NUMBER: __________________________________________________

BY: ________________________ TITLE: ________________________________
    (Please Print)

DATE: __________________________________________________________________

SIGNATURE: _________________________________________________________
## Proposed Subcontractors

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**Type of Work to be Performed**

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**Type of Work to be Performed**

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**Type of Work to be Performed**

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151
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

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City State Zip Code

CONTACT ____________________________________ TELEPHONE ______________________

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TYPE OF WORK TO BE PERFORMED ____________________________________________

____________________________________________________________________________

FIRM __________________________________________

Name

________________________________________________________________________

Street

________________________________________________________________________

City State Zip Code

CONTACT ____________________________________ TELEPHONE ______________________

Please Print

TYPE OF WORK TO BE PERFORMED ____________________________________________

____________________________________________________________________________
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.
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 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

__________________________________  By____________________________(s)
(Principal) Secretary
(SEAL)

__________________________________  ________________________________
(Witness as to Principal)               (Address)

__________________________________  ________________________________
     (Address)                        (Address)

ATTEST: ________________________________  Surety

__________________________________  By____________________________
(Surety) Secretary
(SEAL)

__________________________________  ________________________________
(Witness as to Surety)                Attorney-in-Fact
(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.
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
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

By__________________________(s)

____________________________
(Address)

____________________________
(Witness as to Principal)

____________________________
(Address)

ATTEST:

____________________________
Surety

By____________________________

____________________________
Attorney-in-Fact

____________________________
(Surety) Secretary

(SEAL)

____________________________
(Witness as to Surety)

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(Address)

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(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.