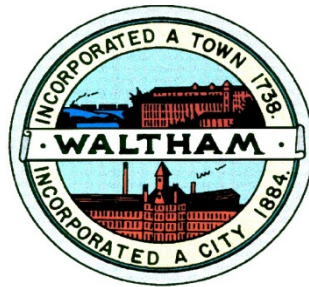


# The City of Waltham



**Invites**

**Interested Parties**

**To propose the best offer and or bid  
For the service or product herewith described:**

**FIRE APPARATUS EQUIPMENT, RESCUE UNIT 6**

**The bid opening will be held: 10:00 AM Monday December 28, 2015**

# **Invitation to Bid**

**The City of Waltham**  
**Purchasing Department**  
REQUEST FOR BID (RFB)

Under the rules of M.G.L. Chapter 30B The Purchasing Department of the City of Waltham hereby requests sealed bids for:

**FIRE APPARATUS EQUIPMENT, RESCUE UNIT 6**

Price Proposals will be received at the office of the Purchasing Agent, , City Hall, 610 Main Street, Waltham MA 02452, until,

**10:00 AM Monday December 28, 2015**

At which time and place the bids will be publicly opened and read.

Specifications and information available at the Purchasing Agent's Office or in the Waltham Purchasing Department web site at [www.city.waltham.ma.us/open-bids](http://www.city.waltham.ma.us/open-bids)

**BIDS MUST BE SIGNED AND ENCLOSED IN A SEALED ENVELOPE AND MARKED:**

**BID FOR: Fire Apparatus, Rescue 6 Unit**

A 5% Bid Bond or Certified Check must accompany each bid submitted and made payable to, and become the property of the City of Waltham, if the successful bidder refuses or neglects to comply with the terms of the Contract.

If the Bidder is a corporation, state your correct corporate name and State of incorporation. If Bidder is a partnership, state names and addresses of partners. If Bidder is a trust or other legal entity, state correct names and addresses of trustees or names and address of those legally authorized to bid and enter into contracts.

**EXCEPTION OR ALTERNATES TO SPECIFICATIONS, TERMS OF SALE, AND DISCOUNTS AVAILABLE, MUST BE INCLUDED IN THE BID PRIOR TO OPENING DATE.**

# Intent of Project

The City of Waltham wishes to purchase a Fire Apparatus Rescue 6 Unit

**AGREEMENT**

**CITY OF WALTHAM**

**ARTICLE 1.** This agreement, made this \_\_\_\_\_ day of \_\_\_\_\_, 2015 by and between the CITY OF WALTHAM, party of the first part, hereinafter called the CITY, by its MAYOR, and

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\_\_\_\_\_ hereinafter called the CONTRACTOR.

**ARTICLE 2.** Witnesseth, that the parties to this agreement, each in consideration of the agreement on the part of the others herein contained, do hereby agree, the CITY OF WALTHAM for itself, and said contractor for his heirs, executors, administrators and assigns as follows:

To furnish all equipment, machinery, tools and labor, to furnish and deliver all materials required to be furnished (except as otherwise specified) and deliver in and about the project and to do and perform all work in strict conformity with the provisions of this Contract and of the Notice to Bidders, bid, Project Manual, and Drawings hereto annexed. The said Notice to Bidders, bid, Project Manual, and Drawings are hereby made a part of this contract as fully and to the same effect as if the same had been set forth at length and incorporated in the contracts.

**ARTICLE 3.** In consideration of the foregoing premises the CITY agrees to pay and the CONTRACTOR agrees to receive as full compensation for everything furnished and done by the CONTRACTOR under this contract, including all work required by not included in the items herein mentioned, and also for all loss or damage arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all expenses incurred by or in consequence of the suspension or discontinuance of the work specified, and for well and faithfully completing the work, and the whole thereof, as herein provided, such prices as are set forth in the accompanying bid.

This Agreement entered into as of the day and year first written above.

**CITY OF WALTHAM, MASSACHUSETTS**

**FOR THE CITY**

\_\_\_\_\_  
Jeannette A. McCarthy, MAYOR,  
City of Waltham  
Date: \_\_\_\_\_

\_\_\_\_\_  
John B. Cervone, City Solicitor  
Date: \_\_\_\_\_  
APPROVED AS TO FORM ONLY

\_\_\_\_\_  
Paul Ciccone, Fire Chief  
Date: \_\_\_\_\_

\_\_\_\_\_  
Joseph Pedulla, Purchasing Agent  
Date: \_\_\_\_\_

**FOR THE COMPANY**

\_\_\_\_\_  
CONTRACTOR (Signature),  
Date: \_\_\_\_\_

\_\_\_\_\_  
Company

\_\_\_\_\_  
Address

---

Paul Centofanti, Auditor

Date: \_\_\_\_\_

I CERTIFY THAT SUFFICIENT FUNDS  
ARE AVAILABLE FOR THIS CONTRACT

### **INSTRUCTIONS FOR BIDDERS**

1. **READ ALL DOCUMENTS.**  
Bidders should familiarize themselves with all the documents contained herein; it is mandatory that all Bids be in compliance with all the provisions contained in said documents.
2. **FORMS AND ATTACHMENTS.**  
Bids are to be completed on the forms provided **ONLY** and enclosed in a sealed envelope marked on the outside "BID (title)" and the name and address of bidder. Attachments submitted in addition to the Waltham Purchasing Department produced forms may not be considered.
3. **PRINTED OR TYPED RESPONSE.**  
All information must be typewritten or printed in ink, including the price the bidder offers in the space as provided on the bid form.
4. **CORRECTIONS.**  
Bids that are submitted containing cross outs, white outs or erasures, will be rejected. All corrections or modifications to the original bid are to be submitted in a separate envelope, properly marked on the outside, "CORRECTION/ MODIFICATION TO BID (title)" and submitted prior to the bid opening.  
  
**ALL DOCUMENTS SUBMITTED WITH YOUR RESPONSE WILL BE INCORPORATED INTO THE CONTRACT.**
5. **PRICE IS ALL INCLUSIVE.**  
Bid prices shall encompass everything necessary for furnishing all items, materials, supplies or services as specified, and in accordance with the specifications, including proper packing, cost of delivery, and in the case of services, completion of same, as per specifications.
6. **PRICE DISCREPANCY.**  
In the event of a discrepancy between the Unit Price and the Extension, the Unit Price shall prevail.
7. **EXCEPTIONS**  
No Exceptions will be acceptable to the City. The City's intent is to purchase precisely what is specified in the document. Only equal or better grade specifications shall be considered by the City.
8. **BID DEPOSITS.**  
Bid deposits are to be made payable to the City of Waltham. In the event that the successful bidder fails to execute a Contract within (10) days of the receipt of said contract, such security shall be retained by the city as liquidated damages. Unsuccessful bidders' deposits will be returned immediately following the award to said successful bidder.
9. **WITHDRAW.**

A Bid may be withdrawn by written request prior to the schedule for the Bid Opening. No withdrawals are permitted after the bid opening date and time. Withdrawals after the bid opening date will cause the forfeit of the bid Deposit.

10. **AWARD.**  
Bids will be awarded not later than (90) ninety days after the scheduled bid opening date, unless otherwise stated, in the specifications. Unless otherwise specified, bids will be evaluated on the basis of, completeness of your RFP response, responsiveness, responsibility, best price and experience.
11. **AWARD CRITERIA.**  
Qualified and responsive proposals will be evaluated based on the following rating, which will apply to all Price, Technical, and Compliance requirements.
12. **DISCOUNTS.**  
Discounts for prompt payments, based on City Pay Day, will be considered when making awards.
13. **TAX EXEMPT.**  
Purchases by the City of Waltham is exempt from any Federal, State or Massachusetts Municipal Sales and/or Excise Taxes.
14. **SAMPLES.**  
The Waltham Purchasing Department may require the submission of samples either before or after the awarding of a contract. Samples are to be submitted, at no charge to the City, so as to ascertain the product's suitability. If specifically stated in the Bid that samples are required, said samples must be submitted with the Bid prior to the Official Bid Opening. Failure to submit said samples would be cause for rejection of Bid. All samples must be called for and picked up within (30) thirty days of award or said samples will be presumed abandoned and will be disposed of.
15. **ACTIVE VENDOR LIST.**  
Vendors who wish to remain on the Active Bid List must either submit a Bid, No Bid, or a letter requesting same, no later than the Official Bid Opening. This is applicable to those vendors who have received the Invitation to Bid.
16. **FUNDS APPROPRIATION.**  
The contract obligation on behalf of the City is subject to prior appropriation of monies from the governmental body and authorization by the Mayor.
17. **THE AWARDDING AUTHORITY RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS, OR ANY PART OF ANY BID, WHICH IN THE OPINION OF THE AWARDDING AUTHORITY, IS IN THE BEST INTERESTS OF THE CITY OF WALTHAM.**
18. **THE TAX ATTESTATION CLAUSE, CERTIFICATION OF NON-COLLUSION AND THE CORPORATION INFORMATION,** are an integral part of the Invitation for Bid and must be completed and signed by the person submitting the Bid, or by the person/persons who are officially authorized to do so.
19. **STANDARD OF QUALITY.**  
Where, in the specifications, one certain kind, type, catalog number, brand or manufacturer of material is named, it shall be regarded as the required standard of quality. Where two or more are named, these are presumed to be equal and the Bidder may select one or the other. If the Bidder proposes to offer a substitute as an equal, he shall so indicate on the Bid Form, the kind, type, catalog number, brand, or manufacturer of material that is offered as an equal, and describe where it differs from the specifications. Substituted items must be capable of performing all the functions and/or operational features described or indicated in the specifications. Failure to indicate the description of any substitute item on the Bid will be interpreted to mean that the Bidder will furnish the item or service as specified.
20. **MODIFICATION.**  
No agreement, understanding, alteration or variation of the agreement, terms or provisions herein contained shall bind the parties, hereto unless made and executed in writing by the parties hereto.
21. **ASSIGNMENT.**  
The final payment for work done under this Contract shall be made only after the Contractor has signed a statement under the penalty of perjury, certifying that he has completed the work described in the final estimate. Neither party hereto shall assign this Contract or sublet it in part or as a whole without the prior



- written consent of the other party hereto. The Contractor shall not assign any sum or sums due or becoming due to him hereunder without the prior written consent of the City.
22. **STABILITY of AGREEMENT:**  
Section 1. The failure of the City or the Union to insist, in any one or more incidents, upon performance of any of the terms or conditions of this Agreement shall not be considered as a waiver or relinquishment of the rights of the City or of the Union to future performance of any such term or condition and the obligations of the Union or of the City to such future performance shall continue in full force and effect.  
Section 2. The provisions of this Agreement supersede any conflicting or inconsistent rule, regulation, ordinance or order promulgated by the City.  
Section 3. Should any part hereof or any provision herein contained be rendered or declared invalid by reason of any existing or subsequently enacted legislation or by any decree of a court of competent jurisdiction, such invalidation of such part or portion of this agreement shall not invalidate the remaining portions hereof and the remaining parts of provisions shall remain in full force and effect.
23. **DELIVERIES (if applicable):**  
a) The Contractor shall pay all freight and delivery charges. The Waltham Purchasing Department does not pay for shipping and packaging expenses. Items must be delivered as stipulated in the specifications. All deliveries must be made to the inside of city buildings. Sidewalk deliveries will not be accepted. City personnel are not required to assist in the deliveries and contractors are cautioned to notify their shippers that adequate assistance must be provided at the point of delivery, when necessary.  
b) All items of furniture must be delivered inside the building, set up, in place and ready for use. Deliveries are to be made between the hours of 8:30 a.m. and 3:00 p.m., Monday through Friday, except on holidays.  
c) All damaged items, or items which do not comply with specifications will not be accepted and title therefore will not vest to the Waltham Purchasing Department until such items are accepted and signed for, in good order, by the receiving department.  
d) The contractor must replace, without further cost to the Waltham Purchasing Department, such damaged or non-complying items before payment will be made.
24. **LABELING (if applicable).**  
All packages cartons or other containers must be clearly marked with (a) building and room destination; (b) description of contents of item number from specifications; (c) quantity; (d) City of Waltham Purchase Order Number and (e) Vendor's name and order number.
25. **GUARANTEES.**  
Unless otherwise stipulated in the specifications, furniture, equipment and similar durable items shall be guaranteed by the contractor for a period of not less than one year from the date of delivery and acceptance by the receiving department. In addition, the manufacturer's guarantee shall be furnished. Any items provided under this contract which are or become defective during the guarantee period shall be replaced the contractor free of charge with the specific understanding that all replacements shall carry the same guarantee as the original equipment. The contractor shall make such replacement immediately upon receiving notice from the Purchasing Agent.
26. **SINGLE VENDOR.**  
The Waltham Purchasing Department desires to award a single contract based on the Grand Total Price. However, where applicable, the City reserves the right to make multiple awards on a unit price basis if, in the opinion of the Waltham Purchasing Department, it is in the best interest of the Waltham Purchasing Department.
27. **BEST AND FINAL OFFER.**  
The Waltham Purchasing Department reserves the right to request best and final offers from one or more bidders. Best and final offer will be exercised should the CPO deem it is in the best interest of the Waltham Purchasing Department in order to obtain the best value.
28. **CHANGE ORDERS.**

Change orders are not effective until, if, as and when signed by the Mayor and no work is to commence until the change orders are fully executed.

29. **BID OPENING INCLEMENT WEATHER**

If, at the time of the originally scheduled bid opening, City Hall is closed to inclement weather or another unforeseeable event, the bid opening will be extended until 2:00 PM on the next normal business day. Bids will be accepted until that date and time.

30. **TIE BREAK**

In the event of a tie where both vendors were responsive and responsible the vendors with a tie agree to a coin toss to determine the winner. The Coin toss will be executed in the presence of both vendors and a witness from the Purchasing Office. The coin will be flipped by the Chief Procurement Officer in the presence of the two bidders. A written record of the process you used, including the results and the names of those participating. The low bidders shall sign an agreement stating that they will abide by the results of the tie breaker. As an alternative, you may allow for a "second round" between the tied vendors

**GENERAL CONDITIONS**

1. **INFORMATION**

All information shall come from the Office of the City Agent. The Contractor shall inquire at this office for any information needed. Wherever the words "or equal as approved" are used, it is to be understood that the opinion of the City Agent shall govern.

2. **SUITS**

The Contractor shall assume defense of and shall indemnify and hold the City and its agents harmless from all suits and claims against them arising from the use of any invention, patent right labor or employment, or from any act of omission or neglect of the Contractor, his agents, employees or any subcontractor in performing the work, under this contract.

3. **LAWS AND REGULATIONS**

The Contractor shall conform to all the applicable rules, regulations, laws and ordinances of the City of Waltham, the United States of America and all agencies having jurisdiction.

4. **PROTECTION OF PROPERTY**

The Contractor shall take all proper precautions to protect the City's property from damage and unnecessary inconvenience. Any City property damaged by the Contractor in carrying out the provisions of this contract shall be restored to its original condition, by and at the expense of the Contractor.

5. **PROTECTION OF PERSONS**

The Contractor shall take all proper precautions to protect persons from injury, unnecessary inconvenience, and shall be responsible for his failure to do so. The Contractor agrees to hold the City harmless from any and all liabilities of every nature and description, which may be suffered through bodily injury, including death, to any person, by reason of negligence of the Contractor, his agents or employees, or any subcontractor.

6. **CONTRACT DURATION.**

This contract is for the period required to complete and deliver the Fire Apparatus exclusive of any warranties.

7. **PERSONNEL:**

The Contractor shall employ a competent supervisor and all properly licensed personnel necessary to perform the services required in this contract. The City Agent shall have the right to require the Contractor to remove and/or replace any of the personnel for nonperformance or for unprofessional behavior. The City Agent may require the Contractor to submit a weekly performance record of the areas and of the work performed, on forms approved by the City Agent. The Contractor or his supervisor shall be available to inspect such work as required by the City Purchasing Agent.

8. **PREVAILING WAGES**

The Contractor is required to pay the prevailing wages as determined under the provisions of Chapter 149, Sections 26 and 27D of the Massachusetts General Laws, including the submission of weekly payrolls to the awarding authority. Certified payrolls must be submitted to the Purchasing Agent PRIOR to the payment of invoices. No invoice payment can be made unless the Certified Payrolls are current

9. **MATERIALS** *(if applicable)*

The City or its Agent reserves the right to approve or reject any supplies, material or equipment used by the Contractor. The Contractor agrees to replace any supplies, material or equipment used by the Contractor. The Contractor agrees to replace any rejected supplies, materials or equipment, to the satisfaction of the City or its Agents.
10. **TERMINATION OF CONTRACT**

This contract may be terminated by the City upon deliverance to the Contractor of a five-day written notice of said termination.
11. **CONTRACT OBLIGATIONS**

Contract obligations on behalf of the City are subject to an annual appropriation to cover the contract obligation.
12. **BIDDER EXPERIENCE EVALUATION**

Each bidder shall submit with his bid, all the information relative to their experience and qualifications in performing the work required under this contract and shall have been in business for a minimum of five (5) years, in order for their bid to be considered.
15. **NOT-TO-EXCEED AMOUNT**

The bid amount proposed in your company's response is a "not-to- Exceed" amount unless the City makes changes, in writing, to the scope of work to be performed. The Change Order must be signed and approved by the CPO PRIOR to the commencement of the change order work. A change order will be priced at the unit price. Failure to comply with this procedure will result in the cancellation of the contract and the non-payment of services provided
16. **FINANCIAL STATEMENTS.**

The City may require, within five (5) days after the bid opening, a complete and detailed Financial Statement prepared by a Certified Public Account, to determine a bidder's financial stability.
17. **BREACH OF CONTRACT/ NON PERFORMANCE**

If the Contractor shall provide services in a manner, which is not to the satisfaction of the City, the City may request that the Contractor refurnish services at no additional cost to the City until approved by the City. If the Contractor shall fail to provide services, which are satisfactory to the City, the City in the alternative may make any reasonable purchase or Contract to purchase services in substitution for those due from the Contractor. The City may deduct the cost of any substitute Contract for nonperformance of services together with incidental and consequential damages from the Contract price and shall withhold such damages from sums due or to become due to the Contractor. If the damages sustained by the City exceed sums due or to become due, the Contractor shall pay the difference to the City upon demand. The Contractor shall not be liable for any damages sustained by the City due to the Contractor's failure to furnish services under the terms of this Contract if such failure is in fact caused by the occurrence of a contingency the nonoccurrence of which was a basic assumption under which this Contract was made, including a state of war, embargoes, expropriation of labor strike or any unanticipated federal, state or municipal governmental regulation of order, provided that the Contractor has notified the City in writing of such cause within seven (7) days after its occurrence.
18. **RIGHT TO AUDIT**

TheWaltham Purchasing Department has the right to review and audit documents related to this contract. This right extends to any subcontractor, supplier or other entity used by the prime contractor to fulfill the obligations under this contract.
19. **CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.**

All contract made by any department, board or commission where the amount involved is two thousand dollars (\$2,000) or more shall be in writing, and no such contract shall be deemed to have been made or

executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars (\$5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor.

20. ACTIVE REPARATION CLAIMS

Does your company or any of its Principals have an active reparation Claim with the City. A claim is any demand by a contract for the payment of disputed invoices, payment penalties, labor disputes, interest, etc. YES \_\_\_\_\_, NO \_\_\_\_\_ (circle or check applicable).

If YES Please explain the nature of the claim, date of the claim and City Department

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(Add an additional page if necessary)

21. THE CITY OF WALTHAM EQUAL EMPLOYMENT OPPORTUNITY AND AFFIRMATIVE ACTION POLICY

The City of Waltham is committed to a policy of equal employment opportunity and to a program of affirmative action in order to fulfill that policy. The City will accordingly recruit and hire into all positions the most qualified persons in light of job-related requirements, and applicants and employees shall be treated in employment matters without regard to unlawful criteria including race, color, religion, ancestry, national origin, sex, sexual orientation, disability, age, positive HIV-related blood test results, status as a disabled or Vietnam Era Veteran, genetic information, or gender identity or expression, as these terms are defined under applicable law, or any other factor or characteristic protected by law. In addition, The City of Waltham recognizes that discriminatory harassment and sexual harassment are forms of unlawful discrimination, and it is, therefore, the policy of the City of Waltham that discriminatory harassment and sexual harassment will not be tolerated. The City of Waltham also prohibits unlawful harassment on the basis of other characteristics protected by law. Further, employees and applicants will not be subjected to harassment or retaliation because they have engaged in or may engage in the following: filing a complaint or assisting or participating in an investigation regarding alleged discrimination or harassment as prohibited in the policy statement above; filing a complaint or assisting or participating in an investigation, compliance evaluation, or any other activity related to the administration of the Vietnam Era Veterans' Readjustment Assistance Act of 1974 ("VEVRAA"), Section 503 of the Rehabilitation Act of 1973 ("Rehabilitation Act"), or the Affirmative Action provisions of federal, state or local law; opposing any act or practice made unlawful by VEVRAA requiring equal employment opportunities for individuals with disabilities, disabled veterans, or veterans of the Vietnam Era; or exercising any rights under VEVRAA or the Rehabilitation Act.

Sources: Titles VI and VII of the Civil Rights Act of 1964; the Immigration Reform and Control Act of 1986; Title IX of the Education Amendments of 1972; the Equal Pay Act of 1963; the Age Discrimination in Employment Act of 1967; the Age Discrimination Act of 1975; Sections 503 and 504 of the Rehabilitation Act of 1973; the Americans with Disabilities Act of 1990; Section 402 of the Vietnam-Era Veterans Readjustment Assistance Act of 1974; Executive Order 11246 as amended; The Genetic Information Nondiscrimination Act of 2008 and such other federal, state and local non-discrimination laws as may apply.

22. BUY RECYCLING REQUIREMENTS. The City of Waltham's Buy Recycling Procedure follows the EPA's Comprehensive Procurement Guideline (CPG) program promoting the use of materials recovered from solid waste. Buying recycled-content products ensures that the materials collected in recycling programs will be used again in the manufacturing of new products. The City requires that the purchase of products and material supplied by subcontractors originate, as often as practical, from the recycling of previously used materials.

**SPECIFICATIONS****INTENT OF SPECIFICATIONS**

It is the intent of these specifications to cover the furnishing and delivery to the *Waltham Fire Department* of a complete fire apparatus equipped as specified herein; with the intent to obtain the best results and the most acceptable apparatus for emergency service use in the community of the *City of Waltham, Massachusetts*. These specifications cover the minimum general requirements as to the type of construction and tests to which the apparatus must conform, together with certain details as to finish, equipment and appliances with which the successful bidder must conform. Minor details of construction and materials, where not otherwise specified, are left to the discretion of the contractor, who shall be solely responsible for the design, engineering and construction of all features.

Y\_\_N\_\_

**COMPLIANCE WITH NFPA 1901**

The National Fire Protection Association Standard "NFPA 1901 - Standard for Automotive Fire Apparatus - Current Edition" (hereinafter referred to as NFPA 1901) in effect at the time of the purchase shall be used as a reference and its requirements shall be met by the bidder. Bidder shall construct the apparatus in accordance with federal and state laws effective at the time of purchase. Any federal, state or NFPA amended changes that shall affect the cost of producing said apparatus shall be charged to the purchaser. Mandatory minor apparatus equipment as stated in the applicable paragraphs (5.8, 6.7, 7.7, 8.8, 9.8, 10.5, 11.9 and respective subparagraphs) of the NFPA standard shall not be provided unless specifically stated and listed in purchaser's written specifications.

Any and all references to "NFPA 1901" within this document shall refer to the current edition of NFPA 1901 in effect at the time of the purchase.

Y\_\_N\_\_

**PURCHASER'S NFPA 1901 RESPONSIBILITIES**

In accordance with NFPA 1901, current edition, it shall be the responsibility of the *Waltham Fire Department* to specify the following details of the apparatus:

- Its required performance, including where operations at or above elevations of 2000 ft. or on grades greater than 6 percent are required.
- The maximum number of firefighters to ride within the apparatus.
- Specific electrical loads that are to be part of the minimum continuous electrical load defined in 13.3.3 of NFPA 2003.
- Any hose, ground ladders, or equipment to be carried by the apparatus that exceed the minimum requirements of the NFPA 1901 standard in effect at the time of the bid. Equipment weight and location on the apparatus are the responsibility of the *Waltham Fire Department* as a prerequisite of defining the loaded vehicle's vertical center of gravity for rollover stability calculations, when required.

**ACQUAINTANCE WITH SPECIFICATIONS**

Y\_\_N\_\_

It is the responsibility of the bidder to review all of the bidding requirements. Failure of a bidder to be acquainted with this information shall not relieve the bidder from any obligations of the bid requirements.

**ERRORS AND OMISSIONS**

Y\_\_N\_\_

Any error or omission in the specifications shall be reported immediately to the *Waltham Purchasing Department* for correction, prior to bidding.

**SINGLE SOURCE MANUFACTURER**

Y\_\_N\_\_

Bids shall only be considered from single source apparatus manufacturers. A single source entire apparatus in the factory of the bidder. The use of commonly incorporated components such as the diesel engine, the transmission, the pump, lighting fixtures, etc. is acceptable. However, calling the cab/chassis/drivetrain or the outriggers/torque box/aerial device a "component" shall not be acceptable. Single source warranty and service provision from one manufacturer is mandatory to insure parts availability and undivided warranty responsibility. **The City of Waltham** shall be the sole judge in determining if a bidder meets the purchaser's definition of "single source manufacturer". There shall be no exceptions to these conditions.

**PROTOTYPE OR EARLY PRODUCTION APPARATUS**

Y\_\_N\_\_

No prototype, experimental or early production apparatus shall be accepted. The bidder shall demonstrate that they have successfully produced apparatus of the same design in the past, and that those apparatus have a repair history that is acceptable to the purchaser.

**UNSOLICITED PROPOSALS**

Y\_\_N\_\_

All bidders shall submit only one (1) bid, which meets or exceeds the specifications. Bids on alternate, stock or demonstrator units are not being solicited. Any such bids shall be considered non-responsive and shall not be considered. Total exception to the bid specifications will be cause for immediate rejection. There shall be no exceptions to these conditions.

**COMPANY OVERVIEW AND HISTORY**

Y\_\_N\_\_

Each bidder shall include in their bid proposal a clear overview of their company's manufacturing history, particularly as it relates to the manufacturing of fire apparatus. The bidder shall also include specifics about the factory location in which the apparatus they are bidding will be manufactured.

**RELIABILITY OF MANUFACTURER**

Y\_\_N\_\_

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

Bids shall only be considered from manufacturers who are current members of the Fire Apparatus Manufacturers Association (FAMA).

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

shall state the location of the factory where the apparatus is to be manufactured. Each bidder shall also show that they are in a position to render prompt service and to furnish replacement parts for said apparatus.

Y\_\_N\_\_

**MANUFACTURER'S LIABILITY**

The bidder, if their bid is accepted, shall defend any and all suits and assume all liability for the use of any patented process, device or article forming a part of the apparatus or any appliance furnished under the contract.

Y\_\_N\_\_

**BID SUBMISSION**

Bidders are required to complete and return this bid document. Bidders are required to complete the Bidder Compliance column truthfully. If a bidder believes that they have met the intent of the specification paragraph, but do not meet the exact requirements of the specification, then they shall write "Exception" in the Bidder Compliance column and document that exception accordingly. Failure to adequately document an exception shall be considered a "Not Compliant" response. *BE ADVISED: This document, and all responses and exception taken therein, shall become part of the contract.*

Each bid shall be accompanied by a "Contractor's Proposal" consisting of a detailed description written by the manufacturer of the apparatus and equipment proposed and to which the apparatus furnished under contract shall conform.

The total price on the bidder's proposal sheet must include all items in the *Waltham Fire Department's* specifications. Listing any requirement contained in the specifications as an option at additional may not be considered.

Y\_\_N\_\_

**EXCEPTION TO SPECIFICATIONS**

Any exception or variation in construction, performance, test or items of equipment between the *Waltham Fire Department's* specification and the bidder's proposal shall be detailed and submitted as an exception. The following requirements shall be strictly adhered to:

- A. Exceptions will be allowed if they are equal to or superior to that specified and provided they are listed and fully documented and explained on a separate page entitled "EXCEPTIONS TO SPECIFICATIONS". The exception list shall refer to specification page number and paragraph.
- B. All exceptions or deviations must be approved in writing by the *Waltham Purchasing Department* or the jurisdiction having authority. The *City of Waltham* shall be the sole judge as to whether an exception or variation meets or exceeds the specification and reserves the right to determine which, if any, exceptions or deviations are acceptable.
- C. Proposals taking total exception to specifications shall not be accepted.
- D. The apparatus shall be inspected upon delivery for compliance with the specifications. Deviations shall not be allowed and shall be cause for rejection of apparatus unless they were originally listed in bidder's proposal and approved in writing by the *Waltham Fire Department*.

Y\_\_N\_\_

**BID SELECTION/AWARD CRITERIA**

The *Waltham Purchasing Department* reserves the right to reject any or all proposals, or to accept such proposal that, in the *Waltham Purchasing Department's* sole opinion, is in the best interest of the *Waltham Fire Department*. The *Waltham Purchasing Department* does not, in any way, obligate itself to accept the lowest bid.

The selection of the successful bidder will be based on a combination of factors which, in the *Waltham*

*Purchasing Department's* sole opinion, will best serve the *Waltham Fire Department's* interest in obtaining the best equipment. Factors that will be considered, but shall not be limited to, are:

- Experience
- Capability
- Prices
- Past performance
- References
- Responsiveness to the bid document
- Delivery time
- Quality of item(s) bid
- Warranty Coverages
- Service ability and location

Y\_\_N\_\_

**COMPLETION DATE**

Each bidder shall include in their proposals the number of calendar days for delivery of the completed apparatus, from the receipt of the complete order and signed approval drawing.

Y\_\_N\_\_

**PROPOSAL DRAWINGS**

Full size, blueprint type drawings of the apparatus being proposed shall be submitted with the bid package. These drawings shall be drawn to scale on a CAD system to assure an accurate and professional drawing. The drawing shall show five (5) views of the vehicle (front, rear, both sides and top). The drawings shall show the wheelbase and overall dimensions of the apparatus, proposed compartment sizes and features, booster tank position and the location of all emergency warning equipment, work lights, seating and other major items that are to be provided on the apparatus.

Because these drawings are an important tool in the bid evaluation process, the drawings submitted shall be specifically for the apparatus being bid. Drawings that are "similar to" or general in design are not acceptable and shall be considered non-compliant and non-responsive.

Bids submitted without these drawings shall also be considered non-compliant and non-responsive.

Y\_\_N\_\_

**BID BONDS**

Each bidder shall supply with their bid proposal a bid bond in the amount of **5%** of the proposed contract amount. Bid Bonds by salesmen or agents of the manufacturer are not acceptable. Bids must remain firm for a period of 90 days. All required insurance coverage shall be underwritten by insurers legally allowed to conduct business in all states of the U.S. and shall have a policy holders rating of "A" or better in the latest evaluation by A. M. Best Co.

No exception to these requirements shall be allowed if the bid is to be considered compliant.

Y\_\_N\_\_

**DELIVERY PENALTY**

The successful bidder shall furnish and deliver the apparatus within 300 calendar days from receipt of order by the bidder; provided, however, the order shall be fully specified, accurate and completely defined. Liquidated damages in the amount of \$200 per day shall go into effect on the 301st day unless due to force majeure events, change order or other actions of the purchaser that cause a delay and are beyond the control of the bidder.



Y\_\_N\_\_

**APPROVAL DRAWINGS**

Following the completion of the pre-construction conference, three (3) sets of engineering, blueprint type drawings, specifically for this apparatus, shall be provided by the manufacturer and shall be approved by the **Waltham Fire Department** before construction begins. Both the **Waltham Fire Department** and the manufacturer's representative shall have a copy of this drawing. It shall become part of the total contract. These drawings shall be drawn to scale on a CAD system to assure an accurate and professional drawing. The drawing shall show five (5) views of the vehicle (front, rear, both sides and top). The drawings shall show the wheelbase and overall dimensions of the apparatus, final compartment sizes and features, booster tank position, the location of all emergency warning equipment, work and scene lights, and all changes, if any, mutually agreed to during the pre-construction conference.

Y\_\_N\_\_

**PRE-CONSTRUCTION CONFERENCE**

One (1) "Pre-Construction" conference trip shall be scheduled. Two (2) representatives of the **Waltham Fire Department** may attend the conference which shall be held at the factory of the successful bidder, during normal business hours, Monday - Friday. The conference shall be held prior to the commencement of any work being done on the apparatus. Factory sales and engineering personnel shall participate in the conference as needed to ensure that the apparatus fulfills all the requirements of the accepted bid. Authorized representatives from both the **Waltham Fire Department** and manufacturer shall approve and sign any changes made during these meetings prior to the commencement of any work being done on the apparatus.

It is understood and agreed that delays beyond thirty (30) days of contract approval for Pre-Construction conference changes in specifications shall be cause for delay in delivery.

Y\_\_N\_\_

**DIGITAL PICTURES**

Digital pictures shall be taken of the apparatus in place of an "In-Process" inspection. On a given day determined by the manufacturer, a quantity of thirty-six (36) pictures shall be taken of the apparatus. Depending upon the type of apparatus, the pictures may include any or all of the following: cab interior and exterior, pump operators stand, body and aerial device.

Y\_\_N\_\_

**FINAL INSPECTION TRIP**

One (1) "Final" inspection shall be scheduled and shall include representatives of the **Waltham Fire Department**. The inspection shall take place at the successful bidder's factory during normal business hours, Monday - Friday. A distributor or sales representative shall accompany the **Waltham Fire Department** on the inspection trip. The trip shall be of sufficient duration to complete the business required. The apparatus to be inspected shall be in finished condition and ready for shipment when the final inspection is conducted.

Y\_\_N\_\_

**UNDERSIDE FINAL INSPECTION**

During "Final" Inspection, the complete vehicle shall be raised, allowing the **Waltham Fire Department** Inspection team to walk under the apparatus to review the complete underside.

Y\_\_N\_\_

**PRE-DELIVERY ROAD TRIP AND FINAL FACTORY CHECKLIST**

Prior to delivery, the completed apparatus shall be thoroughly inspected by the factory. This inspection shall include road testing by the factory of no less than 100 miles. During the factory inspections and road testing, a checklist shall be utilized by factory personnel to document the inspection and road test results. The checklist shall include:

- Documentation of the make, model and serial numbers of all major components such as the engine, transmission, pump, axles, etc.
- Complete, comprehensive operational check of all chassis/drive train components and fluid levels.
- A comprehensive review of the entire exterior and interior of the apparatus for fit and finish, checked against the customer's pre-construction meeting approval specifications, and any ensuing change orders.
- A thorough test of all driving systems under actual highway and city driving conditions, for no less than 100 miles.

Y\_\_N\_\_

**DELIVERY**

The fire apparatus shall be delivered over the road and under its own power to insure proper break-in of all driving components while still under warranty. Rail or truck freight shipment of the apparatus is not acceptable.

Y\_\_N\_\_

**FAMILIARIZATION**

An experienced and qualified distributor or sales representative shall familiarize **Waltham Fire Department** personnel (as designated by the authority in charge) in the proper operation, care and maintenance of the apparatus delivered.

The representative must be a qualified, trained agent of the local authorized distributor or sales representative, or a direct employee of the manufacturer of the apparatus.

The familiarization period shall consist of four (4) sessions over a period of three (4) days, during the normal work week (Monday - Friday). The schedule of the instruction sessions shall be arranged by mutual agreement of the **Waltham Fire Department** and the delivering authority. The number, length and time of the sessions may vary due to the nature of the apparatus and availability of attendees and must be approved in advance. The balance of any time remaining in a session may be devoted to minor adjustments or corrections to the apparatus for items which may have developed while in transit from the factory.

Y\_\_N\_\_

**DOCUMENTATION - NFPA REQUIREMENTS**

All NFPA required documentation and certifications shall be supplied with the apparatus at the time of delivery.

Y\_\_N\_\_

**GENERAL DESIGN REQUIREMENTS**

The design and layout of the apparatus specified herein has been carefully selected to meet the needs of the **Waltham Fire Department**. Because the **Waltham Fire Department** is buying a custom fire apparatus, it is expected that all bidders can provide and shall adhere to the details specified herein.

The specified apparatus shall be a custom cab type, designed and manufactured specifically for the fire service in North America. Modification of a conventional or commercial chassis is unacceptable. The

apparatus shall meet or exceed the requirements of the NFPA 1901, current edition, in all respects.

The chassis shall be the bidder's "top of the line" deluxe custom model incorporating an all steel cab for strength, durability and safety. The cab and body sheet metal shall be constructed of stainless steel, no exception.

The **Waltham Fire Department** requires a cab that is structurally sound and has the structural integrity to provide protection to properly seat belted firefighters in the event of a rollover, impact with a heavy object or collision.

The specified apparatus shall be designed to be fully operational in the local climate of the **City of Waltham, Massachusetts**.

Y\_\_N\_\_

### **GROSS VEHICLE WEIGHT**

The manufacturer shall be responsible for proper weight distribution upon the chassis and axles. The apparatus, when loaded, shall have not less than 25% or more than 45% of the weight on the front axle and not less than 55% nor more than 75% on the rear axle. The successful bidder shall furnish a certified weight certificate showing weights on front axle, rear axle and total weight for the completed apparatus at time of delivery, with water and fuel tanks full, but without personnel, equipment and hose.

In accordance with NFPA 1901, it shall be the responsibility of the **Waltham Fire Department** to notify the manufacturer in the **Waltham Fire Department's** specification of any hose, ground ladders, or equipment to be carried by the apparatus that exceeds the minimum requirements of the NFPA 1901 standard in effect at the time of the bid.

Y\_\_N\_\_

### **IN-SERVICE WEIGHT CALCULATION**

The successful bidder shall furnish a weight calculation showing weights on the front axle, rear axle and total weight for the completed apparatus as specified by the **Waltham Fire Department**, with water and fuel tanks full, equipment and hose. This calculation shall be available for the pre-construction conference.

For the purpose of calculating the in-service weight, firefighter weight shall be calculated at 250 pounds per crew member, including SCBA. If a hose load is not provided, the minimum hose load required by NFPA 1901 shall be used for the calculation. If a loose equipment load is not provided, including its location on the vehicle, the NFPA 1901 load amount based on the cube of the body shall be used.

Y\_\_N\_\_

### **CUSTOMER DECLARED EQUIPMENT WEIGHT**

The **Waltham Fire Department** declared equipment weight shall be 4,500 pounds. This weight shall be evenly distributed.

Y\_\_N\_\_

### **VEHICLE PERFORMANCE ANALYSIS**

A performance analysis report shall be run on the vehicle, as ordered, using computer software to determine top speed, grade ability, optimum shift points and acceleration on various grades. The report shall be delivered with the completed vehicle, but shall be available within thirty (30) days of the pre-construction conference.

**GENERAL CONSTRUCTION, QUALITY AND WORKMANSHIP**

The design and construction of the apparatus shall embody standard automotive heavy vehicle engineering practices. The apparatus shall be designed, engineered and constructed with due consideration for the severe service nature of the fire service. All parts of the apparatus shall be installed in accordance with the OEM specifications and shall be strong enough to withstand the general service under full load for twenty (20) years.

Distribution of load between the front and rear axles shall be engineered so that all specified equipment, including a filled water tank, full complement of personnel and fire hose shall be carried without damage to the apparatus. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association and current standard automotive practices.

The workmanship shall be of the highest quality in its respective field. In order to assure the quality that the *Waltham Fire Department* demands and expects, all welding personnel that shall be utilized in the fabrication and construction of structural components of the apparatus chassis, body and aerial device shall hold a valid certificate from the AWS - American Welding Society.

The apparatus shall be designed to conform to the intent of ANSI and NFPA 1901 standards. The following design criteria shall be applicable to this specification to the extent specified herein:

- American Society for Testing Materials (ASTM) - A-36, Specification for Structural Steel
- Society of Automotive Engineers, Inc. (SAE) - SAE Handbook
- American Welding Society (AWS) - AWSO14.4-77 Classification and Application of Welded Joints for Machinery and Equipment
- American Society for Non-Destructive Testing (ASNT)
- ASNT Guidelines; Procedure SNT-TC-1A

The apparatus shall have symmetrical proportions and a pleasing appearance as a result of design detail and fit/finish quality. The apparatus shall be engineered with firefighter safety as the top priority. Ease of operation and ease of maintenance shall also be considered in the apparatus design, but shall not compromise safety. No special tools shall be required to access normal service or maintenance items.

All sensitive components shall be protected against adverse weather conditions. Any exposed metal surface which is not painted or otherwise coated shall have a bright finish. Corrosion protection shall be provided between any dissimilar metals joined in the construction of this apparatus.

**DRIVELINE VIBRATION TESTING**

The apparatus shall be tested for the level of vibration on power train and drive line components such as the engine, transmission, drive shafts, axles and tires, after construction. The test shall be performed using dedicated sensing devices and software on a pre-defined test route and under various regular driving conditions, including speeds, acceleration and braking. The apparatus shall have all major components and most features completed at the time of the test. The apparatus shall be loaded to simulate an in-service condition.

**STEPPING SURFACE CERTIFICATION**

The manufacturer shall provide at time of delivery of the apparatus, a certification that all materials used for exterior surfaces designated as stepping, standing and walking areas, all interior steps and all interior floors meet the slip resistance requirements of the applicable edition and section of NFPA 1901.

Y\_\_N\_\_

**PERFORMANCE REQUIREMENTS AND TEST - NFPA**

A road test shall be conducted with the apparatus loaded per NFPA recommendations (unless otherwise specified) and a continuous run of ten (10) miles or more shall be made during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus.

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

The fully loaded vehicle shall be capable of obtaining a minimum top speed of 50 mph on a level concrete highway with the engine not exceeding its governed rpm (full load).

The apparatus shall be able to maintain a speed of 20 mph on any grade up to and including 6%.

The service brakes shall be capable of stopping the fully loaded vehicle in 35 feet at 20 mph on a level concrete highway.

The apparatus shall be tested and approved in accordance with NFPA standard practices.

Y\_\_N\_\_

**FAILURE TO MEET TEST**

In the event that the apparatus fails to meet the road test requirements of these specifications upon delivery, during the first trials, second trials may be made at the option of the bidder within 30 days of the date of the first trials. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection of the apparatus. Permission from the manufacturer to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the *Waltham Fire Department* during the above specified period shall not constitute acceptance.

Y\_\_N\_\_

**GENERAL**

Chassis shall be a new, heavy duty, custom fire apparatus design built expressly for the fire service. All standard components that have not been specified shall be provided.

Chassis shall be designed, engineered and built by the bidder and be the manufacturer's first line custom chassis.

The chassis shall be suitable for heavy duty service with all components having adequate strength and capacity for the intended load to be sustained and the type of service required.

Y\_\_N\_\_

**WHEELBASE**

The wheelbase shall be 207 inches.

Y\_\_N\_\_

**SEATING CAPACITY**

The safe seating capacity of the cab for properly belted passengers shall be five (5).

Y\_\_N\_\_

**APPROACH - DEPARTURE ANGLES**

An angle of approach and an angle of departure of at least 12 degrees shall be maintained at the front and the rear of the vehicle when it is loaded to the estimated in-service weight, as defined by NFPA 1901 2009 edition.

Y\_\_N\_\_

**GROSS VEHICLE WEIGHT RATINGS**

Front Vehicle Weight Rating shall be 22,800 pounds.  
Rear Vehicle Weight Rating shall be 27,000 pounds.  
Gross Vehicle Weight Rating shall be 49,800 pounds.

Y\_\_N\_\_

**FRAME**

The chassis frame shall be built with two variable section steel channels with a minimum of six (6) cross members. Pump shall not be counted as a cross member. The side rails shall be of heat treated steel with tapering measurements. Each rail shall have a section modulus of 21.7, a minimum elastic limit of 120,000 PSI and a minimum resisting bending moment of 2,601,600 inch pounds. The cross members shall be of heavy duty, fabricated, all-welded design, made out of a minimum of 50,000 psi material. The frame and cross members shall be a bolted assembly utilizing 1/2" flange head grade eight bolts and Spiralock® flange nuts. Spiralock® nuts shall be used exclusively in the frame assembly for mounting spring hangers, steering gear, engine, transmission, etc. because of their ability to maintain a constant torque tension and prevent vibration loosening. Their design shall provide for an even thread load distribution over the bolt, increased fatigue strength and life, and clamping torque. All holes made must be used and any holes in the frame for options not required on this chassis are not acceptable.

Frame rails less than or equal to 480" in length shall receive a duo-coat primer: an E-coat followed by a powder coating. This duo-coat process meets 1000 hours of salt spray testing per ASTM B117 test procedure. Frame rails greater than 480" in length shall be powder coated only. The inside of the rails shall be hand re-sprayed to insure coverage. This process meets 240 hours of salt spray testing per ASTM B117 test procedure.

Y\_\_N\_\_

**BUMPER**

A heavy duty, 10" high, ribbed, highly polished stainless steel bumper shall be mounted to the front of the chassis. The bumper shall be a "ribbed" cross section shape with 2" flanges and rounded corners.

As part of the bumper extension, a second formed channel with 2" flanges shall be provided directly behind the full width of the flat portion of the bumper. The bumper extension support shall be of channel (minimum 9-7/16" x 3" x 3/8") construction, bolted to the chassis frame stub. A 3/16" aluminum tread plate gravel pan (deck) contoured to fit just below the front face of the cab and just below the upper bumper flange shall be provided. The gravel pan shall not be fastened to the top flange of the bumper.

Y\_\_N\_\_

**12" BUMPER EXTENSION**

A bumper extension shall be installed at the front of the cab. The front of the bumper shall be approximately 12" from the front face of the cab. A gravel pan made of 3/16" aluminum tread plate shall be installed between the front bumper and the cab. The bumper extension shall be designed and constructed so that the apparatus can be pulled by the extension.

**LIFTABLE AND TOWABLE BUMPER EXTENSION**

Y\_\_N\_\_

The bumper extension shall be designed and constructed so that the apparatus can be lifted and towed by the extension. The bumper extensions shall be constructed with a heavy duty structure so as to allow the gravel pan to support weight and additional options.

**RECESSED NOTCH IN FRONT BUMPER FOR LEFT SIDE Q2B SIREN**

Y\_\_N\_\_

A recessed notch shall be cut into the left side of the front bumper and gravel pan for a Q2B siren. It shall be boxed in on the three vertical sides with aluminum tread plate.

**FRONT TOW EYES**

Y\_\_N\_\_

Two (2) painted "cut plate elongated-style" type tow eyes shall be furnished. They shall be installed under the aluminum tread plate "gravel" pan, behind bumper. The eyes shall be fabricated of 1" thick steel plate with a 3" diameter opening. They shall be painted black in color.

**RECEIVER TUBE**

Y\_\_N\_\_

A receiver tube for use with a trailer hitch or portable winch shall be provided at the rear of the apparatus centered above the rear step. The tube shall be welded to an assembly that is attached directly to the chassis frame recessed above the rear step and shall be designed to allow up to 9000 lb. straight line pull with a 2.0 to 1 no yield safety factor. A drop down aluminum tread plate door shall be utilized to access the receiver tube.

**PIGTAIL**

Y\_\_N\_\_

A weather proof 7-pin pigtail shall be provided next to the receiver. Pigtail shall be a Pollak brand 7-way #12-705.

**RECEPTACLE**

Y\_\_N\_\_

A 12 volt weather proof plug-in receptacle shall be provided next to the receiver.

**ELECTRIC TRAILER BRAKE CONTROLLER**

Y\_\_N\_\_

A proportional electric trailer brake controller shall be provided and mounted in the cab.

**RECEIVER TUBES**

Two (2) receiver tubes shall be installed on the sides of the body. Each 2" receiver tube shall be installed behind the rear axle in the fender panel, one on the left side of the body, one on the right side. Tubular framework shall be bolted directly to the chassis frame. The receiver tubes shall be flush with the outside of the fender panels. Each assembly shall be constructed of a minimum of .25" structural steel angle and be designed, engineered and positioned to allow up to a 45 degree angle upward pull of 2,000 lbs, side-to-side pull to a 45 degree angle of 1,000 lbs, or a 9,000 lbs straight horizontal pull, with a 2.0 to 1 no-yield safety factor.

Y\_\_N\_\_

**RECEIVER DOOR**

Each side receiver tube shall be located behind a hinged door. The doors shall have a brushed finish and be secured by a full length stainless steel hinge and a chrome finish lift and turn lock.

Y\_\_N\_\_

**RECEPTACLE**

A 12 volt weather proof plug-in receptacle shall be provided next to the receiver.

Y\_\_N\_\_

**UNDER BODY ROPE RESCUE RECEIVERS**

Four (4) 2" receiver tubes shall be installed under the body compartmentation, two (2) each side. The purpose of the receivers is for them to be utilized during rope rescue operations. The 2" receiver tubes shall be installed aft of the rear axle. Framework shall be bolted directly to the chassis frame. The receiver tubes shall be flush with the outside of the body. Each assembly shall be constructed of a minimum of .25" structural steel angle and be designed, engineered and positioned to allow a 9,000 lbs no yield condition with a straight horizontal pull. A label reading '600 lbs straight pull 15:1 safety factor' shall be affixed adjacent to each receiver.

Y\_\_N\_\_

**REPELLING EYE**

A painted cast steel rappelling eye for use within the 2" receiver tube shall be provided. The rappelling eye shall have a solid 2" square shank and a round 1.25" eye that has a 2.5" inner diameter and a 5" outer diameter. The whole unit shall measure 11" in length.

Y\_\_N\_\_

**WINCH**

A Ramsey model QM9000 electric winch with Hawse fairlead, 95 feet of cable and a replaceable hook shall be provided. It shall have a 9,000 lb. capacity (top layer) and shall have one forward and one reverse speed. The winch shall have a 12-volt electric drive and a "RAM-LOK" semiautomatic clutch which permits free spooling of the cable. A 12 foot remote control cable for the winch shall also be provided. The winch shall come with one (1) Jergens #803921 J1076 détente pin.

Y\_\_N\_\_

**RECEIVER TUBE**

One (1) receiver tube shall be installed under the front bumper extension rails and in front of the bumper. It shall be bolted in place for easy removal. Assembly shall be constructed of a minimum of .25" plate.

With a 9000 lbs winch, the receiver has a 9000 lbs pulling capacity in the horizontal pulling position, in line with the centerline of the apparatus. In this condition, it has a 2:1 no yield safety factor.

Y\_\_N\_\_

**RECEPTACLE**

A 12 volt weather proof plug-in receptacle shall be provided next to the receiver.

Y\_\_N\_\_

**FRAME SIDEBARS**

The frame sidebars shall be extended to allow the tow eyes to protrude through the rear compartment face.



Y\_\_N\_\_

**STEERING**

A heavy duty 18,000 lb. capacity power steering system shall be provided. The hydraulic pump shall be engine gear driven. The steering gear "box", or fixture that the gear is mounted to, shall be fabricated in the factory of the bidder. It shall be a welded assembly constructed of 3/8" formed steel with a 3/4" face plate. Vertical gussets shall be provided between the face plate and the frame mounting plate to insure against frame flex while the vehicle is stationary.

Y\_\_N\_\_

**AUXILIARY CYLINDER FOR POWER STEERING**

An auxiliary power assist cylinder shall be provided in the power steering system.

Y\_\_N\_\_

**CHASSIS ALIGNMENT**

The chassis frame rails shall be cross checked for length and square. Front and rear axles shall be laser aligned. The front axle shall be aligned at the manufacturer's facility.

The completed apparatus should be rechecked for proper alignment after a 100 mile road test has been completed at the factory.

Y\_\_N\_\_

**AIR PIPING**

The service brake system shall be full air type. The system is to meet or exceed current FMVSS-121 requirements. Other components or accessories shall be as follows:

- Pressure protection valve
- Quick build up system
- Engine mounted, gear driven air compressor
- Bendix Model E-6 dual circuit brake treadle valve
- Two (2) air pressure gauges on cab dash with indicator light and buzzer
- Manual drain valves on all air reservoirs
- Air reservoirs

The Bendix SR-7 valve, in conjunction with the double check valve, shall enable modulation of the spring brakes in the event of a service brake air system failure to allow the vehicle to be stopped.

Brake piping shall consist of SAE approved, DOT rated "Synflex" reinforced colored nylon tubing. The lines shall be wrapped in a heat protective loom where necessary in the chassis. Braided hoses shall provide flexibility between axle and frame connections. Brake air lines shall be color-coded. Air inlet to air brake compressor shall be from the engine intake manifold, i.e. after transition through the engine air cleaner. A flexible stainless steel braided Teflon hose and/or copper tubing shall be provided from the compressor to the air dryer.

The parking brake system is to be the spring set type operated by control valve on driver's console. A brake indicator light shall also be provided.

Y\_\_N\_\_

**ADDITIONAL AIR RESERVOIR**

One (1) additional 1770 cubic inch air reservoir(s) shall be provided and installed. Each extra reservoir shall be isolated and be plumbed with a pressure protection valve on the reservoir supply side.

**WET AIR RESERVOIR DRAIN CONTROL**

Y\_\_N\_\_

A cable controlled drain valve shall be provided on the wet tank. The pull cable shall be extended to the side of the truck with a loop provided at its end.

**AIR DRYER**

Y\_\_N\_\_

A Bendix AD-9 air dryer shall be installed in the air brake system. It shall be equipped with an automatic heated moisture ejector.

**AUXILIARY AIR INLET**

Y\_\_N\_\_

There shall be an auxiliary air inlet installed to maintain the chassis air pressure while the engine is not running. A check valve shall be installed in the line to prevent outflow of air pressure from the "wet" or "supply" tank.

Location shall be on the front of the driver's step well.

Y\_\_N\_\_

**FRONT AXLE**

A Meritor MFS front axle with a 22,800 pound rating shall be provided. It shall include composite low-friction bushings with diagonal grooves to better distribute lube, camber settings of +1/4 degree for both left and right sides to help improve tire life and a large diameter, heat treated kingpin with a lube retaining seal.

Y\_\_N\_\_

**DISC BRAKES**

The front axle shall be provided with Meritor #EX225H air disc brakes with internal automatic adjustment, sealed synchronized twin pistons and robust sealing of slide pins for environmental protection. The #EX225H air disc brakes shall have 17" rotors and a fully sealed lever mechanism with variable mechanical ratio. A visual indicator of brake wear shall also be provided.

Y\_\_N\_\_

**FRONT SEMI-ELLIPTICAL SPRING SUSPENSION, 4" X 52"**

The front suspension shall be semi-elliptical 4" x 52" constant rate type springs with a military wrapped eye. The correct material, spring length, width, thickness and number shall be provided to match the leaf spring rating with that of the gross axle weight rating of the vehicle.

Y\_\_N\_\_

**SHOCK ABSORBERS**

Gabriel heavy-duty telescoping shock absorbers shall also be provided on the front axle.

Y\_\_N\_\_

**WARRANTY**

Meritor Corporation provides a two (2) year parts and labor warranty on the front axle.

**WARRANTY**

Meritor Corporation provides a three (3) year parts and labor warranty on the EX225H disc brakes.

Y\_\_N\_\_

**AUXILIARY AIR APPLIED FRONT AXLE PARKING BRAKE**

An auxiliary air applied front axle parking brake shall be supplied with a separate control switch and properly labeled indicator light in the cab. This front parking brake will only be able to be activated when the parking brake for the rear axle is set.

Y\_\_N\_\_

**REAR AXLE**

The rear axle shall be a Meritor model RS26-185 with a capacity of 27,000 pounds at the hub. The rear axle shall be provided with Meritor #EX225H air disc brakes with internal automatic adjustment, sealed synchronized twin pistons and robust sealing of slide pins for environmental protection. The #EX225H air disc brakes shall have 17" rotors and a fully sealed lever mechanism with variable mechanical seal. A visual indicator of brake wear shall also be provided.

Y\_\_N\_\_

All axles shall be purchased complete from and certified by the axle manufacturer for the specific application. Brake chamber brand and size shall be determined by the axle manufacturer.

All axle applications must be certified by the axle manufacturer.

Y\_\_N\_\_

**ROAD SPEED**

The top road speed of the vehicle shall be 68 MPH at the governed engine RPM.

Y\_\_N\_\_

**ANTI-LOCK BRAKING SYSTEM (ABS)**

The vehicle shall be equipped with a WABCO 4S4M anti-lock braking system (ABS). The ABS shall provide four (4) channel anti-lock-up braking control on the (2) front and (2) rear wheels. The system shall employ a digital electronics system with microprocessor controls divided into two (2) diagonal circuits. In the event of one circuit malfunction the second circuit shall operate unaffected. Each wheel shall be constantly monitored by the system when the vehicle is in motion. When any wheel begins to lock-up during braking, a signal shall be transmitted to the processor from the wheel sensor. The control unit shall instantly reduce the braking force applied to the wheel and immediately re-apply braking force so that the wheel rapidly slows without locking. The system shall control all wheels simultaneously to provide maximum vehicle braking in a relatively straight line.

An ABS warning light shall be installed in the warning light panel of the driver's dash.

The ABS system shall automatically disengage the auxiliary braking system whenever the anti-lock braking mode is active.

Y\_\_N\_\_

**WARRANTY**

A three (3) year or 300,000 miles parts and labor warranty shall be provided by Meritor WABCO Vehicle Control Systems for the Anti-Lock Braking System (ABS).

Y\_\_N\_\_

**WARRANTY**

Meritor Corporation provides a three (3) year parts and labor warranty on the EX225H disc brakes.

Y\_\_N\_\_

**WARRANTY**

Meritor Corporation provides a two (2) year parts and labor warranty on the rear axle.

Y\_\_N\_\_

**VEHICLE STABILITY COMPLIANCE – ELECTRONIC CONTROL**

In compliance with NFPA 1901-2009 Edition standard 4.13.1, the vehicle, as specified, shall be equipped with a Meritor-WABCO electronic Roll Stability Control system that shall utilize a centrally mounted pitch and yaw sensor and steering shaft position sensor interacting with the chassis' ABS traction control, auxiliary braking system and the engine ECM to minimize the vehicle's potential for rollover in a turning at speed maneuver.

Y\_\_N\_\_

**AUTOMATIC TRACTION CONTROL WITH DEEP SNOW AND MUD SWITCH**

Automatic Traction Control, working in concert with the ABS system, shall be provided which shall reduce wheel slip on acceleration on wet or slippery road conditions. A light shall illuminate on the driver's dash when the drive wheels slip during acceleration.

A deep snow and mud option switch shall be provided in addition to the ATC option. This function increases available traction on extra soft surfaces like snow, mud or gravel by slightly increasing the permissible wheel spin.

Y\_\_N\_\_

**SKF LUBRICATION SYSTEM**

The SKF automatic lubrication system shall provide automatic grease application up to 16 designated wear points on the unit, with the recommended dosages, per system interval cycle.

The auto lube system shall be powered by an electrically driven Gear Pump. The gear pump shall be top mounted to a reservoir assembly with a capacity of 2.7 liters. The pump shall operate against a back pressure of 38 BAR (550 PSI) nominal, with an output of 160 cc/min. The pump assembly shall be mounted in a suitable location to facilitate care and maintenance of the system by removal of the cover assembly for access to the refill valve connection for replenishment of the grease reservoir.

Distribution of lubricant shall be via Piston Distributors utilizing the "post lubrication principle", dispensing lubricant on the off cycle of the system or pump run time, with metering nipples bearing dosage identification which can be field changeable without disruption of other lubrication point connections.

The auto lube system shall be operated via an electronic control module with System Monitoring capabilities of the main line and operating cycle with dash mounted visual indication to the vehicle operator. The control module shall have LED's and a system reset button to initiate a lube cycle for diagnostic purposes and/or reset the control module in the event a system fault has occurred. Upon a fault, the system is inoperable until the fault has been corrected and a system reset has been initiated by the operator or serviceman.

Y\_\_N\_\_

**REAR SEMI-ELLIPTICAL SPRING SUSPENSION, 3" X 52", SINGLE - 27,000#**

The rear suspension shall be semi-elliptical 3" x 52" constant rate type springs with a military wrapped

eye. The correct material, spring length, width, thickness and number shall be provided to match the leaf spring rating with that of the gross axle weight rating of the vehicle.

Y\_\_N\_\_

**FRONT TIRES**

The two (2) front tires shall be Michelin 425/65R22.5, XFE, load range "L", regional tread (medium to heavy loads, frequently on 2-lane roads) with a maximum rating of 12,200 pounds at a top speed of 75 mph.

Y\_\_N\_\_

**REAR TIRES**

The four (4) rear tires shall be Michelin 12R22.5, XDN2, load range "H", neige tread (all-weather premium drive tire optimized for exceptional traction and mileage) with a maximum rating of 7,220 pounds at a top speed of 75 mph.

Y\_\_N\_\_

**WHEELS**

Front axle and rear axle outer wheels shall be Alcoa aluminum. The aluminum wheels shall be coated with Durabrite. Inner rear axle wheels shall be steel. All wheels shall be disc type and hub piloted. Isolators are mandatory between the aluminum and the steel wheels. Chrome plated nut covers shall be furnished.

Y\_\_N\_\_

**FRONT AXLE "BABY MOON" HUB CAPS**

Stainless steel "Baby Moon" type hub caps shall be provided on the front axle.

Y\_\_N\_\_

**REAR AXLE "HIGH HAT" HUB CAPS**

Stainless steel "High Hat" type hub caps shall be provided on the rear axle(s).

Y\_\_N\_\_

**TIRE PRESSURE INDICATORS**

Accu-Pressure Heavy Duty Safety Caps shall be provided and installed: each wheel shall be equipped with a valve stem inflation pressure sensitive monitor that shall provide a visual color indication of when the tire pressure is below the manufacturers recommended level. The chrome safety cap shall show green when the tire is properly inflated and red once the tire becomes underinflated.

Y\_\_N\_\_

**TIRE BALANCE**

EQUAL Tire Performance Balancing Compound shall be inserted into the front tires to balance and maintain a vibration-free rotation.

Y\_\_N\_\_

**ENGINE**

The chassis shall be powered by a 2013 emissions compliant Cummins ISL-450 diesel engine as described below:

Model	ISL9
Number of Cylinders	Six
Bore and Stroke	4.49 x 5.69
Displacement Liter (Cu. In.)	8.9 (543)
Rated BHP	450 @ 2100 RPM

Torque	1250 ft.lb. @ 1400 RPM
Governed RPM	2200
Oil Capacity / Type	7.3 gallons / SAE CJ-4
Fuel Requirement	Ultra low sulfur diesel (15 ppm max.)

Standard equipment on the engine shall include the following:

- Selective Catalytic Reduction (SCR) after treatment
- Cooled Exhaust Gas Recirculation system
- Fan – 29”, 11 blade
- Charge air cooling
- High pressure, common rail fuel system
- Fuel filter with check valve and water separator
- Fuel strainer
- Governor – electronic, interact system
- Injectors – electronically controlled full authority injection
- Lube oil cooler – integral
- Lube oil filter – full flow
- Turbocharger – variable geometry type
- Air compressor – Wabco 18.7 CFM

The engine exhaust system shall be a horizontal design constructed from heavy-duty truck components. Flexible couplings shall be utilized to absorb the torque and vibration of the engine. The outlet shall be directed to the forward side of the rear wheels, exiting the right side, with a straight tip. A heat-absorbing sleeve shall be used on the exhaust pipe in the engine compartment area to reduce stored heat, providing protection for the alternator, and also to protect hands when checking or adding oil in the engine compartment.

Y\_\_N\_\_

### **ENGINE AND CHARGED AIR COOLING SYSTEMS**

A serpentine core type radiator with continuous louvered copper fin design shall be provided. The radiator shall be fitted with formed steel side frames. The top tank shall have a built-in de-aeration system. A drain shall be located at the lowest point.

The engine charged air heat exchanger shall be located directly in front of the radiator and be bolted to its side rails. It shall be all aluminum-brazed construction. Air cooler shall be the cross flow design with cast aluminum side tanks, horizontal inlet and outlet at top and louvered serpentine design, aluminum external air fins. Plastic tanks shall not be acceptable, no exceptions. Cooler tubes shall also be constructed of aluminum and shall have internal fins that eliminate laminar air flow.

The charge air cooler and the radiator shall be produced by the same manufacturer as a single assembly to provide continuity throughout the cooling system. This shall ensure a certified “balanced” package for the chassis engine air and fluid cooling systems.

The radiator charge cooler shall be mounted to the chassis front frame stub and the fabricated mounting brackets for the fan ring shall be attached to the front of the engine in a manner so that it “floats” with the engine and increases the fan’s efficiency by minimizing the fan tip clearance while preventing torque contact between fan and ring. This mounting design eliminates engine fan and radiator shroud contact due to engine torque movement and promotes more efficient airflow. The radiator / charge air cooler package shall be held in place at the bottom by two (2) large bolts equipped with anti-stress rubber biscuits. The top of the radiator shall be supported by two (2), ¾” tubular braces, bolted to the front

frame stub. Anti-vibration rubber biscuits shall be installed at the top threaded end of the braces where they attach to the radiator.

Y\_\_N\_\_

**ENGINE COOLING CERTIFICATION**

"EPQ" (End Product Questionnaire) certification shall be provided by the apparatus manufacturer and shall be done on a completed unit (after pump and complete body installation). Incomplete certifications (chassis only) shall not be acceptable.

Y\_\_N\_\_

**FUEL WATER SEPARATOR WITH ALARM**

A Fleetguard FS1065 spin-on 10 micron filter with fuel water separator and water sensor alarm shall be provided.

Y\_\_N\_\_

**ENGINE STARTER**

A Denso, 12 volt, 5.0 kW gear reduction starter shall be installed.

Y\_\_N\_\_

**AIR COMPRESSOR**

A Wabco 18.7 cfm air compressor shall be furnished. The air compressor shall be gear driven off the engine.

Y\_\_N\_\_

**WARRANTY**

Cummins provides a 5 year or 100,000 mile warranty on the ISL9 engine.

Y\_\_N\_\_

**FAN CLUTCH**

A thermostatically controlled, clutch shall be provided for the engine cooling fan. The clutch shall be of a failsafe design, in that it shall fail in the "on" mode and thus prevent overheating in the event of component or air line failure. Manufacturer shall also wire the clutch so that it remains "on" in the pumping mode to prevent water pressure fluctuations.

Y\_\_N\_\_

**COOLANT OVERFLOW RESERVOIR**

A six (6) quart coolant overflow reservoir shall be provided. It shall be accessed in the officer's step well. A hinged aluminum tread plate door with small D-ring handle shall be provided for access. A visual inspection shall be possible without tilting the cab (NO EXCEPTIONS). The aluminum tread plate door shall be properly labeled.

Y\_\_N\_\_

**SILICONE HOSES**

All hoses in the cooling system shall be silicone type with stainless steel constant torque Oetiker clamps.

Y\_\_N\_\_

**SKID PLATE**

A radiator skid plate shall be provided to protect the radiator from debris. The skid plate shall cover the lower radiator tank and shall be painted to match the frame rails.

**TRANSMISSION**

An Allison, Model 3000 - EVS, electronically controlled, 5 speed automatic transmission with integral fluid filter shall be provided. A transmission cooler shall be installed in the radiator bottom tank. A warning light and buzzer shall be provided on the cab dash to alert the driver should the transmission overheat.

The transmission shall include the following: an oil life monitor, a filter life monitor, and a transmission health monitor. The oil life monitor determines fluid life remaining by monitoring various operating parameters. The filter life monitor determines when fluid filter(s) need to be replaced. The transmission health monitor determines when clutch system inspection is required. The monitors send a message via a blink code to a special prognostic light on the shift pad. Also on the shift pad shall be installed a digital, double-digit display that identifies the level of transmission oil. The display shall identify the oil level as "Ok", "Lo" or "Hi", also indicating the number of quarts lo or hi.

The transmission shall include the following emergency vehicle specifications:

Maximum gross input power:	450 hp
Maximum gross input torque:	1250 ft.lb.
Input speed range:	2000 to 2800 rpm
Direct gear lock-up:	4 <sup>th</sup> @ 1.00 to 1.00
Overdrive gear and ratio:	5 <sup>th</sup> @ 0.75 to 1.00

Gear ratios shall be as follows:

1 <sup>st</sup>	3.49 to 1
2 <sup>nd</sup>	1.86 to 1
3 <sup>rd</sup>	1.41 to 1
4 <sup>th</sup>	1.00 to 1
5 <sup>th</sup>	0.75 to 1
6 <sup>th</sup>	0.65 to 1
Rev	-5.03 to 1

The transmission shall automatically shift into neutral whenever the chassis parking brake is applied.

Y\_\_N\_\_

**TRANSMISSION FLUID**

The Allison 3000-EVS transmission shall be delivered from the factory with a synthetic SAE standard ATF.

Y\_\_N\_\_

**TOUCH PAD TRANSMISSION SHIFT CONTROL**

Touch pad control shift module shall be mounted to the right of the driver on the console and be indirect lighted for after dark operation.

Y\_\_N\_\_

**WARRANTY**

Allison provides a 5 year warranty on the EVS transmissions.



Y\_\_N\_\_

**TRANSMISSION PROGRAMMING**

The transmission shall be programmed as a 5-speed with 5th gear (overdrive) selected by mode button only.

Y\_\_N\_\_

**DRIVELINE**

Drivelines shall be built with heavy-duty metal tubes and utilize Spicer 1710 series or "Equal" mechanics type universal joints with "half round" end yokes. This quick disconnect strap and bolt design type end joint shall allow the driveline to be easily disassembled and dropped straight down for ease of service and maintenance. They also shall be dynamically balanced by the truck manufacturer before installation in the chassis. A splined slip joint shall be provided in each shaft assembly.

Y\_\_N\_\_

**FUEL SYSTEM**

The vehicle shall be furnished with a 65 gallon fuel tank mounted behind the rear axle and just below the frame rails using a stainless steel strap. The tank shall be constructed of stainless steel and equipped with a swash partition and vent. The fuel tank shall meet all FHWA requirements including a fill capacity of 95% of tank volume and all DOT and FMVSS regulations for rollover protection. A 2" diameter fill inlet shall be provided. Fuel cap shall be of brass or bronze construction, non-vented and have lead safety fuses. It shall be chained to inlet tube or to the body sheet metal to prevent loss. Braided hoses shall be provided for the fuel lines. A 1/2" NPT drain plug shall be located at the bottom of the tank. The tank shall be installed using stainless steel straps and hardware, separated from the tank by a rubber insulating strip to prevent against chaffing. On trucks without torque boxes, the fuel tank pickup tube and sending unit shall be accessible without having to remove the tank.

The fuel fill inlet shall be located on the left (drivers) side of the apparatus. It shall be concealed behind a door. The inside of the door shall be marked "ULTRA LOW SULFUR DIESEL FUEL ONLY". The fuel inlet area, recessed behind the door, shall be completely enclosed to prevent dirt and debris from entering. Provision shall be provided inside the fill recess for drainage of any spilled fuel within the cavity.

The fuel door shall be constructed of stainless steel and shall have a brushed finish. It shall be vertically hinged along the side of the door. A magnet shall hold the door in the closed position. The door shall be kinked along 3 edges with the fourth side being used as a finger grab for opening and closing it. A stainless steel trim ring shall encircle the opening to prevent the fuel nozzle from damaging the surrounding surface when it is opened. The fuel shelf shall be made from a high impact polyethylene material.

Y\_\_N\_\_

**FUEL LINE SHUTOFF VALVE**

A fuel line shutoff valve shall be provided near the tank to prevent fuel from draining back while changing fuel filters.

Y\_\_N\_\_

**ALTERNATOR**

A 430 amp Delco alternator, model 55SI, shall be provided.

Y\_\_N\_\_

**AIR CLEANER**

A Racor Ecolite® dry type engine air cleaner shall be provided. It shall be installed in a location above the chassis frame rails and no less than 40" above the ground. A visual inspection shall be possible without tilting the cab (No Exceptions). The air cleaner shall be serviceable through an access opening of no less than 30" wide by 13" high.

Y\_\_N\_\_

**AIR RESTRICTION INDICATOR IN INFORMATION DISPLAY CENTER**

An electrical engine air restriction indicator shall be provided and installed in the cab information display center.

Y\_\_N\_\_

**EXHAUST**

A SCR chamber shall be installed in series with the DPF chamber on the right side of the vehicle, immediately behind the cab, and shall ingest urea from a remote storage tank providing a catalytic reaction with diesel exhaust particulates. The exhaust assembly shall be mounted outboard of the frame rail.

Y\_\_N\_\_

**DPF REGENERATION PROCESS**

NFPA 12.2.6.7.1 The regeneration process shall be activated by two methods:

- 1) Automatically by the engine system but only when the transmission is in gear and the speedometer indicates a speed above 5 mph (8km/hr) whether the apparatus is in motion or is operating in stationary pump mode with an engine rpm sufficient to register 5 mph (8 km/hr) on the speedometer.
- 2) Manually when initiated by activation of a switch located in the driver's area of the driving compartment.

Any automatic regeneration shall be inhibited when the generator PTO is engaged. There shall also be an inhibit switch placed near the driver to inhibit an automatic reburn when driving.

Y\_\_N\_\_

**DEF & DEF ACCESS**

The urea mixture, a solution of 2/3 water and 1/3 urea which reacts with NOx to create nitrogen and water, shall be stored in a 10 gallon tank equipped with a level sensor and alarm to prevent run-out.

The filling or adding of DEF to the DEF tank shall be available without tilting the cab (No Exceptions). Access to the urea tank fill connections and level sensor shall be available without tilting the cab.

One (1) tank full of urea solution shall be required for every 500 gallons of diesel fluid.

Y\_\_N\_\_

**DEF FILL ACCESS DOOR**

An aluminum tread plate hinged door shall be provided for access to the DEF fill cap and neck. The DEF fill access door shall be located to the rear of the crew cab door, in the D-pillar. The DEF fill access area shall contain a fill neck enclosure spaced inboard from the cab outside panel and shall incorporate a method of draining splashed or spilled DEF fluid.

The DEF fill access door shall open with a key.

Y\_\_N\_\_

### **TAILPIPE EXTENSION**

The tailpipe shall be provided to accommodate a Plymovent exhaust evacuation system. The tailpipe shall be mounted perpendicular to the side of the truck and be flush with the body. 12" of clearance between the pipe and the tire will be provided. The tailpipe mounting shall be straight out from the body.

It is understood that the 2013 engine exhausts cannot be connected to exhaust evacuation systems when the Diesel Oxidation Catalyst and Diesel Particulate Filter on the engine are regenerating.

Y\_\_N\_\_

### **EXHAUST HEAT SHIELDS**

Heat shields shall be provided as needed to prevent damage to body and wiring from excessive exhaust temperatures. The exhaust pipe shall be wrapped in multi-layered insulation blankets, from just aft of the turbo down to inlet side of the DPF. Each blanket shall have a fiberglass inner layer and a silicone impregnated fiberglass cloth outer layer

The cab shall receive 1.25" thick foil back insulation blanket under the crew floor to reduce floor temperatures.

All harnesses and cables, in proximity to exhaust system components, shall be protected with insulation.

Y\_\_N\_\_

### **TELMA FOCAL RETARDER**

A Telma Focal retarder shall be installed in the drive line to provide an auxiliary braking device for the vehicle. Telma application shall be achieved by depressing the brake pedal. There shall also be a four lamp indicator system to indicate the progressive stages of vehicle retardation. A momentary on/off switch with indicator light and display message shall be provided. The retarder shall be reset with the ignition or by pressing the switch a second time. The Telma relay box shall be mounted at the manufacturer's discretion in an easily accessible location for service. Location shall be confirmed at the Pre-Construction Conference.

Y\_\_N\_\_

### **FAST IDLE SWITCH**

A fast idle switch shall activate an engine high idle. The circuit shall be wired through the neutral safety/parking brake interlock to prevent activation when the transmission is in the road mode. Fast idle shall be set at 1000 RPM's. A switch located inside the cab convenient to the driver shall be provided for this system.

Y\_\_N\_\_

### **LUBRICATION DECAL**

A decal shall be installed that specifies the quantity and type of lubrication fluids used in the following chassis or apparatus components: engine, chassis transmission, pump transmission, pump primer and rear axle differential. Engine coolant type and quantity shall also be stated.

The lubrication decal/nameplate shall be installed on the interior face of the driver's door, near the hinge and below the window controls.

Y\_\_N\_\_

**STAINLESS STEEL SPLIT TILT CAB**

The cab shall be designed specifically for the fire service and shall provide roll cage strength and safety. The cab shall be made in the factory of the bidder and must be the bidder's top-of-the-line stainless steel model. The cab shall be of the open interior design and must be split at the front axle centerline. The front portion of the cab shall tilt forward 45 degrees for engine access. The rear crew section shall be fixed. In order to provide the strongest, safest cab design possible, no extrusions shall be used in the construction of the cab structure. No plastic or fiberglass shall be used in the construction of the cab sub-frame, floor assembly, front assembly, side assemblies, back wall assemblies or roof assembly.

Y\_\_N\_\_

**FRONT CAB MOUNTING**

A four point isolated mounting system shall be provided for the front cab. The mounting system shall consist of two (2) front pivot mounts fabricated of steel connected to the chassis and two (2) rearward cab locks that are attached to the rear cab sub-structure. Each front pivot mount shall consist of a greaseless pin and a multi-layered, self-lubricating, composite bearing. The outer layer of the bearing shall be high-durometer rubber to isolate road vibrations and shock.

Y\_\_N\_\_

**SUB-FRAME**

The sub-frame shall be stainless steel reinforced welded safety-cage construction utilizing a 3" x 2" rectangular structural steel tube sub-frame. All joints shall have continuous welds; stitch welding shall not be acceptable. The sub-frame shall be designed as a one-piece structure from the front to the back of the cab. It shall be used to support the cab while tilting, join front pivots to the cab locks, and to join the cab to the chassis. Pocketing of the sub-frame shall not be acceptable. Use of the engine tunnel as part of the main sub-frame shall not be acceptable.

Y\_\_N\_\_

**CAB FLOORS**

All floor components shall be welded directly to the sub-frame. The floor shall be constructed of 50,000 psi stainless steel. Cab floors shall be covered with a sound barrier mat with a heavy-duty wear surface.

Y\_\_N\_\_

**FRONT ASSEMBLY**

The safety-cage section at the front of the cab shall be constructed of 1.25" stainless steel tubing and shall join the front door posts together with the main sub-frame. There shall be a 2.50" x 1.50" x .25" heavy wall lower cross tube that joins the cab sills together to prevent cab twisting when tilting the cab. The front fire walls shall be set back from the front assembly structure to provide added protection in a frontal crash. The outer cab skin shall not be an integral structural member, although it shall help stiffen the cab front face.

The front cab door hinge mount (aka "A" pillar) shall be a 2" x 2" tube with a .19" thick wall.

Y\_\_N\_\_

**SIDE WALL ASSEMBLIES**

The safety-cage on the sides shall be constructed of 1.25" stainless steel tubing. Both side wall assemblies shall be joined to the sub-frame via thick tubular structures, using heavy fillet welds. This shall strengthen the walls to withstand high roof loading. The side wall outer skins shall be integral with the cab structure as well as additional formed components to help stiffen side wall assemblies. There shall be 1.25" of insulating foam between the exterior and interior side walls. The structure shall be reinforced for cab entry grab handle mountings.

The rear cab door hinge mount (aka "C" pillar) shall be equivalent to a 2.5mm formed channel with .19" thick tapping bar.

Y\_\_N\_\_

**ROOF ASSEMBLY**

The 1.25" stainless steel tubing used in the construction of the roof section of the safety-cage shall support 2 psi of loading across the whole roof. The fabricated and welded roof sills and front header shall be made of 50,000 psi stainless steel material. The corner caps shall utilize spun metal technology thus retaining the metal's strength while producing a very rigid corner joint. The side roof covering (rolled edges) shall be constructed of stainless steel formed in a quarter round. It shall form a hollow double wall, angle reinforced roof edge with an integral drip rail. The roof top outer wall shall not be an integral structural member, although it shall stiffen the roof. There shall be 1.25" of insulating foam between the exterior roof and interior ceiling.

Y\_\_N\_\_

**FRONT CAB DIMENSIONS**

The front face of the forward cab shall measure 68" from the center of the front axle. The cab shall have an inside width of 91" and outside width of 96". Entrance step wells to the driver's and officer's positions shall be a minimum of 26" wide. Entrance steps shall be made of expanded stainless steel grating.

Y\_\_N\_\_

**FORWARD CAB FLOOR**

The forward cab floors shall be covered with a black mat that functions as a sound barrier. The mat shall have a pebble textured heavy-duty wear surface and be laminated to a foam underlay. The mat shall be composed of a vinyl-nitrile blend, which is the base material used in IV tubes and blood bags; it is not affected by blood or other body fluids.

Y\_\_N\_\_

**REAR CAB DIMENSIONS**

The back wall of the cab shall measure 74" from the center of the front axle. The cab shall have an inside width of 91" and outside width of 96". Entrance step wells to the crew cab positions shall be a minimum 34" wide. Entrance steps shall be made of expanded stainless steel grating.

Y\_\_N\_\_

**REAR CAB MOUNTING**

A four point isolated mounting system shall be provided for connecting the rear cab to the chassis frame. The mounting system shall consist of six (6) center bonded rubber isolators between the rear cab sub-

frame and chassis frame mounts. The forward mounting utilizes four (4) isolators, two (2) each side, and the rear mounting utilizes two (2) isolators, one (1) each side.

Y\_\_N\_\_

**BACK WALL ASSEMBLY**

The safety-cage on the back wall shall be constructed of 1.25" stainless steel tubing. It shall join the roof to the floor assembly. Construction of the back wall assembly shall utilize a minimum of 2.5mm 3CR12 material and the design shall provide crush protection in the event of a rollover. The back wall structure shall be uniform, regardless of the seating choices. All seat mounts and seatbelt mounts shall use weld nuts to eliminate pullouts and stripped threads. The outer skin shall not be an integral structural member, although it shall stiffen the back wall. 1.25" of insulating foam shall be located between the exterior and interior back walls.

The rear crew cab floor shall be raised 2 inches so that it matches the floor of the body walk-through.

Y\_\_N\_\_

**CREW CAB FLOOR**

The crew cab floors shall be covered with a black mat that functions as a sound barrier. The mat shall have a pebble textured heavy-duty wear surface and be laminated to a foam underlay. The mat shall be composed of a vinyl-nitrile blend, which is the base material used in IV tubes and blood bags; it is not affected by blood or other body fluids.

Y\_\_N\_\_

**CAB DOOR CONSTRUCTION - FULL LENGTH**

The cab doors shall be full length and fabricated from stainless steel (No exceptions). The cab doors shall be 34.75" wide. The interior and exterior door handles to be flush mounted paddle style with a keyed lock incorporated in the exterior handle and lever control lock incorporated in the interior handle.

Six (6) inch wide strap style door checks shall be provided. The door check's straps shall have a tensile strength of 120 lbs/in of width. The door's latch locking mechanism shall make it impossible to lock oneself out of the cab unless locked with the supplied key. Doors shall be hung on stainless steel full length hinges attached to cab and door with .25" bolts. The hinges for each door shall be of one-piece 304-2B stainless steel construction, with ¼ stainless steel pins and 0.090 gauge leaves with 2" joints and a 3" width opening. Doors shall meet Federal Motor Vehicle Safety Standard #206. The doors shall be designed so as to allow the windows to roll completely down.

Y\_\_N\_\_

**INNER CAB DOOR PANELS - BLACK LINE-X**

The lower inside bolt-on panel of each cab door shall be covered with black LINE-X. The color shall match the color chosen for the interior.

Y\_\_N\_\_

**INNER DOOR PANELS – BLACK LINE-X (4)**

The upper inside bolt-on panel on each cab door shall be removable and shall be constructed of aluminum covered with black LINE-X.

Y\_\_N\_\_

**STOP SIGN(S)**

A reflective stop sign shall be provided on the interior lower portion of four (4) cab door(s) in place of the required NFPA reflective chevron.

Stop signs shall be located on all doors.

Y\_\_N\_\_

### **CAB TILT**

The cab shall tilt a minimum of 45 degrees for normal servicing of the engine and other equipment. The tilt cab locking system shall be a two-point type that locks automatically when the cab is lowered into its nested position. The forward tilt portion of the cab and the rear crew cab shall incorporate separate sub-frames. The cab tilt package is custom designed for safety and ease of vehicle maintenance. The hydraulic tilting system consists of two (2) heavy-duty double acting cylinders. The power supply is a high efficiency electric over hydraulic system with an integral mechanical override in case of battery failure. All components and parts are designed for installation with a minimum of 3 to 1 safety factor based on current S.A.E. standards.

The cab shall incorporate an inflatable type seal between the forward and rear cab sections. This seal shall inflate automatically when the cab is in the lock position. An isolated air tank shall be provided for the seal. In addition to the velocity fuses, a secondary safety system shall be provided to hold cab in the fully raised position in the event of a failure in the primary lift mechanism. It shall consist of a metal channel device, which automatically drops over the extended rod of the right side hydraulic lift cylinder thereby preventing its retraction. The safety channel can only be released through an overt action made by the operator such as pulling a lever or cable from the right side of the apparatus, near the safety channel. Automatic release of the safety system shall not be acceptable.

The cab tilt system shall be remotely controlled utilizing a fifteen foot cable with a hand held push button device which is located, stored, and tethered directly to an interior compartment near the right rear cab door.

Y\_\_N\_\_

### **ATP OVERLAY ON BACK OF CAB**

An aluminum tread plate overlay shall be provided on the exterior rear wall of the cab. Strips of aluminum treadplate shall cover the full height of the rear wall of the cab, and shall run from the outside edge of each side of the cab in towards the center approximately one-quarter of the width of the cab. If an optional window is provided on the rear wall of the cab, it shall be fully surrounded by the aluminum tread plate.

Y\_\_N\_\_

### **CAB ENGINE COOLING INTAKE GRILLE**

The cab front opening shall be covered with a custom made polished stainless steel grille fabricated at the bidder's factory. The grille shall have vertical bars spaced apart on 2-1/4" centers. The upper polished stainless steel grille shall have a stainless steel matching lower counterpart to further facilitate engine cooling.

Y\_\_N\_\_

### **FRONT GRILLE SCRIPT NAMEPLATE**

An 18" long manufacturer's nameplate, fabricated from AISI 304 stainless steel, with mirror finish, shall be located on the lower front engine cooling intake grille of the cab.

Y\_\_N\_\_

**ENGINE AIR INTAKE GRILLE WITH WATER/EMBER SEPARATOR**

A highly polished stainless steel removable grille for engine air intake shall be provided. The air intake grille shall contain the replaceable water and ember separator filter in an integral housing.

The air intake grille and water/ember separator cartridge shall be located on the side of the fixed crew cab, above and to the rear of the driver's side steer axle. The engine air intake grill shall be no less than 60" above the ground.

Y\_\_N\_\_

**14" RAISED ROOF**

The rear section of the cab roof, over the crew cab area, shall be raised 14" higher than the driver's and officer's section. The raised portion shall start just behind the centerline of the front axle. The leading forward face of the raised roof shall slope backward 45 degrees to provide a streamlined look.

The interior floor to ceiling height of the forward portion of the cab shall be **57"**. The interior floor to ceiling height of the rear crew portion of the cab shall be **71"**.

The rear crew cab doors shall be extended into the raised portion to provide maximum headroom for entering and exiting the rear crew cab. The top of the rear crew doors shall increase by 14" and have an additional piece of fixed glass at the top of the door, above and separate from the standard door glass.

Y\_\_N\_\_

**DOOR WINDOW TRIM**

Flat black trim shall separate the roll-down glass of the crew doors and the fixed glass above it.

Y\_\_N\_\_

**PAINTED CAB ROOF**

The exterior surface of the cab roof shall be painted in compliance with the cab paint specifications detailed elsewhere in this specification document.

Y\_\_N\_\_

**FRONT STAINLESS STEEL INNER LINERS**

Semi-circular inner liners shall be provided in each front wheel housing. They shall be constructed of 304 stainless steel and shall be bolted in place so they may be removed if damaged. Self-tapping sheet metal screws are not acceptable. The outside edge of the inner liner shall be bolted along its entire length. The bottom edge of liner shall not have a formed reinforcement flange to avoid trapping dirt and debris.

Y\_\_N\_\_

**FRONT FENDERETTE**

Polished stainless steel fenderettes shall be installed in the front wheel openings. They shall be sufficiently wide to completely cover the outside rear tire and reduce wheel splash along the sides of the cab. They shall be installed with 1/4" hex head bolts (self-tapping sheet metal screws are not acceptable) and have a full width rubber welt placed between the fenderette and body wheel well opening flange. Outside edge of welting shall form a "V" bead between fender and cab side face to prevent moisture from entering. Inside edge shall also have a small raised bead. Outside edge of fenderette, at the wheel opening shall be rolled inward to eliminate a sharp edge and avoid injury when cleaning apparatus.

Y\_\_N\_\_

**FRONT AND REAR MUD FLAPS**



Heavy duty mud flaps with manufacturer's "script and flame logo" shall be provided at the rear of each front wheel and at the rear of the rear dual wheels. Front flaps shall be 15" wide and rear flaps shall be 24" wide. Mud flaps shall be made of 0.38" heavy duty rubber material to prevent "sailing".

Y\_\_N\_\_

**CAB MIRRORS WITH AUTOMATIC TEMPERATURE CONTROL**

Two (2) Lang Mekra 300 Series smooth chrome plated Aero style main and convex mirrors shall be installed, one (1) on each side of the vehicle. The main mirror shall be a four-way heated, remotely controlled adjustable 8" x 15" second surface chromed flat glass. The convex shall be a four-way adjustable 8" x 6" second surface chromed 400 mm radius glass.

The mirrors shall have a built-in temperature sensor that will automatically control the surface temperature of the mirror. An additional on/off switch is installed for mirror heat.

There shall be an integrated red dot LED turn signal incorporated into the mirror which shall flash as the main turn signal flashes. There shall also be an orange LED marker light in the rear face of the mirror.

Y\_\_N\_\_

**WINDSHIELD**

The windshield shall be of tinted automotive laminated safety plate glass with a curved two-piece design. The windshield shall have approximately 2900 square inches of visual area. Right and left hand windshield glass shall be symmetrical and interchangeable from side to side to minimize spare parts stock and expense. Windshield shall be installed and held in place by an extruded rubber molding with a bright finish, decorative, locking bead. Cab shall be finish painted prior to windshield glass being installed.

Y\_\_N\_\_

**WINDSHIELD WIPERS AND WASHERS**

One (1) wet arm operated windshield wiper shall be provided for each plate of windshield glass for accessibility and optimum windshield wiping surface areas. Wipers shall be two speed type with intermittent wiping feature. One (1) control switch shall be provided and located on the self-canceling directional switch for both wiper arms. The switch shall combine the on/off (automatic park position), two speed, intermittent and washer functions in one control. The turning switch shall activate the wipers and control speed, and pushing it shall operate the washers. The wiper arms shall park in a low, horizontal position to provide an unobstructed view when not in use.

Y\_\_N\_\_

**WINDSHIELD WASHER RESERVOIR**

A five (5) quart windshield washer fluid reservoir shall be provided. It shall be accessed in the officer's step well. A hinged aluminum tread plate door with small D-ring handle shall be provided for access. A visual inspection shall be possible without tilting the cab (NO EXCEPTIONS). The aluminum tread plate door shall be properly labeled.

Y\_\_N\_\_

**DOOR WINDOWS**

A retractable window with automotive type laminated safety glass shall be provided in all four (4) forward hinged cab doors. All glass shall be tinted. Glass shall slide in stainless steel side channels with cloth/fiber liners. Rubberized fiber seals shall be located at the bottom of the window opening to prevent water and debris from entering the interior of the door when the glass is up (or down). A seal shall be placed on both sides (interior and exterior) of the glass. The front door glass shall be 23.75" high x 25.75" wide upper and 27.50" wide lower. The rear door glass shall be 23.75" high x 30" wide. The door window openings shall be trimmed on the exterior side with a smooth, black, poly vinyl chloride

(PVC) molding

Electric power window regulator shall be manufactured by the Muncy Corporation and shall be the enclosed, sliding flexible shaft, gear type for ease of operation and reliability. The shaft shall enter a vinyl plastic protective sheath whenever it is exposed. A 12 volt electric motor with gear reduction box to slow driven gear rpm and increase power transmission shall be provided. Individual switches shall be provided so that the driver controls the left side forward door window, officer the right side and crew occupants the rear.

Y\_\_N\_\_

**DRIVER'S DOOR GLASS SWITCH**

An individual switch for the driver's electric door window shall be provided on the driver's dash. Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.

Y\_\_N\_\_

**OFFICER'S DOOR GLASS SWITCH**

An individual switch for the officer's electric door window shall be provided on the officer's dash. Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.

Y\_\_N\_\_

**CREW DOOR GLASS SWITCHES**

An individual switch for the crew electric door windows shall be provided on the crew doors.

Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.

Y\_\_N\_\_

**ADDITIONAL SWITCHES**

Three (3) additional switches shall be provided to allow driver to operate all power cab door windows.

Y\_\_N\_\_

**CREW CAB SIDE GLASS**

There shall be a side window on each side of the cab between the doors. They shall be tinted and be manufactured of automotive laminated safety glass. The curb side window shall measure 23" high x 12" wide. The street side window shall measure 23" high x 12" wide. They shall be installed and held in place by an extruded rubber molding with a chrome plated, decorative, locking bead. The cab shall be finish painted prior to window glass being installed.

Y\_\_N\_\_

**CAB TRIM**

Decorative molding is to be provided across the front and along both sides of the cab just below the windshield level. The molding shall be the automotive adhesive type made of poly vinyl chloride (PVC). It shall be 5/8" wide with chrome plated outer edges and a 5/16" textured black center strip.

Y\_\_N\_\_

**CAB DOOR HINGES**

All piano hinges on the exterior cab doors shall be mill finished.

Y\_\_N\_\_

**CAB HANDRAILS (SURFACE MOUNT) AND GRAB HANDLES**

Handrails shall be 1-1/4" diameter extruded aluminum, knurled, with a bright anodized finish.

All handrail stanchions shall be chrome plated. They shall be bolted to the body with 1/4" stainless steel hex head bolts. Stanchions shall have a rubberized gasket placed between them and the body surface they are mounted on. A drain hole shall be provided in each bottom stanchion.

**Handrails shall be installed as follows:**

Four (4) 24" handrails shall be installed on the side of the cab, one just to the rear of each cab door.

**Grab Handles shall be installed as follows:**

Two (2) 6" chrome grab handles shall be provided, one on the inside of each front cab door.

Two (2) 12" rubber covered grab handles shall be provided, one on the inside of each crew cab door.

Two (2) 12" rubber covered grab handles shall be provided, one on the driver's side and officer's side front A-pillar, above the door hinge, to assist in entry to the cab.

Two (2) 12" rubber covered grab handles shall be provided, one on each rear crew door hinged-pillar, on the hinged side of the door, to assist in entry to the cab.

Y\_\_N\_\_

**ADDITIONAL GRAB RAIL(S)**

Two (2) 8" knurled aluminum grab rail(s) shall be provided and installed on/in the cab.

Handrail(s) shall be located beneath windshields, one (1) each side.

Y\_\_N\_\_

**CRASH TEST**

The cab shall be certified for the following tests:

SAE J2420: Cab Over Engine (COE) Front Strength Evaluation - Dynamic Loading - Heavy Trucks

SAE J2422: Cab Roof Strength Evaluation - Quasi Static Loading - Heavy Trucks

ECE Regulation 29: Protection of Occupants of Cab in Commercial Vehicle

Performance Measure:

1. After undergoing each test, the cab of the vehicle shall exhibit a survival space accommodating a 50th percentile male ATD in the median position without contact between the manikin and non-resilient parts for all seating positions.
2. None of the doors shall open during the tests.
3. The cab attachments may be distorted or fractured, however, the cab shall remain attached to the vehicle frame in at least one attachment location.

Y\_\_N\_\_

**HELMET HOLDER - BODY**

The helmets shall be stored in the body in accordance with NFPA 1901 current regulations:

NFPA 14.1.8.4.1 A location for helmet storage shall be provided.

NFPA 14.1.8.4.2 If helmets are to be stored in the driving or crew compartment, the helmets shall be secured in compliance with 14.1.11.2.

Y\_\_N\_\_

**CAUTION LABELS**

Caution labels shall be posted in the cab so that they shall be visible from each seat position. The labels shall read: "Do Not Wear Helmets While Seated".

Y\_\_N\_\_

**HEADLINER**

The cab shall be provided with a removable headliner for ease of servicing the electrical wiring placed in the cab roof. The headliner shall consist of 3 layers of material. Next to the roof shall be a layer of acoustical insulation made of polyester and polypropylene fibers. The next layer is 1/4" thick Luan. Finally, there is a 1/4" thick layer of foam/perforated acoustical vinyl.

The headliner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance.

Y\_\_N\_\_

**BACK LINER**

The cab shall be provided with an 18 gauge brushed stainless steel removable back liner. The back liner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance.

Y\_\_N\_\_

**PAC TRAC TOOLBOARD**

One (1) Pac Trac #P/N 7000 series tool board shall be installed on the rear cab wall interior face, on the Driver's side. Tool board shall be mounted above the crew cab heater. Approximate dimensions shall be 50.00" high x 17.00" wide.

Y\_\_N\_\_

**FRONT CAB ENGINE ENCLOSURE**

The engine enclosure structure shall have a 1-1/4" thick inner lining, on the engine side, comprised of aluminized foil and foam/barrier composite for heat insulation. The tunnel cover shall have 1/2" decoupled foam lower and 1" decoupled foam upper covering, on the cab interior side, for noise insulation. The top forward portion of the hood shall have a full-width riser with a sloped face for the installation of the switch panel. The sloped panels shall be used for vehicle accessory controls. A minimum of 1" shall be provided between the right edge of the accelerator pedal and the side of the engine hood. A removable cover over the engine enclosure and insulation shall be coated with black LINE-X to act as an insulator for sound and engine temperature, as well as to provide an easy-to-clean work surface.

Y\_\_N\_\_

**ACCESSORY MOUNTING STRUCTURE**

The top portion of the engine enclosure shall have a stainless steel channel frame located between the engine tunnel structure and the cover to support the cover and facilitate mounting of accessories and equipment.

Y\_\_N\_\_

**CREW CAB ENGINE COMPARTMENT ACCESS DOOR**

An access door shall be provided at the rear of the engine enclosure for routine engine fluid checks. The access door shall be insulated from engine heat with aluminized foil/foam/barrier composite and sealed to prevent exhaust fumes from entering the crew cab.

Y\_\_N\_\_

**18" STEERING WHEEL WITH TILT/TELESCOPE**

A padded 18" steering wheel with center horn ring shall be provided. The upper steering column shall be of the tilt and telescopic type. A self-canceling directional switch with wiper control and headlight dimmer control shall be mounted on the steering column with an ICC four way flash switch. The self-canceling directional switch shall be easily removable and replaceable without removing the steering wheel or column assembly. The junction of the shaft and the cab floor shall be sealed to prevent air exchange between the cab interior and exterior.

Y\_\_N\_\_

**BLACK LINE-X FOR CAB DASH**

The cab dash shall be sprayed with black LINE-X having a high resistance to abrasion and tearing. A vinyl cloth glued or laminated in some manner to a metal backing surface shall not be acceptable.

The LINE-X shall absorb impact without surface damage. The LINE-X shall be resistant to gasoline, diesel fuel, paints, bleaches, organic solvents and other cleaning agents and chemicals. It shall include sound dampening and vibration elimination properties.

The LINE-X shall be solvent free and be environmentally safe to apply with no VOC or CFC hazards. Its surface shall have a non-glare, granular texture and be easily cleaned with common cleansing compounds.

Y\_\_N\_\_

**SUN VISORS**

Two (2) approximately 8" x 28" padded sun visors shall be provided, one on the driver's side and one on the officer's side. Visor shall be supported at both ends to prevent drooping.

Y\_\_N\_\_

**CUP HOLDER**

Four (4) cup holders with a black Line-X finish shall be installed in the cab. The location of the holders shall be determined at the Pre-Construction Conference.

Y\_\_N\_\_

**VEHICLE DIMENSION SIGN**

A sign shall be provided in the front cab area indicating the height of the completed apparatus in feet and inches, length of the completed apparatus in feet and inches, and the gross vehicle weight rating (GVWR) in tons.

Y\_\_N\_\_

**RACEWAY**

A cable raceway, 2.0" x 4.0" shall be provided between the seat riser compartment under the officer's seat and the officer's side toe kick area below the dash. The raceway will run on top of the floor next to the engine tunnel. The raceway shall be constructed of aluminum tread plate.

Y\_\_N\_\_

**DRIVER'S SEAT**

The driver's seat shall be an H.O. Bostrom Sierra Air-100 reclining high back seat with air suspension. This seat shall have 5" horizontal adjustment.

The driver's seat shall be held at NFPA regulated height by a 3CR12 stainless steel frame that measures approximately 18" wide x 5" high x 17" deep, front to back at the top and 13.5" deep, front to back at the bottom.

Y\_\_N\_\_

**OFFICER'S SEAT**

An H.O. Bostrom Tanker 450 SCBA seat shall be provided for the officer. This seat shall have 5" horizontal adjustment.

The officer's seat shall be held at NFPA regulated height by a 3CR12 stainless steel frame which creates an enclosed compartment. The compartment measures approximately 18" wide x 11" high x 18" deep, front to back at the top and 10" deep front to back at the bottom. Access to this compartment shall be through a front drop-down door, measuring approximately 8.5" high and 14.5" wide.

One (1) NFPA compliant H. O. Bostrom SecureAll™ universal SCBA bracket shall be installed in the seat(s).

Y\_\_N\_\_

**REAR SEATING**

The rear crew cab section shall contain two (2) outboard rear facing H. O. Bostrom Tanker 450 SCBA passenger seats. The seats shall be installed one (1) each side at the rear of the engine enclosure. The seating area shall allow maximum room for fire fighters in full turn out gear.

Two (2) NFPA compliant H. O. Bostrom SecureAll™ universal SCBA bracket shall be installed in the seat(s).

Y\_\_N\_\_

**REAR SEATING**

The rear crew cab section shall contain one (1) outboard forward facing seat on the right side. The forward facing seat shall be a fold-up jump seat installed on the rear wall of the cab. The seat cushion shall be made by H. O. Bostrom. The seating area shall allow maximum room for fire fighters in full turn out gear.

Y\_\_N\_\_

**SEAT BELT**

The driver's seat shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.

Y\_\_N\_\_

**SEAT BELT**

The officer's seat shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.

Y\_\_N\_\_

**SEAT BELTS**

The two (2) outboard, rear facing seat(s) shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belts shall be red in color.

Y\_\_N\_\_

**SEAT BELTS**

The one (1) outboard, forward facing seat(s) shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belts shall be red in color.

An IMMI ReadyReach shall be attached to each of the outboard forward facing seat belts. The ReadyReach positions the seat belt forward making the seat belt easier to reach.

Y\_\_N\_\_

**SEAT UPHOLSTERY**

Five (5) cab seats shall be upholstered in black H.O. Bostrom Durawear™ waterproof cloth fabric.

Y\_\_N\_\_

**INTERIOR DÉCOR**

The following components shall be black in color:

Headliner

Head bumper over crew doors

Back liner, if using padded acoustical material

Vinyl visors, if selecting vinyl

The following components shall always be black in color:

Floor matting and floor mat edging

Headliner trim

Back liner trim

Crew heater, complete assembly

Electrical panels

Plastic snap plugs for wire access holes

Door seals

Seat risers

Under seat compartments

Seat belt retractor cover.

Rubber covered grab handles

Map desk

Y\_\_N\_\_

**INTERIOR LINE-X DECOR**

The following items, with LINE-X finish, shall be black in color:

Engine cover and center dash, including engine access door and electrical access door

Driver and officer dashes

Overhead dash

Upper interior door panels

Lower door panels

All interior compartment exteriors

The map box shall have a black LINE-X finish.

Y\_\_N\_\_

**CAPACITY SIGN**

A sign visible to the driver, that states the number of personnel the vehicle is designed to carry, shall be provided.

Y\_\_N\_\_

**EMBROIDER CUSTOMER LOGO TO SEAT HEAD REST(S)**

A Waltham Fire Department supplied embroidery design shall be sewn into five (5) seat head rest(s) in place of the manufacturer's logo.

**HEATER/DEFROSTER/AIR CONDITIONING-FORWARD CAB**

A front cab heater / defroster / air conditioning unit shall be provided. The HVAC unit shall distribute filtered, heated or cooled, fresh and / or recirculated, air through ducting of the cab front dash panels.

Heating capacity shall be rated at 46,000 BTU minimum.

Cooling capacity shall be rated at 33,000 BTU minimum.

The HVAC unit shall be located in the cab RH firewall and have a variable speed 625 CFM blower assembly. The HVAC unit shall be designed for serviceability and be located behind a removable panel. Access to air intake filter, heater core, evaporator core, and fan assembly shall be provided without removing the HVAC housing from the installed location.

Intake air shall be filtered by a commercially available filter and can be mixed between fresh and recirculated for vent / defrost and heat / cool selections.

Output air can be distributed between the four (4) defroster vent located at the base of the windshield, four (4) rear facing dash vents, and two (2) lower rear facing vents.

Defrost function selection can provide heated or cooled output air, fresh or recirculated intake air, and utilizes the AC system for drying air to the windshield. Output air will be directed through six (6) vents. Four (4) fixed flow vents located at the base of the windshield positioned and designed to distribute the air up. Two (2) adjustable vents located, one (1) at the LH edge of the dash directed at the LH driver's door glass and one (1) at the RH edge of the RH passenger's door glass.

Vent function selection can provide heated or cooled output air, fresh or recirculated intake air. Output air shall be directed rearward through four (4) adjustable vents. Two (2) adjustable vents shall be located in the center dash panel with positioning optimized for LH driver and RH passenger air flow direction to the upper torso. Two (2) adjustable vents shall be located, one (1) each forward seating position, in the upper outboard area of each forward seating kick panel, below the dash.

The front HVAC unit shall utilize a dedicated condenser located on the forward cab roof. The condenser shall be a stacked type, low profile and feature two fans. All connections, hose and harness, shall be through weatherproof bulkheads. The condenser assembly shall include a white powder coated cover over the stacked condenser coils and a white painted protective cover over the Freon hoses, dryer, valves, switches and / or solenoids above the cab roof and connected to the condenser body. Condenser and cover mounting shall be made without perforating the cab roof skin for maximum resistance to water intrusion to the cab interior.

Y\_\_N\_\_

**MANUAL COOLANT SHUTOFF VALVE - INLET**

The forward cab heater inlet flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification.

Y\_\_N\_\_

**MANUAL COOLANT SHUTOFF VALVE - RETURN**

The forward cab heater return flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification.



Y\_\_N\_\_

**REAR HEAT ADDITION OUTBOARD REAR CREW CAB, 2 SPEED / MANUAL CONTROL**

Two (2) crew cab heaters shall be provided. The heater units shall provide filtered, engine coolant heated, air to the crew cab area through ducted enclosures.

Crew heating capacity shall be rated at 58,000 BTU minimum (2 x 29,000 BTU) and the combined heating capacity of the cab HVAC units shall be 104,000 BTU minimum.

The heater units shall have variable speed 350 CFM blower assemblies. The heater units shall be designed for serviceability and be located in the outboard position against the rear crew cab wall in vented and ducted enclosures. Access to air intake filters, heater cores, and fan assemblies shall be provided.

Each crew heater function shall feature one (1) control. One (1) lighted switch with three positions (OFF, LOW, HIGH).

Y\_\_N\_\_

**MANUAL COOLANT SHUTOFF VALVE - INLET**

The crew cab heater inlet flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification.

Y\_\_N\_\_

**MANUAL SHUTOFF VALVE - RETURN**

The crew cab heater return flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification.

Y\_\_N\_\_

**AIR CONDITIONING SYSTEM ADDITION - CREW CAB**

A crew cab air conditioning unit shall be provided on the cab ceiling, above the rear portion of the engine enclosure. The AC unit shall distribute cooled recirculated, air through six (6) outlets. The six air outlets include four (4) adjustable rear facing air diffusers and two (2) adjustable side outboard facing vents.

Cooling capacity of the crew AC evaporator unit shall be rated at 39,500 BTU minimum and the combined cooling capacity of the cab HVAC evaporator units shall be 72,500 BTU minimum.

The crew AC unit shall have a variable speed 577 CFM blower assembly. Intake air shall be filtered by a commercially available and serviceable filter. The AC unit shall feature independent fan speed and temperature controls. Evaporator condensate shall be evacuated by two independent drain hoses, each routed inside a single stainless pipe located beneath the AC unit, between the AC unit and the top of the engine enclosure. The two independent hoses route through the top of the engine enclosure cover, behind the engine block, and terminate outboard the LH chassis frame rail.

The crew AC unit shall utilize a dedicated condenser located on the, rear, crew cab roof. The condenser

shall be a stacked type, low profile and feature two fans. All connections, hose and harness, shall be through weatherproof bulkheads. The condenser assembly shall include a white powder coated cover over the stacked condenser coils and a white painted protective cover over Freon hoses, dryer, valves, switches and / or solenoids above the cab roof and connected to the condenser body. Condenser and cover mounting shall be made without perforating the cab roof skin for maximum resistance to water intrusion to the cab interior.

The air conditioning system, front and rear combined, shall exceed the performance standard of cooling the cab from an ambient temperature of 100 degrees Fahrenheit at 50% relative humidity to an average cab temperature of 75 degrees Fahrenheit in less than 30 minutes.

Y\_\_N\_\_

### **AUXILIARY FAN(S)**

Six (6) adjustable 7.5" auxiliary fan(s) shall be provided near the center portion of windshield with a two (2) speed control switch on the mounting pedestal.

Location for two (2) shall be one on each side of the center windshield post on the dash.

Location for two (2) shall be in the rear crew cab. Exact location to be determined at the PreConstruction.

Location for two (2) shall be in the body walk-through area. Exact location to be determined at the PreConstruction.

Y\_\_N\_\_

### **HVAC CONTROL - FORWARD CAB**

HVAC controls shall feature rotary switches, function labeling, backlighting, and have colored indicators. A single, lighted, AC engagement push switch shall be provided for engaging the AC system components as needed.

The HVAC panel shall have four (4) rotary control switches inline, from left to right, in the following order:

- Fan Speed (OFF, LOW, MEDIUM, HIGH)
- Water Temperature Blend Control (HEAT-COOL)
- Outlet Air Blend Control (DEFROST-VENT)
- Intake Air Blend Control (FRESH-RECIRC)

The HVAC panel shall have one (1) raised, "push to engage", switch that illuminates when the air conditioning is engaged. This switch shall be centrally located on the control panel, between the second and third rotary control switches, along the top edge of the control panel.

The HVAC control panel shall allow the operator to make selections or adjustments to any one of the four (4) selectors without resetting or disturbing the selections of other three (3) controls.

The HVAC control shall feature an override to engage the air conditioning system when the operator has selected 100% Defrost on the Outlet Air Blend Control.

Y\_\_N\_\_

### **MAP DESK**

A combination map box with writing desk shall be provided on the cab dash in front of the officer. The map box shall be a minimum of 10" wide x 15" long x 4" deep. An 11" x 20-1/2" writing desk shall be provided and equipped with spring clips to hold papers in place. Desk shall slope down towards the officer approximately 15 degrees. A tubular pencil holder with closed bottom end shall be welded to the right side of the writing surface. Desk shall be hinged at top to provide access to map box. Hinge shall be the piano type. Box shall be constructed of aluminum and be covered with black spatter finish. The top writing surface shall be "DA'd". A spring type latch shall hold the desk top in place.

Y\_\_N\_\_

**MAP BOX**

A map box shall be provided between the driver and officer. It shall be installed on the top of the engine hood. Box shall have six (6) slots spaced on 3.00 inch horizontal centers. Each slot shall be 14.00 inches wide and 8.00 inches deep. They shall slant at a 30 degree angle towards the rear of the truck.

Box shall be constructed of .125 inch thick smooth 5052 aluminum sheet metal with welded assembly. It shall be covered with black LINE-X.

Y\_\_N\_\_

**CRIBBING STORAGE**

A storage compartment shall be provided atop the crew cab roof aft of the air conditioning unit. The compartment shall be fabricated from 3/16" aluminum treadplate. Dimensions shall be 26.00" wide x 5.00" high x 90.00" long. A vertically hinged aluminum treadplate door shall be provided on each side. Doors shall have a single brake on all four sides for rigidity. Doors shall be secured with two rubber latches. Weather-stripping shall be provided for the doors. The compartment shall be secured to the roof utilizing 0.75" high stainless steel unistrut.

Y\_\_N\_\_

**GENERAL 12-VOLT ELECTRICAL WIRING REQUIREMENTS**  
**12-VOLT ELECTRICAL SYSTEM**

The apparatus shall be equipped with a heavy-duty 12-volt electrical system. All 12-volt electrical equipment installed by the apparatus manufacturer shall conform to modern automotive practices. All electrical wiring and components installed in the apparatus shall be suitable for use in severe duty emergency vehicle applications.

Y\_\_N\_\_

**GENERAL WIRING AND WIRE HARNESS CONSTRUCTION**

Unless otherwise specified by the component supplier, all insulated wire and cable shall conform to SAE J1127 *Low Voltage Battery Cable* type SGX or STX, or SAE J1128 *Low Voltage Primary Cable* type SXL, GXL, or TXL.

Circuit feeder wires shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for which the circuit is protected.

Conductor materials and stranding, other than copper, shall be permitted if all applicable requirements for physical, electrical, and environmental conditions are met as dictated by the end application.

The overall covering of conductors shall be moisture-resistant loom or braid that has a minimum continuous rating of 194°F (90°C) except where good engineering practice dictates special consideration for loom installations exposed to higher temperatures.

The overall covering of jacketed cables shall be moisture resistant and have a minimum continuous

temperature rating of 194°F (90°C) except where good engineering practice dictates special consideration for cable installations exposed to higher temperatures.

Y\_\_N\_\_

**CIRCUIT IDENTIFICATION**

All wiring shall be uniquely identified by a circuit number and color coding. The identification shall be referenced on a wiring diagram. Wires less than 8 AWG shall be permanently identified at least every 2.0 inches (50.8 mm) by a circuit and function code. Cables equal to or larger than 8 AWG and wires included in jacketed cables shall be permanently identified by circuit number at all terminations.

Y\_\_N\_\_

**WIRING CONNECTIONS**

All wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection. The wiring connections and terminations shall be installed in accordance with the device manufacturer's instructions. Secondary locks shall be utilized on all connectors that are secondary lock capable.

Exterior exposed wire connectors shall be environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Seal plugs shall be installed in all unused sealed connector cavities.

All ungrounded electrical terminals shall have covers or be in enclosures to protect against corrosion, excessive heat, excessive vibration, physical damage, liquid contaminants, dust, and other environmental factors.

Wiring splices shall be crimp-type, molded, or sonic weld type. Adhesive lined heat shrink tubing shall be used to seal and insulate splice joints.

Y\_\_N\_\_

**WIRE AND CABLE ROUTING**

Wiring routed through holes in sheet metal or castings shall have edges protected by an appropriately sized grommet.

Wiring shall be routed to avoid metal edges, screws, trim fasteners and abrasive surfaces. When such routings are not possible, protective devices (shields, caps, etc.) shall be used to protect the wires. When wires must cross a metal edge the edge shall be covered with a protective shield.

Wiring shall be routed to provide at least 3 inches (76.2 mm) clearance to moving parts, unless positively fastened or protected by a conduit.

Wire routings should avoid areas where temperatures exceed 180° F (82.2° C) and a minimum clearance of 6 inches (152.4 mm) shall be maintained from exhaust system components. Where compliance with this requirement is not possible, high temperature insulation and heat shields shall be utilized.

When wiring is routed between two members where relative motion can occur the wiring shall be secured to each member, with enough wire slack to allow flexing without damage to the wires.

Wiring to all circuit components (switches, relays, etc.) in exposed locations shall provide a drip loop to prevent moisture from being conducted into the device via the wire connection.

Routing wires into areas exposed to wheel wash shall be avoided if possible. When such routings cannot be avoided, adequate clipping or protective shields shall protect the wires from stone and ice damage.

Wiring shall be secured in its intended location with appropriately sized bolt-on clips and nylon wire ties.

Electrical components designed to be removed for maintenance shall include a sufficient length of wire to allow the component to be pulled away from the mounting area for inspection and service work.

Bulkhead type connectors or sealed fittings shall be used to prevent the entry of liquid contaminants into weather tight enclosures.

Y\_\_N\_\_

**SPARE WIRES**

Wiring harnesses from/to major power and signal distribution areas of the apparatus shall include spare wires for future expansion of the system.

Y\_\_N\_\_

**ELECTRICAL SYSTEM COMPONENTS**

Serviceable components shall be readily accessible. Switches, relays, terminals and connectors shall have a dc rating of 125% of the maximum current for which the circuit is protected.

A distributed power and signal system shall be utilized on the apparatus to minimize power supply voltage drops. Power and signal distribution areas in the cab shall be concentrated in five (5) areas.

A lower cab power and signal distribution center shall be located in the center forward portion of the cab "dash". It shall be hinged and opened by unlocking two (2) top mounted, double hinged, lift and pull latches. This area shall contain relays and circuit breakers installed in a logical and serviceable fashion.

An additional lower cab power and signal distribution center shall be located below the officer's dash behind the kick plate.

An upper power and signal distribution area shall be located in the forward portion of the cab ceiling, above the engine tunnel. Components in this area shall be permanently labeled and easily accessible by opening a hinged cover.

A power and signal distribution area shall be located in the pump module, if applicable. Components in this area shall be permanently labeled and easily accessible.

A power and signal distribution area shall be located on the front of the forward body compartments. Components in these areas shall be permanently labeled and easily accessible.

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

Y\_\_N\_\_

**CORROSION PROTECTION**

Externally exposed, non-plug type, electrical connections shall be given a hand applied or sprayed

application of an industrial standard insulation coating with a minimum rating of 2100 volts per mil thickness. Insulation shall protect the connection from water induced electrical corrosion and accidental short circuiting. Should the connection be loosened or removed during the manufacturing process another coating shall be applied after it has been refastened or replaced.

Y\_\_N\_\_

**BATTERY POWER BUSS**

All positive cables from the batteries shall be connected directly to a battery positive buss bar located as close to the batteries as practical. The alternator shall be wired directly to the battery positive buss bar through the ammeter shunt, if one is provided.

Y\_\_N\_\_

**ENGINE STARTER AND INTERLOCK CIRCUITS**

The starter solenoid(s) shall be connected directly to the battery positive buss bar. An interlock shall be provided to prevent the operator from engaging the starter when the engine is running.

Y\_\_N\_\_

**BATTERY GROUND BUSS AND SINGLE POINT GROUND SYSTEM**

All negative (ground) cables from the batteries shall be connected directly to a battery negative buss bar located as close to the batteries as practical. A 2/0 AWG cable shall connect the battery negative buss bar to the chassis frame. Appropriately sized ground feeder cables shall be utilized to provide a low impedance ground path to the negative buss bar for all electrical devices on the apparatus.

Y\_\_N\_\_

**APPARATUS GROUND BONDING**

A 2/0 AWG cable shall connect the battery negative buss bar to the chassis frame. The cab, pump enclosure (if furnished), and body structure shall be electrically bonded to the vehicle frame with two (2) 2 AWG braided copper grounding straps.

Y\_\_N\_\_

**EMI/RFI PROTECTION**

The apparatus electrical system and related devices shall have the ability to function in the severe electromagnetic environment typical of fire ground operations.

Y\_\_N\_\_

**EMI/RFI EMISSIONS**

State-of-the-art electrical system design and components shall be utilized to ensure the suppression of radiated and conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions that may cause communication and navigation radio-reception interference. The electrical system and related components shall comply with the applicable sections of J551/1 *Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles, Boats (up to 15 m), and Machines (16.6 Hz to 18 GHz)*

Y\_\_N\_\_

**EMI/RFI SUSCEPTIBILITY**

The apparatus electrical system shall incorporate immune circuit designs, filtering, shielding and twisted-pair wiring to control EMI/RFI susceptibility. Particular attention shall be given to harness and

cable routing to minimize the potential for conducted and radiated signal susceptibility.

Electrical / electronic equipment on the apparatus shall not be susceptible to radiated and conducted EMI/RFI emissions from on-board radio transmitter(s) and shall comply with the requirements of SAE J551-12 *Vehicle Electromagnetic Immunity--On-Board Transmitter Simulation*.

Y\_\_N\_\_

### **ELECTRICAL SYSTEM PERFORMANCE TESTING**

An operational test shall be conducted to ensure that all installed electrical equipment is properly connected and is in working order. The apparatus alternator shall be tested with the total continuous electrical load applied and engine running up to the engine manufacturer's governed speed for a minimum of 2 hours. Additionally, all warning lights shall be run continuously during the three (3) hour NFPA pump certification test (or at another time for not less than three (3) hours). Activation of the load management system (if furnished) shall be permitted during this test. An alarm sounded by excessive battery discharge, as detected by the low voltage warning system or a system voltage of less than 11.8 V dc at the battery for more than 120 seconds, shall be considered a test failure.

Y\_\_N\_\_

### **CAB DASH AND INSTRUMENTS FOR 2013 EMISSIONS ENGINE**

A non-glare instrument panel, custom designed to accommodate the appropriate functions, shall be provided. Illumination shall be provided for controls, switches, instruction plates, gauges, and instruments necessary for the operation of the apparatus. The cab dash shall be forward slanted, and constructed of aluminum.

A system shall be provided that interacts with the engine electronics and eliminates redundant senders and switches. The electronic engine gauges shall receive information on the SAE J1939 data link to improve reliability and gauge accuracy. Connectors shall be utilized for ease of service. The dial face shall be black with white lettering. The primary letters shall be in Imperial with the secondary, smaller letters in metric. The dial shall have international non-language symbols for the gauge function (except speedometer). Gauges shall have illumination with a monochrome LCD display located on the speedometer gauge. They shall also have a 250 degree dial sweep for greater definition of scale. SAE J1939 Faults and Warnings shall be displayed on the LED display.

Y\_\_N\_\_

### **DRIVER'S INSTRUMENTATION**

The following gauges shall be provided:

#### Main Gauges

- |                          |  |
|--------------------------|--|
| 3" Speedometer:          | 0-85 mph with built-in LCD display                         |
| Speedometer Mode Switch: | Allows operator to select menu items in the display screen |
| Speedometer Up Switch:   | Allows operator to scroll up through display menu items    |
| Speedometer Down Switch: | Allows operator to scroll down through display menu items  |
| 3" Tachometer:           | 0-4000 rpm   |

#### Satellite Gauges

- |                |   |
|----------------|---|
| 2" Fuel Level: | Empty – full with low level warning indicator |
| 2" Voltmeter:  | 10-16 VDC                                     |

2" Coolant Temperature:	100-240 Degrees Fahrenheit
2: Engine Oil Pressure:	0-80 psi
2" Transmission Oil Temp:	100-320 Degrees Fahrenheit
2" Front Air Pressure:	0-150 psi
2" Rear Air Pressure:	0-150 psi
2" DEF Level:	Empty – full with low level warning indicator

Y\_\_N\_\_

**DRIVER'S INDICATOR LIGHT MODULE**

The following indicators shall be mounted in a removable modular panel in front of the steering column. The indicators shall be identified with universal ISO 2575 symbols where applicable and visible to the driver while seated. All applicable indicators in the modular panel shall automatically illuminate for 1 second upon activation of the ignition switch to verify operation:

- Battery Switch "On" green indicator light
- Ignition Switch "On" indicator
- Check Transmission amber indicator light
- Check Engine amber indicator light
- Stop Engine (Engine Warning) red indicator light
- High Exhaust Temperature (HEST) amber indicator light (if applicable)
- Diesel Particulate Filter Regeneration (DPF) amber indicator light (if applicable)
- Wait-to-Start amber indicator light (if applicable)
- Malfunction Indicator Light (MIL) amber indicator light (if applicable)
- ABS warning amber indicator light
- ATC/ESC activated amber indicator light
- Spring (Parking) Brake "On" red indicator light
- High Beam "On" blue indicator light
- Low air pressure red indicator light
- Left Turn signal green indicator light
- Right Turn signal green indicator light
- General Warning red indicator light (if applicable)
- DEF Level Indicator Light

Y\_\_N\_\_

**AUDIBLE CAB ALARMS**

Audible alarms shall be provided in the cab to alert the operator of conditions that require attention. The alarm device(s) shall be audible in the driving compartment and feature an adjustable volume control.

An intermittent audible tone shall sound when the following conditions are present and the parking brake is disengaged:

- Active Hazard Warning –  
(Do Not Move Apparatus; Door Open, Tower Raised, Ladder Rack Down, etc.)
- Seat Belt Warning

A steady audible tone shall sound when the following conditions are present:

- Stop Engine (includes High Engine Temperature and Low Engine Oil Pressure)
- Low Voltage
- Engine Air Filter Restriction



Y\_\_N\_\_

**DRIVER'S AND OFFICER'S CONTROLS**

The following rocker style control switches shall be identified and accessible to the driver while seated. Switches shall include integral indicator lights (where applicable) to advise that the switch has been energized and identification labels shall be illuminated for night driving.

- Ignition switch with green indicator light
- Engine Start switch
- Headlight / Tail-Marker-ID light switch
- Instrument Panel Dimmer control rheostat

The following controls shall be stalk mounted on the steering column and identified and visible to the driver while seated:

- Turn Signal Control and 4-Way Hazard Warning switch
- High-beam headlight switch
- Windshield wiper control switch
- Windshield washer control switch

The following controls shall be identified and accessible to the driver while seated:

- Parking (Spring) Brake Control
- High Idle control switch
- Other controls (as defined elsewhere in this specification)

The following controls shall be identified and accessible to both the driver and officer while seated. Controls shall be identified and illuminated for night driving.

- HVAC control panel
- Other controls (as defined elsewhere in this specification)

Y\_\_N\_\_

**EMERGENCY & WORK LIGHT SWITCH PANEL - DRIVER'S SIDE**

All emergency light and work area lighting control switches shall be mounted in a removable panel located in the overhead position on the driver's side of the cab. The light switches shall be "rocker" type with an internal indicator light (where applicable) to show when the switch is energized. All switches shall be properly identified by an illuminated label for night driving.

A master warning light switch shall be provided for emergency lighting.

Y\_\_N\_\_

**DOOR AJAR/HAZARD INDICATOR LIGHT (DO NOT MOVE APPARATUS)**

A Whelen "T0" series 2" round red flashing LED light with chrome flange shall illuminate automatically whenever the apparatus parking brake is not fully engaged and any of the following conditions exist:

- Any passenger or equipment compartment door is open.
- Any ladder or equipment rack is not in the stowed position.
- Stabilizer system is not in its stowed position.

Powered light tower is extended.

Any other device permanently attached to the apparatus is open, extended, or deployed in a manner that is likely to cause damage to the apparatus if the apparatus is moved.

The hazard warning light shall be identified with a label that reads: "Do Not Move Apparatus When Light Is On." The light shall be located on the ceiling between the driver and the officer.

Y\_\_N\_\_

### **DIGITAL CLOCK**

A 12/24 hour real-time digital clock shall be identified and visible to both the driver and officer while seated.

Y\_\_N\_\_

### **ELECTRICAL WIRING REQUIREMENTS - INTELEX™ PLUS**

The apparatus shall be equipped with an INTELEX™ PLUS management system for control of the electrical system devices, where applicable.

Y\_\_N\_\_

### **CIRCUIT PROTECTION**

Circuit protection devices shall be utilized to protect each electrical circuit. All circuit protection devices shall be sized according to 125% of the anticipated load to prevent wire and component damage when subjected to extreme current overload.

Y\_\_N\_\_

### **SOLID STATE CIRCUIT PROTECTION**

Intelix power distribution modules shall utilize solid state output channels and feature fully protected high-side drivers (+12V) to protect wiring. High-side drivers shall provide overload protection, current limitation, transient protection, and replicate the function of an automatic reset circuit breaker. If output current exceeds the rated amperage, the output shall automatically turn off. After 30 seconds, the module shall attempt to re-energize the load. If the output is still overloaded, it shall remain off until the power is cycled. In the event of a communications loss with the vehicle's control module, all outputs not controlling a moving device, such as a ladder rack, shall remain in their previous state until communication is restored or the power is cycled.

Y\_\_N\_\_

### **NON-SOLID STATE CIRCUIT PROTECTION**

Circuit breakers shall be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258 unless operational requirements and/or safety concerns dictate Type-III manual reset type conforming to SAE J1625. Automotive-type fuses conforming to SAE J554, J1284, J1888 or J2077 shall be utilized when required to protect electronic equipment.

Y\_\_N\_\_

### **POWER CONTROL RELAYS AND SOLENOIDS**

Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the anticipated current load.

Y\_\_N\_\_

### **BUSSMANN MVEC RELAYS AND CIRCUIT PROTECTION**

Manufactured as a hardened and weather tight module, the mVEC is rated at 200 Amps. The mVEC is configured to provide various OEM circuit protection and switching functions, using industry standard fuses, relays and breakers, with the status and control of each circuit accessible through J1939 CAN

open messages. Each mVEC is rated at 200 Amps, with individual outputs rated up to 30 Amps. Waterproof to high pressure spraying (IP66 equivalent). The mVEC is designed and manufactured with robust features such as heavy-duty housing, silicon and Gortex gaskets, and protective conformal coated electronics, to operate in demanding vehicle environments such as those found in fire apparatus.

Y\_\_N\_\_

**INFORMATION CENTER II**

A color display capable of displaying graphical images as well as text messages shall be located on the cab dash. The main display page shall include the date and time. Additional information pages shall be provided for the seat belt status, warning indications, not stowed indications, and open doors.

Y\_\_N\_\_

**APPARATUS STATUS INDICATORS AND AUDIBLE ALARMS**

If a monitored "Not Stowed" or "Warning" condition is active, the corresponding status indicator shall flash. In addition to visual indicators, audible alarms shall sound when designated conditions activate the "Not Stowed" and "Warning" status indicators.

Y\_\_N\_\_

**WARNING INDICATOR**

A flashing red triangle symbol shall alert the vehicle occupants of an active "WARNING" condition. This is defined as a situation or status on the vehicle that is of high priority or "mission critical" nature. The flashing red triangle shall be displayed on the Information Center and dash gauge panel in front of the driver. The following are typical "Warning" (high priority) conditions:

HYDRAULIC FILTER	LOAD MANAGE	LOW AIR PSI
CAB NOT LOCKED	LOW VOLTAGE	
AIR RESTRICTION	ABS FAULT	

Y\_\_N\_\_

**NOT STOWED INDICATOR**

A flashing Not Stowed indicator shall alert the vehicle occupants of an active "Not Stowed" condition. This is defined as a situation or status on the vehicle that is not of high priority or "mission critical" nature, but requires attention before the vehicle is put in motion. The following are typical "Not Stowed" (not high priority) conditions:

AERIAL RAISED	DECK GUN RAISED	JACKS EXTENDED
---------------	-----------------	----------------

The following items are considered Not Stowed only when the parking brake is released.

LADDER UP	JACKS EXTENDED	Q2B TILTED
LIGHT TOWER UP	DECK GUN RAISED	DS TELE LIGHT UP
OUTRIGGERS	STEP DOWN	PS TELE LIGHT UP
DS HATCH OPEN	PS HATCH OPEN	

Y\_\_N\_\_

**AUDIBLE ALARMS**

The following conditions shall cause the audible alarm to sound "steady" (not an intermittent beep); signifying a "mission critical" condition exists that requires immediate attention.

STOP ENGINE	CAB NOT LATCHED	LOW VOLT
-------------	-----------------	----------

LOW AIR  
LOW COOLANT

ABS FAULT  
LOW OIL PRESSURE

Corresponding "Low Air", "Stop Engine" visual indicators shall be located in the dash gauge panel in front of the driver.

The following conditions shall cause a chime alarm to sound "intermittently" (i.e., beep), once the parking brake is released, signifying a condition exists that may become "mission critical" if not quickly addressed.

ANY LIGHT NOT STOWED  
ANY BODY DOOR OPEN  
ANY CAB OR CREW CAB DOOR OPEN

Y\_\_N\_\_

### **OPEN DOORS / DEPLOYED EQUIPMENT RACKS / EXTENDED STEPS**

When a cab or compartment door is open, a step is extended, or equipment (i.e., ladder) rack is deployed, the "DOORS" indicator shall flash. Pressing the corresponding button shall display an overhead graphical representation of the apparatus. This image depicts the open cab door(s), open compartment door(s), deployed equipment rack(s), and/or extended step(s). The chime alarm shall also sound when the parking brake is released.

Y\_\_N\_\_

### **AUTOMATED ELECTRICAL LOAD MANAGEMENT SYSTEM**

The apparatus shall be equipped with an automated load management system. The load management system shall monitor battery voltage and activate the engine high idle system (provided NFPA interlocks have been established) before disabling any electrical loads. If engine high idle is not available or activation does not result in sufficient battery system voltage, individual electrical loads shall be automatically and sequentially deactivated until voltage returns to an acceptable level. Loads shall be sequentially reactivated to avoid a sudden large voltage demand on the system. Electrical loads defined in NFPA 1901 as "minimum continuous" shall not be subject to automatic load management. Load prioritization shall be independently field programmable by authorized users.

If the load management system becomes active, the "LOAD MANAGE" indicator shall illuminate on the "Warnings" page of the INTELEX™ PLUS cab mounted display.

Y\_\_N\_\_

### **LOAD SEQUENCER**

A sequential switching device shall automatically energize the specified optical warning devices to minimize potentially damaging voltage fluctuations due to the sudden addition or removal of large current demands on the electrical system. Upon activation of the "EMERGENCY MASTER" warning switch and provided the individual optical warning device switches are also activated, the following loads shall be activated (or deactivated) in 0.5 second intervals:

Front Light Bar  
Side Light Bar (if applicable)  
Front and Rear Flashing Lights  
Side Warning  
Rear Beacons  
High Beam Headlight Flash

Y\_\_N\_\_

**VEHICLE DATA RECORDER AND SEAT MONITOR DISPLAY**

Fire Research series SBA300-A00 seat monitor display and vehicle data recorder kit shall be installed. The kit shall include a seat monitor display module, a vehicle data recorder, and cables.

The seat monitor display shall be programmable for up to thirteen (13) seats and have a seatbelt icon for each. An alarm silence button and LED indicators for power and data link status shall be located on the front of the seat monitor display.

The data recorder case shall be waterproof. It shall have inputs for monitored information from the vehicle J1939 CAN bus, independent sensors, seatbelt and seat occupied switches, outputs for audible alarms, and two-way FRC data link connectors.

The vehicle data recorder shall record the following data once per second and store it in a 48 hour loop:

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

The vehicle data recorder shall record the following data once per minute and have memory to store it for 100 engine hours:

- Maximum Vehicle Speed
- Maximum Acceleration
- Maximum Deceleration
- Maximum Engine Speed
- Maximum Engine Throttle Position
- ABS Event
- Seat Occupied with Seat Belt Unbuckled
- Master Optical Warning Device Switch
- Time
- Date

The oldest data shall be erased first when memory capacity is reached. All data shall be password protected and up loadable from the vehicle data recorder to a computer running FRC HAWK data management software. The HAWK software shall store, manage, provide graphic displays and produce formatted reports of the vehicle data recorder data.

Y\_\_N\_\_

**ELECTRICAL SYSTEM DIAGNOSTICS**

The apparatus shall feature on-board electrical system diagnostics and provision for off-board diagnostic service equipment.

Y\_\_N\_\_

**ON-BOARD DIAGNOSTICS**

On-board diagnostic indicators shall be provided to support rapid troubleshooting of the INTELEX™ PLUS based electrical power and signal system. The input and output status of each INTELEX™ PLUS system module shall be easily determined through easy to use display pages.

Switches shall be provided in the cab to allow the operator or service personnel to obtain On-Board diagnostic information from the ABS system and Engine Controller.

A troubleshooting guide shall be provided with the vehicle to assist with interpretation of the diagnostic signals.

Y\_\_N\_\_

**OFF-BOARD DIAGNOSTIC PROVISION**

An interface port shall be provided for service access to the INTELEX™ PLUS data bus. The diagnostic port shall be mounted inside the cab on the driver side in a location that is accessible from the ground.

Y\_\_N\_\_

**POWER STUDS (OVERHEAD SWITCH PANEL)**

Four (4) studs shall be provided in the overhead switch panel to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud, switched ignition stud and grounding stud.

Y\_\_N\_\_

**POWER STUDS (CAB DASH)**

Four (4) studs shall be provided in the cab dash area to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud, switched ignition stud and grounding stud.

Y\_\_N\_\_

**WIRING FOR MOBILE RADIO**

Wiring (12 vdc and ground) shall be provided in the cab dash for a mobile radio that shall be installed by the Waltham Fire Department post-delivery. Wiring shall be provided for two (2) external speakers, one (1) mounted in the front cab and one (1) mounted on the ceiling of the rear crew cab. Speakers shall be supplied & installed by the Waltham Fire Department post-delivery.

A cab dash panel shall be laser cut for a Waltham Fire Department installed mobile radio. Mobile radio make and model shall be provided at the PreConstruction meeting.

Y\_\_N\_\_

**DASH LAYOUT**

The Manufacturer shall furnish a dash layout drawing to the *Waltham Fire Department* for their review and approval. The drawing shall detail the locations for installation of radios, sirens, light switches, gauges, etc. Due to the cab dash configuration and electrical wiring design, the components shall have designated locations that each will fit. The *Waltham Fire Department* shall review and approve the layout during the Engineering Conference.

**12 VOLT PLUG(S) AND RECEPTACLE(S)**

Y\_\_N\_\_

Two (2) 12 volt power plug receptacle(s) and cover(s) shall be provided on the officer's side of the dash and shall be wired battery direct. The plug and receptacle are made from corrosion resistant marine grade materials. The plug locks into the receptacle providing a positive moisture proof connection.

**12 VOLT PLUG(S) AND RECEPTACLE(S)**

Y\_\_N\_\_

Two (2) 12 volt power plug receptacle(s) and cover(s) shall be provided and shall be wired battery direct. The plug and receptacle are made from corrosion resistant marine grade materials. The plug locks into the receptacle providing a positive moisture proof connection.

**OUTLET BOX**

Y\_\_N\_\_

A fabricated 0.090" aluminum enclosed box that follows the contour of the engine tunnel shall be provided aft of the officer's seat on the side of the engine tunnel. It shall be covered with LINE-X to match the color of the engine tunnel. This outlet box shall be capable of holding two (2) 12 volt power points and one (1) 120 volt receptacle. (The power points and receptacle are not included in this cost.)

**USB CHARGER PORT**

Y\_\_N\_\_

Two (2) Kussmaul Electronics model 091-219 USB Dual Charger Ports shall be located on the dash as follows:  
Location shall be TBD @ PreCon.

**TWO-WAY RADIO ANTENNA MOUNT(S)**

Y\_\_N\_\_

Two (2) universal antenna mount(s), model MATM, with 17 feet of coax cable and weatherproof cap shall be provided for the two-way radio equipment. The mount(s) shall be installed in the cab roof. The cable shall be routed to the lower dash, or as requested by the customer, with any excess cable secured in an accessible location. All installation locations and cable routing shall be confirmed with the customer during the pre-construction process.

Desired location(s) shall be behind main roof lightbar, one (1) each side.

**RADIO ANTENNA**

Y\_\_N\_\_

One (1) radio antenna(s) supplied by the fire department shall be mounted on the cab roof with wiring run to the radio box.

Desired location(s) shall be centered behind the main roof lightbar.

**BATTERIES**

Y\_\_N\_\_

Six (6) Champion 12V Group 31 950 CCA batteries shall be installed three each side of the cab under the rear entrance way.

Heavy-duty battery cables shall be provided to maximize power available to the electrical system.

**JUMPER CABLE STUDS**

Y\_\_N\_\_

A pair of jumper cable studs with color coded covers shall be provided under the driver's side battery storage area.

**BATTERY AND ELECTRICAL COMPONENT STORAGE AREAS**

Y\_\_N\_\_

Battery and electrical component storage areas shall be constructed of stainless steel with structural steel tubes at the corner mounting points and shall be located one (1) each side mounted on the vehicle frame. They shall be well ventilated and enclosed to protect against road splash and debris. Suitable provisions shall be provided for drainage.

The batteries shall be held firmly in place by providing a full frame type top clamp which encloses the battery set on all four (4) upper corner sides. The one piece clamp shall be fabricated of 3/4" angles and be held in place by two (2) "J" shaped clamping bolts. Battery inspection shall be provided through latched drop down doors in the lower step area of the crew cab. Battery replacement shall be possible without tilting the cab (No Exceptions).

Y\_\_N\_\_

**BATTERY MATS**

The batteries shall be installed on a non-corrosive Turtle Tile mat.

Y\_\_N\_\_

**DISCONNECT SWITCH - BLUE SEA 9003**

A master load disconnect switch shall be provided between the battery positive buss bar and the remainder of the switched battery electrical loads on the apparatus. A green "battery on" pilot light that is visible from the driver's position shall be provided.

One (1) single battery system switch mounted near the driver's side front entrance in a location so it may be turned off by a person standing on the ground outside the vehicle. It shall have the capacity to handle 350 amps of continuous power.

Y\_\_N\_\_

**AIR COMPRESSOR/BATTERY CHARGER**

A Kussmaul model #52-21-1100 "Pump Plus 1200" combination air compressor/battery charger shall be installed. The 12 volt compressor will automatically replace air lost due to leakage in the brake system without any interference to engine mounted air compressor functions. The 12 volt automatic battery charger shall maintain a single battery bank with charging capabilities to 40 amps maximum output. A remotely located bar graph display shall indicate the state of charge of the batteries whenever the system is connected to 120 VAC.

A selector switch shall be provided on the charger to operate the compressor either as a DC compressor or as an AC compressor. The switch shall be placed in the A. C. position.

It shall be located on the floor behind the driver's seat.

Y\_\_N\_\_

**BATTERY CHARGER COVER**

A smooth aluminum cover shall be provided over the battery charger. The outside finish shall match the cab interior finish.



Y\_\_N\_\_

**AUTO EJECT PLUG**

A Kussmaul 20 Amp, 120 VAC "Super Auto Eject" shoreline power connector shall be provided for the battery charger. The shoreline power connector shall be provided with a spring loaded cover to prevent water from entering when the shoreline is not connected. A label shall be permanently affixed at the power inlet that indicates the line voltage in volts and the current rating in amps.

Y\_\_N\_\_

**UPPER RAISED BEZEL SURROUNDS, WITH PANELS**

A custom raised and chrome plated bezel shall be installed on the front face of the cab, on each side of the front grille. Housed within each bezel shall be a removable panel, painted job color. The removable panel shall provide service access to the forward side, firewall mounted electrical connections and wiring harness.

Y\_\_N\_\_

**HEADLIGHTS**

Two (2) Sylvania Silverstar H4656ST high/low beam bulbs and two (2) Sylvania Silverstar H4651ST low beam only bulbs shall be mounted on the front cab face to the left and right of the engine cooling intake grille. The headlights shall be quad type, rectangular halogen with bright finished trim rings and bezels. The low beam headlights shall be located at the outer position.

Y\_\_N\_\_

**DAYTIME RUNNING LIGHTS**

One set of the dual headlights, one each side, shall illuminate continuously in the dim mode at 80% of candela capacity while the unit is running.

Y\_\_N\_\_

**FRONT DIRECTIONAL DUAL LIGHT BEZEL**

The front directional lights shall be mounted in a chrome plated dual light bezel located on each side of the cab front face. The dual light bezel shall match the headlight housing.

Y\_\_N\_\_

**FRONT DIRECTIONAL LIGHTS**

There shall be one (1) Whelen 600 Series model 60A00TAR LED amber arrow directional signal light installed on each side of the cab front face. The light lens shall have an amber arrow shape with black background and shall be provided with a "flash" pattern; a "sweep" pattern shall not be allowed.

Y\_\_N\_\_

**LIGHTS**

Exterior cab lighting shall meet or exceed Federal Department of Transportation, Federal Motor Vehicle Safety Standards and any National Fire Protection Association requirements in effect at the time of proposal.

Five (5) pedestal mount Truck-Lite model 10 Beehive, amber LED type clearance and identification lights with chrome mounts shall be installed across the top leading edge of the cab roof.

A Techniq S34 amber LED marker light shall be recess mounted in a rubber sealing grommet placed in the lower side of the front cowl, on each side of the cab. The light body shall be urethane filled to ensure

against moisture intrusion. These cowl mounted lights shall have 100,000 hour life and shall carry a manufacturer's 10 year warranty.

Seven (7) Techniq S34 red LED marker and clearance lights shall be installed at the rear of the body. The three light identification cluster shall be surface mounted on the rear step vertical flange. Two lights shall be placed at each lower rear body corner, facing the side. Two lights shall be placed in the upper rear body corners, facing the rear.

Y\_\_N\_\_

**TURN/MARKER LIGHTS**

One (1) Truck-Lite model 60117Y turn/marker light shall be provided and installed on the rear fender panel below the forward air bottle compartment on each side of the vehicle. The lights shall have an amber polycarbonate lens and highly polished stainless steel mounting flange or bezel.

Y\_\_N\_\_

**REAR MARKER LIGHTS**

A Britax long stemmed "LED" dual faced #427 marker light shall be placed at each rear corner of the body. The front lens shall be amber; the rear lens shall be red.

Y\_\_N\_\_

**LICENSE PLATE LED LIGHT & BRACKET**

A steel license plate bracket, painted black, shall be installed on the rear of the vehicle. Mounted on the license plate bracket shall be a chrome light bracket containing a 12 volt LED lamp that shall illuminate the license plate.

Location shall be rear of apparatus above the tail light cluster on Driver's side.

Y\_\_N\_\_

**D.O.T. REFLECTORS**

Reflectors shall be placed on the cab and body as required by Federal standards. An amber reflector, Signal Stat, model 32ADB, shall be placed on each side of the cab. Four (4) Signal Stat model 32DB red reflectors shall be located on the rear face and sides of the body. The reflectors shall be rectangular in shape.

Y\_\_N\_\_

**SIDE DIRECTIONAL LIGHTS**

Britax model #L428, short rubber side LED directional lights shall be provided in addition to the front turn signals. One (1) light shall be mounted just above the front fender on each side of the cab. Lamp shall have an amber plastic lens at front and a red lens facing rear.

Y\_\_N\_\_

**BRAKE/TURN/BACKUP/WARNING LIGHTS CONFIGURATION**

The brake, turn, backup and warning lights shall be located at the rear of the apparatus. Each light shall be mounted horizontally in a vertical configuration, one light atop the other.

The order of lights shall be as follows:

- Top: Brake
- Second from top: Turn Signal
- Third from top: Back Up
- Bottom: Warning

Y\_\_N\_\_

**BRAKE/TAIL LIGHTS**

Two (2) Whelen series 600 LED red brake/tail lights, model 60BTT, shall be mounted at the rear of the apparatus, one on each side. All brakes lights shall be shall be programmed for "steady burn" operation in compliance with FMVSS No. 108.

Y\_\_N\_\_

**TURN SIGNAL LIGHTS**

Two (2) Whelen series 600 LED amber arrow turn lights, model 60A00TAR, shall be mounted at the rear of the apparatus, one on each side. They shall be provided with a "flash" pattern; a "sweep" pattern shall not be allowed.

Y\_\_N\_\_

**BACK UP LIGHTS**

Two (2) Whelen series 600 maximum intensity clear LED back up lights, model 60C00WCR, shall be mounted at the rear of the apparatus, one on each side.

Y\_\_N\_\_

**BEZELS**

Three (3) pair of Whelen #6EFlange chrome plated bezels shall be provided for the 600 series rear stop, turn, and backup lights.

Y\_\_N\_\_

**LIGHT ACTIVATION**

The cab ground and step lights shall be activated with the cab door open switch.

The step and ground lights on the body shall be activated with the parking brake in conjunction with the marker lights.

Y\_\_N\_\_

**CAB STEP LIGHTS**

Four (4) Whelen model TOCACCCR, LED step lights shall be provided, one (1) at each cab entrance door.

Y\_\_N\_\_

**BODY STEP LIGHTS**

Two (2) TecNiq Eon, LED horizontal step lights with a polished stainless steel flange shall be surface mounted, one (1) on each side of the step area to illuminate the step.

**GROUND LIGHTS**

Y\_\_N\_\_

Four (4) weatherproof TecNiq #T410 LED ground lights shall be provided underneath the cab, per NFPA requirements.

**GROUND LIGHTS**

Y\_\_N\_\_

Two (2) weatherproof TecNiq #T410 LED ground lights shall be provided underneath the body rear step, per NFPA requirements.

**GROUND LIGHTS**

Y\_\_N\_\_

In addition to the standard, NFPA required ground lights, one (1) weatherproof TecNiq #T410 LED ground lights shall be provided underneath the vehicle.  
Location of the additional TecNiq #T410 LED ground lights shall be beneath the compartment ahead of the rear wheels, one (1) each side.

Y\_\_N\_\_

**ENGINE COMPARTMENT WORK LIGHT**

One (1) Truck-Lite 4094SW engine compartment work light with integral switch shall be provided. The light shall illuminate the fluid dip sticks and coolant overflow reservoir.

Y\_\_N\_\_

**PARKING LIGHTS**

Two (2) TecNiq #E960 LED, side mounted, surface mounted, parking lights shall be provided. The lights shall have a stainless steel housing. They shall be installed one each side of body in the rear wheel well area. Light mounting fixture shall be designed so that light is angled to shine out to the rear and down towards the ground. They shall be switched on from the driver's position in the cab.

Y\_\_N\_\_

**INTERIOR CAB DOME LIGHTS**

Four (4) Weldon 8080 series red/clear LED lights with push button shall be mounted in the cab ceiling. Two (2) in front (driver & officer) and two (2) in the crew cab. All lights shall be controlled by a switch by the lens and shall have a black bezel.

Y\_\_N\_\_

**AUTOMATIC DOOR SWITCHES**

Automatic door switches shall be provided for the cab dome lights.

The white dome light activates with the automatic door switch.

Y\_\_N\_\_

**MAP LIGHT**

A Sunnex model HS761-00 pivot and swivel map light with on/off switch, shall be located hanging from the overhead in Zone 7 within reach of the officer.

Y\_\_N\_\_

**HAND LIGHTS**

Four (4) Streamlight Fire Vulcan® LED model 44451 rechargeable hand light(s) with quick release shoulder strap(s) shall be provided. The hand light shall be orange in color and feature a C4 LED

primary bulb and two(2) blue LED taillights. The momentary toggle switch has 8 different modes of operation. A 12 volt DC direct wire charging rack shall be installed and wired to vehicle electrical system.

Location of hand light charger/holders shall be: TBD @ PreConstruction

Y\_\_N\_\_

**EXTERIOR COMPARTMENT LIGHTS - (2) LED STRIP(S)**

Eight (8) exterior compartment(s) shall have a ROM LED lighting strip installed on both sides of the door. The lighting strips shall be mounted vertically along both sides of the door framing in all specified body compartments. The LED lights shall be mounted in an anodized aluminum track. A switch, installed in the door frame, shall be used to activate the lights.

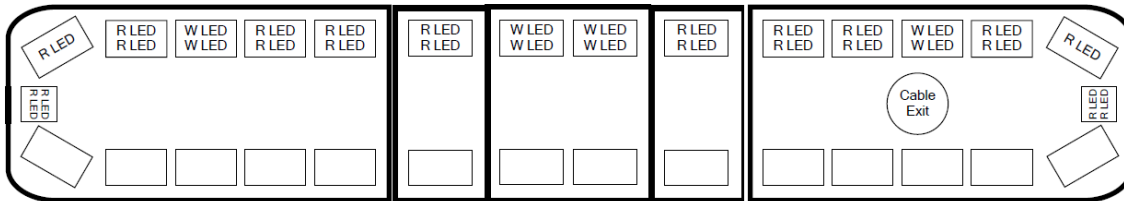
Y\_\_N\_\_

**LIGHTBAR**

A Whelen model 72" Freedom™ IV Series Super-LED® lightbar shall be provided on the cab roof. The lightbar shall match the attached configuration.

Lens color shall be clear.

*Configuration*



Y\_\_N\_\_

**RESCUE UPPER WARNING (B, D)**

Two (2) Whelen model 90RR5F\*R red, LED warning lights with chrome plated flanges shall be installed, one on the upper rear corner of each side of the body to meet upper B and D zone lighting requirements. The flash pattern of the lights shall be Triple Flash, also known as Comet Flash. The lens color shall be the same as the LED color.

Y\_\_N\_\_

**RESCUE UPPER C WARNING**

One (1) Whelen model 90RR5F\*R red, LED warning light with chrome plated flanges shall be installed on the upper right side corner of the rear of the body to meet upper C zone lighting requirements.

One (1) Whelen model 90BB5F\*R blue, LED warning light with chrome plated flanges shall be installed on the upper left side corner of the rear of the body to meet upper C zone lighting requirements.

The flash pattern of the lights shall be Triple Flash, also known as Comet Flash.

The lens color shall be the same as the LED color.

Y\_\_N\_\_

**WARNING LIGHTS**

Ten (10) Whelen model 60R02F\*R red linear Super-LED® warning light(s) with chrome plated flange(s) shall be installed on the apparatus. The flash pattern of the light(s) shall be Triple Flash, also

known as Comet Flash.  
The lens color shall be the same as the LED color.

Y\_\_N\_\_

**PERIMETER WARING LIGHT LOCATIONS**

Zone A Upper:

One (1) Whelen front light bar

Zone A lower:

One (1) Whelen 60R02F\*R warning light inboard of turn signals, one (1) each side.

Zone B/D lower:

Two (2) Whelen 60R02F\*R warning lights on side of bumper, (1) each side.  
Two (2) Whelen 60R02F\*R warning lights on side of ca, one (1) each side.  
Two (2) Whelen 60R02F\*R warning lights on body fender, one (1) each side.

Zone B/D Upper:

Four (4) Whelen 90RR5F\*R warning lights on upper side of body, one (1) fore and one (1) aft each side.

Zone C upper:

One (1) Whelen 90BB5F\*R warning light on upper left rear of body.  
One (1) Whelen 90RR5F\*R warning light on upper right rear of body.

Zone C lower:

Two (2) Whelen 60R02F\*R warning lights below the backup lights

Y\_\_N\_\_

**AUDIBLE WARNING DEVICES**

One (1) automotive electric horn controlled by the steering wheel horn button shall be provided.

Y\_\_N\_\_

**BACKUP ALARM**

One (1) Preco Model LDA-50 backup alarm shall be provided and activated when the vehicle transmission is placed in reverse. Alarm output shall be a minimum of 97 DBA.

Y\_\_N\_\_

**DUAL AIR HORNS**

Two (2) Grover 1510 chrome air horns shall be furnished. A pressure protection valve shall be installed in-line to prevent loss of all air from the vehicle air brake system.

Air horns shall be located one pair on the right side of the bumper.

Y\_\_N\_\_

**AIR HORN DUAL LANYARD**

The air horn(s) shall be activated by two lanyard pull cords, one for the officer and one for the driver, terminating into one control valve, located between the driver and officer.

Y\_\_N\_\_

**WHELEN SIREN**

A Whelen model 295SLSC1 electronic siren shall be provided in the cab dash. The siren has a selectable output of 100 or 200 Watts. The microphone shall be removable. The location of the Mic Clip shall be determined at the Pre-Construction Conference.

Y\_\_N\_\_

**SIREN SPEAKER(S)**

One (1) Federal Signal Model ES100 compact 100 watt speaker(s) shall be provided and recess mounted in the front bumper. Opening in the bumper for the speaker shall be covered with a manufacturer's logo.

One (1) speaker shall be located in the center of the bumper.

Y\_\_N\_\_

**SIREN/HORN SELECTOR SWITCH**

There shall be a three (3) position selector switch that shall allow the driver to switch activation of the automotive horn (air or electric) to the vehicle electric mechanical siren or electronic siren. The switch shall allow the standard steering wheel button to sound either the horn or the sirens.

Y\_\_N\_\_

**MECHANICAL SIREN**

A Federal Signal Model Q2B® siren with chrome plated housing shall be recessed mounted in the front bumper extension with front and vane grille exposed. There shall be an electric brake control installed in the cab, at the driver's switch panel, properly labeled.

Mounting location shall be on the left side of the bumper, notched out and flush.

Y\_\_N\_\_

**MECHANICAL Q2B® FOOTSWITCH**

Two (2) Linemaster® Model 491 momentary foot operated switch(es) to activate the mechanical Q2B® siren shall be installed on the toe board of the cab floor.

The foot switch shall be located on both the officer and driver's side, by the feet.

Y\_\_N\_\_

**ADDITIONAL Q2B® BRAKE ROCKER SWITCH**

An additional siren brake rocker switch shall be provided to allow easy access for the officer.

Y\_\_N\_\_

**STAINLESS STEEL BODY CONSTRUCTION**

The body and compartments shall be constructed of heavy duty 3CR12 stainless steel. The body shall be welded on external or hidden surfaces wherever possible to insure a clean compartment interior look.

Compartments shall be the "sweep out" design with the floor higher than the door sill. The compartment floors shall be a minimum of 2.5 mm 3CR12 stainless steel. All compartment seams shall be caulked with gray adhesive/sealant. Door frames (hinged doors style) shall be fabricated by flanging the door opening edges inward 1.88" and bending out again .75" to form an angle. False bulkheads shall be provided on the inside of the side/rear compartments to cover and protect all electrical components which provides a clean interior for equipment mounting. Panels shall be removable. Each compartment shall be rated for 500# at the floor (evenly distributed in the compartment). For loads exceeding 500# or concentrated loads, consult the factory for options.

The top of the body shall be covered with slip resistant tread plate and shall be adequately reinforced to walk on.

Extruded aluminum drip molding with a bright anodized finish shall provide drip protection for the side body compartment doors (Lap doors only - Roll doors include drip molding). The forward face of the rescue body shall be covered with bright aluminum tread plate overlay from the bottom of the body to the top of the body compartments. The rear body panels shall be finish painted job color. All body components covered with aluminum tread plate overlays shall be coated with an anti-corrosion compound prior to installation. All tread plate shall be secured with threaded fasteners.

Fender compartments shall be integral with the body side compartment. There shall be no sharp objects protruding into the wheel well area that could cause injury while cleaning or doing other maintenance in this area.

Y\_\_N\_\_

### **BODY MOUNTING SUBSTRUCTURE**

The body shall be built over a stainless steel sub frame that is flexible mounted under the front body section. The back portion of the body (the portion extended behind the chassis frame) shall be supported by an under slung support assembly that is bolted directly to the chassis frame. The rear support shall be constructed of formed plate and structural angle in a welded assembly.

Y\_\_N\_\_

### **LEFT SIDE EXTERIOR COMPARTMENTS**

The full height left hand side panel at 221.00" long by 70.00" high shall be made of 3CR12 stainless steel. This panel consists of two (2) full height compartments ahead of the rear wheels, one (1) full height compartment behind the rear wheels, and one (1) upper compartment above the rear wheels. All compartments shall be full depth rescue style. All compartments shall have roll up doors.

Compartment L1 shall be a full height compartment at the front of the body next to the cab, and shall have a doorframe to doorframe dimension of 47.50" wide x 63.75" high. The clear door opening shall be 45.00" wide x 57.50" high. The usable compartment space shall be 50.25" wide x 57.50" high x 28.50" deep. The area behind the door roll shall be 50.25" wide x 8.75" high x 16" deep. This compartment shall have an aluminum shutter type roll up door.

Compartment L2 shall be a full height compartment, ahead of the rear wheels, and shall have a doorframe to doorframe dimension of 47.50" wide x 63.75" high. The clear door opening shall be 45.00" wide x 57.50" high. The usable compartment space for the area under the roll shall be 47.50" wide x 57.50" high x 28.50" deep and the area behind the door roll shall be 47.50" wide x 8.75" high x 16.00" deep. This compartment shall have an aluminum shutter type roll up door.

Compartment L3 above the rear wheels shall have a doorframe to doorframe dimension of 58.00" wide x 30.50" high. The clear door opening shall be 56.50" wide x 25.25" high. The usable compartment space



under the roll shall be 63.38" wide x 26.25" high x 28.50" deep. The usable compartment space behind the roll shall be 63.38" wide x 7.00" high x 16.00" deep. This compartment shall have an aluminum shutter type roll up door.

Compartment L4 shall be behind the rear wheels and shall have a doorframe to doorframe dimension of 53.00" wide x 63.75" high. The clear door opening shall be 50.50" wide x 57.50" high. The usable compartment space for the area under the roll shall be 53.00" wide x 57.50" high x 28.50" deep and the area behind the door roll shall be 53.00" wide x 8.75" high x 16.00" deep. This compartment shall have an aluminum shutter type roll up door.

Y\_\_N\_\_

### **RIGHT SIDE EXTERIOR COMPARTMENTS**

The full height right hand side panel at 221.00" long by 70.00" high shall be made of 3CR12 stainless steel. This panel consists of two (2) full height compartments ahead of the rear wheels, one (1) full height compartment behind the rear wheels, and one (1) upper compartment above the rear wheels. All compartments shall be full depth rescue style. All compartments shall have roll up doors.

Compartment R1 shall be a full height compartment at the front of the body next to the cab and shall have a doorframe to doorframe dimension of 47.50" wide x 63.75" high. The clear door opening shall be 45.00" wide x 44.75" high. The usable compartment space shall be 50.25" wide x 50.50" high x 28.50" deep. The area behind the door roll shall be 50.25" wide x 8.75" high x 16" deep. The area behind the door roll shall be 50.25" wide x 8.75" high x 76" deep. This compartment shall have an aluminum shutter type roll up door. (Note: The usable height of this compartment has been adjusted to provide body clearance around engine exhaust system)

Compartment R2 shall be a full height compartment, ahead of the rear wheels, and shall have a doorframe to doorframe dimension of 47.50" wide x 63.75" high. The clear door opening shall be 45.00" wide x 57.50" high. The usable compartment space for the area under the roll shall be 47.50" wide x 50.50" high x 28.50" deep and the area behind the door roll shall be 47.50" wide x 8.75" high x 16.00" deep. This compartment shall have an aluminum shutter type roll up door. . (Note: The usable height of this compartment has been adjusted to provide body clearance around engine exhaust system)

Compartment R3 above the rear wheels shall have a doorframe to doorframe dimension of 58.00" wide x 30.50" high. The clear door opening shall be 56.50" wide x 25.25" high. The usable compartment space under the roll shall be 63.38" wide x 26.25" high x 28.50" deep. The usable compartment space behind the roll shall be 63.38" wide x 7.00" high x 16.00" deep. This compartment shall have an aluminum shutter type roll up door.

Compartment R4 shall be behind the rear wheels and shall have a doorframe to doorframe dimension of 53.00" wide x 63.75" high. The clear door opening shall be 50.50" wide x 57.50" high. The usable compartment space for the area under the roll shall be 53.00" wide x 57.50" high x 28.50" deep and the area behind the door roll shall be 53.00" wide x 8.75" high x 16.00" deep. This compartment shall have an aluminum shutter type roll up door.

Y\_\_N\_\_

### **VENTS**

Compartment vents shall be provided to meet the requirements of NFPA 1901, current edition.

Y\_\_N\_\_

### **REAR STAINLESS STEEL INNER LINERS**

Full semi-circular inner liners shall be provided in each wheel housing. They shall be constructed of 304 stainless steel and shall be bolted in place so they may be removed if damaged. Self-tapping sheet metal

screws are not acceptable. The bottom edge of liner shall be reinforced along its full length, however, it shall not have a formed reinforcement flange to avoid trapping dirt and debris.

Y\_\_N\_\_

**REAR FENDERETTE**

Polished stainless steel fenderettes shall be installed on the rear wheel openings. The fenders shall be wide enough to completely cover the outside rear tire and reduce wheel splash up the sides of the body. They shall be installed with 1/4" hex head bolts, self-tapping sheet metal screws are not acceptable. A full width rubber welt shall be placed between the fenderette and body wheel well opening flange. The outside edge of the welting shall form a "V" bead between the fender and the body side face to prevent moisture from entering. The inside edge shall also have a small raised bead. The outside edge of fenderette, at the wheel opening, shall be rolled inward to eliminate any sharp edges and avoid injury when cleaning the apparatus.

Y\_\_N\_\_

**REAR FENDER PANELS**

Painted 3CR12 stainless steel fender panels shall be provided on the outer face of each fender area. The panels shall be painted to match the job color.

Y\_\_N\_\_

**ROLL-UP COMPARTMENT DOORS**

The side compartment doors shall be R.O.M./Robinson aluminum shutter roll-up type doors (made in the U.S.A.) with an anodized finish. A magnetic door ajar and compartment light system designed within the door to conceal moving parts and prevent parts exposure in the compartment shall be provided. Slats shall be double-wall box frame extrusion and must be anodized to eliminate oxidation and rusting. Exterior surface shall be flat and interior surface to be concave to help loose equipment from jamming the door. The latch system shall be a full width, one piece, lift bar, enabling operation with one hand. The manufacturer's standard door frame design may be altered or modified to accommodate the roll-up doors.

Y\_\_N\_\_

**PAINT ROLL-UP DOOR(S) JOB COLOR**

The slats on eight (8) roll-up door(s) shall be painted the same color as the apparatus. The door frames shall not be painted; they shall remain a satin finish.

Specific terms and conditions of the warranty are as provided by the door manufacturer.

Y\_\_N\_\_

**REMOVABLE PROTECTIVE SHIELD(S)**

A removable protective shield shall be provided and installed in the upper portion of eight (8) compartment(s) to protect the roll-up door when in the open position. The shield shall be fabricated of 18 gauge brushed stainless steel.

Y\_\_N\_\_

**WARRANTY**

The R.O.M. Roll-Up Shutter shall be warrantied for manufacturing defects for a period of 7 years from the date of purchase. See attached warranty for specifics.

Y\_\_N\_\_

**BODY DOORS**

All exterior compartment doors on the main body shall be roll-up.

Y\_\_N\_\_

**FINISH – BODY SIDE COMPARTMENT INTERIOR(S)**

Eight (8) body side compartment interior(s) shall be finished with gray Zolatone type paint following the Zolatone Coat application process.

Y\_\_N\_\_

**FINISH – BODY SIDE COMPARTMENT INTERIOR(S)**

Eight (8) body side compartment interior(s) shall be clear coated following the Zolatone Clear Coat application process in the same components that received a Zolatone application.

Y\_\_N\_\_

**RESCUE INTERIOR COMPARTMENT AREA**

The interior area over the side compartments shall be 27.75” deep x 32.00” high. The top of the side compartment provides a work area. This work area is divided into four work zones that shall be filled with options as specified.

Y\_\_N\_\_

**INTERIOR WALKWAY FLOOR**

The center walkway shall be approximately 40” wide and have an overall height of 78.50”. The subfloor shall be 3/4” fiberglass reinforced high density polyurethane rigidly attached to a stainless steel sub-frame. The floor shall consist of non-slip tread plate and extend up the sides of the walkway 4” to from a protective kick panel. Aluminum diamond plate shall extend from the top of the side compartments down the vertical face and overlap the 4” protective kick panel.

Y\_\_N\_\_

**CEILING AND UPPER WALLS**

The upper exterior walls and ceiling cavities shall be insulated with 2” thick rigid foam insulation and covered with aluminum tread plate.

Y\_\_N\_\_

**REAR SINGLE DOOR**

A single rear door shall be installed on the rear of the rescue body. The door opening mounting surface shall be 28.50” wide x 77.75” high. The door shall incorporate a full-length/ full height stainless steel hinge and a gas prop door stop mechanism. The keyed door paddle latches shall be shall meet Federal Motor Vehicle Safety Standards for passenger carrying vehicles.

The rear entranceway shall be covered with aluminum tread plate at the top and down both sides. There shall be a total of three (3) steps to access the body interior. The third or top step is actually the interior floor. The inside of the door panel shall be finished in aluminum tread plate with an angled handrail mounted to the inside of the door, angled to the rear, to assist when entering. At the bottom of the door window shall be an 8" chrome plated grab handle to assist with closing the door.

One (1) 21" x 30" window shall be installed in the rear door. The window shall be equipped with a sliding glass and screen.

Y\_\_N\_\_

**CAB TO BODY WALK THROUGH**

A walk through door opening measuring 32" wide x 67.50" high shall be provided from the back of the cab through the front of the rescue body. This opening shall be sealed from the outside elements by a flexible bellows made from high abrasion polyester. This seal shall have welded mounting plates each end and bolt to both the body and cab. It shall be able to accommodate a minimum of 1 1/2" of side movement at the top.

Y\_\_N\_\_

**DOOR - CAB TO BODY WALK THROUGH**

A sliding 'pocket door' shall be provided in the body for the cab to body walk-through separating the body from the cab. The door shall be latching. The door shall be tied into the tell-tale alarm system. The door shall have a window.

Y\_\_N\_\_

**TAILBOARD**

The tailboard shall be 8" deep from the rear edge to the body face and shall run the full width of the body (100" wide). The tailboard surface shall be 3/16" thick aluminum tread plate with 2-1/2" deep flanges on the front, rear, and side edges. It shall be installed over a heavy-duty steel framework to prevent the tailboard from bending and flexing. There shall be a 1/2" gap between the tailboard and the body to prevent moisture from being trapped. Rear outside corners shall have a 5"x 45 degree miter.

Y\_\_N\_\_

**COUNTERTOP(S)**

Eight (8) zone(s) over the side compartment(s) shall be overlaid with brush finished stainless steel.

Y\_\_N\_\_

**UPPER CABINET(S)**

Eight (8) interior cabinet(s) shall be provided in the zones specified. The dividing walls shall be 2.25" thick x 32.00" tall x 27.00" deep and be capable of concealing recessed lights, receptacles, and wiring. The interior side wall finish shall be aluminum tread plate and have provisions for an optional shelf.

Y\_\_N\_\_

**CABINET LIGHT(S) - LED STRIP(S)**

Eight (8) cabinet(s) shall have a ROM LED lighting strip installed. The full height lighting strip shall be mounted vertically along the right side of the door framing (standing outside, facing the inside of the cabinet) in all specified body compartments. The LED lights shall be mounted in an anodized aluminum track. A manual switch, installed in the cabinet, shall be used to activate light.

Y\_\_N\_\_

**STOKES LITTER & PIKE POLE STORAGE**

A storage compartment for one (1) Junkin JSA-200 plastic litter and two (2) 6 ft pike poles shall be provided in the body interior walkway. It shall be fabricated from 3/16" smooth aluminum. It shall have a vertically hinged door with a lift & turn latch. The litter and pike poles shall be removable from the

rear of the apparatus. The litter shall be stored on its side. The compartment shall be located on the Driver's side of the walkway.

The compartment shall have a DA'd finish on the exterior. The inside of the compartment shall have a mill finish.

Padding shall be provided atop the compartment. Padding shall be covered with black Dura-Wear material. The intent of the padding is to provide protection of cold water rescue suits during donning and doffing. **No personnel will be allowed to ride in the body while the apparatus is in motion.**

Y\_\_N\_\_

**BODY INTERIOR CEILING LIGHTS**

There shall be three (3) TecNiq Orion 6" white LED lights spaced evenly over the body interior walkway. All the lights shall be activated by a switch at the door. Each light shall have a chrome trim ring. Each light shall be rated for 50,000 hours and have a 10 year limited warranty.

Y\_\_N\_\_

**BODY INTERIOR LIGHTS**

One (1) TecNiq Orion 6" white LED lights with chrome trim rings shall be installed on the interior of the body. Each light shall be rated for 50,000 hours and have a 10 year limited warranty.

Y\_\_N\_\_

**120 VOLT SHORELINE POWERED RECEPTACLE(S) IN BODY INTERIOR**

Two (2) 120-volt, 20 amp, 3-wire receptacle(s) shall be provided in the walk in body interior, in accordance with NFPA guidelines. A brushed stainless steel cover plate shall be provided to protect the receptacle. The receptacle shall be powered by the shore power inlet and labeled accordingly.

Y\_\_N\_\_

**COMPARTMENT DOOR SILL PROTECTOR(S)**

A brushed stainless steel sill protector, approximately .50" wide, shall be provided on eight (8) body compartment door sill(s) to protect the painted finish.

Y\_\_N\_\_

**DRI-DEK®**

Forty (40) black Dri-Dek® mat(s) shall be provided and installed on body compartment floors and/or in shelves/trays as specified.

Y\_\_N\_\_

**COMPARTMENT DIVIDER(S)**

Three (3) vertical compartment divider(s) shall be installed in the body compartments. Partition(s) shall be constructed of the same material as the body, (0.125" for aluminum, 2.5 mm for stainless steel) and shall be the full height (allowance shall be made for ceiling light) and depth of the compartment. They shall be bolted in place so they may be removed if desired.

**ADJUSTABLE SHELF OR SHELVES**

Y\_\_N\_\_

Twenty (20) adjustable shelf or shelves (with open corners) made from 3/16" smooth aluminum sheet metal shall be provided in the body compartment(s). Each shelf shall be supported by four (4) stainless steel angles bolted to Aluma-Strut tracks.

**FINISH - ADJUSTABLE SHELF (OR SHELVES)**

Y\_\_N\_\_

Twenty (20) adjustable shelf (or shelves) shall have a mill finish on the outside edge of the shelf.

**ROLL OUT TRAY(S)**

Y\_\_N\_\_

Six (6) roll out tray(s) constructed of 0.188" aluminum shall be provided in the body compartment(s). Each tray shall have edges on all four sides for added strength and be mounted on heavy duty rollers able to support a 500 lbs. load. Corners shall be open. Trays shall extend 70% of the slide length and shall be bolted to the compartment floor.

Six (6) Trays shall have SlideMaster HSL 2 Rail spring locks.

**FINISH - ROLL OUT TRAY(S)**

Y\_\_N\_\_

Six (6) roll out tray(s) shall have a mill finish applied to the outside edge of the tray.

**ROLL OUT DROP DOWN TRAY(S)**

Y\_\_N\_\_

Six (6) roll out drop down tray(s) constructed of 0.188" smooth aluminum shall be provided in the body compartment(s). Each tray shall have edges on all four sides for added strength and be mounted on heavy duty rollers able to support a 250 lbs. load. Corners shall be open. Each tray shall be vertically adjustable on Aluma-Strut attached to the sides of the compartment.

Six (6) Trays shall have SlideMaster HSL 2 Rail spring locks.

**FINISH - DROP DOWN ROLL OUT TRAY(S)**

Y\_\_N\_\_

Six (6) drop down roll out tray(s) shall have a mill finish applied to the outside edge of the tray.

**PAC TRAC**

Y\_\_N\_\_

Pac Trac assemblies consisting of extruded aluminum tool mounting tracks and "Z" shaped mounting brackets shall be located on the back wall of four (4) compartment(s). Pac Trac shall be 25.88" in height and as wide as the compartment door opening (maximum of minus 2.5"). Pac Trac in the full height compartments shall be located in the upper portion only.

**ADJUSTABLE ALUMINUM SLIDE-OUT TOOLBOARD(S)**

Y\_\_N\_\_

Four (4) heavy duty adjustable aluminum slide-out tool board(s) shall be provided. The full height, full depth vertically mounted tool board(s) shall be fabricated of 3/16" smooth aluminum. A hand hold cut-out shall be provided at the center of the tool board. Full extension slides shall be provided at both top

and bottom of the tool board(s) along with a locking mechanism to hold tool board(s) securely in place.

Y\_\_N\_\_

**AIR BOTTLE COMPARTMENTS**

There shall be four (4) enclosures to accommodate six (6) air bottles. Two (2) oval double air bottle compartments shall be located, one (1) each side, in front of the rear axle. Two (2) single round air bottle compartments shall be located, one (1) each side, behind the rear axle. The compartments shall be fabricated of high impact polyethylene material. They shall be a minimum of 26.00" usable depth, with an 8.00" inside diameter. The double compartments shall have a single wide opening and a raised nylon center divider to prevent the bottles from rolling together.

Y\_\_N\_\_

**AIR BOTTLE COMPARTMENT DOOR**

The compartment doors shall be constructed of 12 gauge brushed stainless steel secured by a full length stainless steel hinge and a push button lever latch.

Y\_\_N\_\_

**RUB RAIL – BODY SIDES**

Bright aluminum polished C-channel rub rails shall be provided along the lower portion of the body, beneath the compartment doors, on each side to prevent damage to the body and finish. The C-channel shall be mounted so the flat side of the channel is against the body and the legs of the channel protrude outward. The rub rails shall be a minimum of 2.25" wide x 1.25" deep, and shall be mounted on rubber supports. The rub rails shall have a 1.25" x 1.25" chamfer at the front and rear of the rail. The rails shall protrude 1.50" from the face of the body.

Y\_\_N\_\_

**ROOFTOP ROPE RESCUE ANCHORS**

Six (6) rope rescue anchor eyes shall be provided. Four (4) shall be located on the side rooftop approximately 96 inches apart equidistant from the rear wheel well mounted winch receivers, two (2) each side. Two (2) shall be located on the rear rooftop approximately 96 inches apart equidistant from the rear winch/trailer receiver.

The purpose of the anchors is for them to be utilized during rope rescue operations. Each anchor shall be designed, engineered and positioned to allow a 9,000 lbs no yield condition with a straight horizontal pull. A label reading '600 lbs straight pull 15:1 safety factor' shall be affixed adjacent to each anchor.

Y\_\_N\_\_

**ONAN PROTEC 15KW PTO GENERATOR**

An Onan 15 kW, w/voltage regulator, 1 phase, two bearing generator shall be provided and installed. The unit shall include an 1800 rpm input shaft. The unit shall be equipped with a voltage regulator. The generator system shall be monitored by an Onan generator meter panel. The generator system shall be driven by a PTO unit mounted on transmission. The unit shall be controlled by the PTO generator controls on the driver console. A high temperature visual indicator and audible alarm shall be provided and installed.

Y\_\_N\_\_

**GENERATOR/INVERTER TEST AND CERTIFICATION**

The generator/inverter shall be third party tested at the manufacturer's facility and shall conform to NFPA requirements and standards. Copies of all tests shall be provided with the delivery documentation.

Y\_\_N\_\_

**ONAN GENERATOR WARRANTY**

The Cummins Onan generator shall have a 5 year / 1000 hour limited warranty from the manufacturer.

Y\_\_N\_\_

**BREAKER BOX**

A twenty (20) place Square D brand, or approved equal, gray colored circuit breaker box shall be provided and installed in the front upper left hand side compartment. Manual reset circuit breakers, matching the rated output of each specific outlet or device shall be provided. All power supply assembly conductors, including neutral and grounding conductors from the line voltage power source to the circuit breaker box shall have an equivalent amperage rating and shall be sized to carry not less than 115 percent of the amperage of the nameplate current rating of the power source. Power supply conductors shall be run in nonmetallic liquid tight flexible conduit or type SO/SEO cord with a WA suffix. Conduit shall have a temperature range of -67°F (-55°C) to 221°F (105°C). Wiring from the circuit breaker box to the individual outlets and devices shall be sized in accordance with NFPA 70, *National Electrical Code* requirements. Branch circuit wiring conductors shall be run in (1) metallic or nonmetallic liquid tight flexible conduit rated for use in a temperature range of -67°F (-55°C) to 221°F (105°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C) or (2) Type SOW, SOOW, SEOW, or SEOOW flexible cord, rated at 600 volts and at temperatures not less than 194°F (90°C). A power source specification label shall be permanently attached to the apparatus near the operators control panel.

The door of the breaker box shall have a side hinge.

Y\_\_N\_\_

**RECEPTACLE(S)**

One (1) 240 volt outlet(s) shall be provided. Wiring shall be 10/3 with twist-lock receptacle(s).

Y\_\_N\_\_

**120 VOLT GENERATOR POWERED RECEPTACLE IN BODY COMPARTMENT(S)**

A 120 volt, 20 amp, 3-wire receptacle shall be provided inside two (2) body compartment(s) in accordance with NFPA guidelines. A brushed stainless steel cover plate shall be provided to protect the receptacle. The receptacle shall be powered by the on-board generator and labeled accordingly.

Y\_\_N\_\_

**120 VOLT SHORELINE POWERED RECEPTACLE IN BODY COMPARTMENT(S)**

A 120-volt, 20 amp, 3-wire receptacle shall be provided inside two (2) body compartment(s) in accordance with NFPA guidelines. A brushed stainless steel cover plate shall be provided to protect the receptacle. The receptacle shall be powered by the shorepower inlet and labeled accordingly.

Y\_\_N\_\_

**CORD REEL(S)**

Two (2) Hannay Model ECR1618-17-18 power rewind cord reel(s) for live electric cable shall be provided. The reel(s) shall be 12 volt electric rewind and be equipped with an electrical collector ring with a minimum #10 gauge, 3-conductor wiring. Capacity of each reel shall be a minimum of 200 feet 10/3 gauge or 250 feet of 12/3 gauge electric cable.



Motor speed shall be 36 rpm (95 sec to rewind 100 ft)

The cord reel shall be installed on the ceiling of compartment forward of the rear wheels, one (1) each side.

Y\_\_N\_\_

**HOSE ROLLER ASSEMBLY**

Cable reel shall be equipped with a captive roller assembly mounted directly on reel frame. It shall be supplied by Hannay and have a 4-way roller assembly with stainless steel rollers mounted in a stamped steel housing.

Y\_\_N\_\_

**CABLE STOP**

A molded plastic spherical type stop shall be provided near the end of the cable. It shall prevent damage to the electrical plug or connection when the reel is rewound. Stop shall be drilled for the correct cable size. It shall be a two piece design that clamps over the cable by tightening two bolts. Bolts shall be recessed into the ball to keep them from damaging the roller assembly when it is fully retracted.

Y\_\_N\_\_

**CORD REEL CABLE(S)**

Two (2) 200 foot length(s) of 10/3 type SO electric cable shall be provided and installed on the cord reel.

Y\_\_N\_\_

**TWIST-LOCK FEMALE PLUG(S) ON CORD REEL CABLE**

Two (2) Hubbell model HBL2313SW 120V/20A heavy duty twist-lock female plug(s) with watertight safety-shroud and Insulgrip® connector body shall be provided. The plug(s) shall be installed on the working end of the cord reel cable(s).

Y\_\_N\_\_

**ELECTRICAL JUNCTION BOX**

An Akron Brass 4-receptacle junction box shall be provided for distribution of electrical power on the fire ground. The box shall be constructed of aluminum and shall be completely powder coated in high visibility yellow with gray hinged protective receptacle covers and the full length carry handle. Internally lighted faceplates shall provide sufficient light to make connections and alert the crew that the box is in "power-on" status. The junction box shall have dimensions of 9.25" long x 5.5" wide x 8.5" high. The box shall be equipped with a 12-inch pigtail with a wire mesh cord grip and a L5-20 connection.

A total of four (4) single receptacles shall be provided; two (2) NEMA L5-20R twist-lock and two (2) NEMA 5-20R household, straight blade. Each receptacle shall be rated for 20 amps at 125 Volts.

A mounting box, with brushed stainless finish, shall be provided for the junction box.

Y\_\_N\_\_

**CAB FRONT BROW MOUNT SCENE LIGHT(S)**

Two (2) FRC model 807 mount(s) shall be installed on the cab front brow.

The SPA807 mount shall be on the left and right sides of the cab front brow.

Two (2) FRC "Spectra" SPA100-Q15, 12 volt, 13.0 amp, 15,000 lumen LED light head(s) shall be

provided. The lamp head shall have sixty (60) ultra-bright white LEDs, 48 for flood lighting and 12 to provide a spot light beam pattern. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head shall be no more than 5-3/8" high by 14" wide by 3-3/4" deep and have a heat resistant handle.

One (1) 12 volt light(s) shall be switched at the cab dash and a second location with a 3-way momentary switch.

The second location for the switch shall be the Officer's side upper dash.

Y\_\_N\_\_

**LIGHT HEAD AND BRACKETS FINISH**

Two (2) FRC light head(s) and light mounting bracket(s) shall have a white powder coat finish.

Y\_\_N\_\_

**CAB SIDE BROW LAMP MOUNTS**

Two (2) FRC model SPA850 mounts shall be installed on the cab side brows, one on each side.

Two (2) FRC "Spectra" SPA100-Q15, 12 volt, 13.0 amp, 15,000 lumen LED light head(s) shall be provided. The lamp head shall have sixty (60) ultra-bright white LEDs, 48 for flood lighting and 12 to provide a spot light beam pattern. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head shall be no more than 5-3/8" high by 14" wide by 3-3/4" deep and have a heat resistant handle.

Two (2) 12 volt light(s) shall be switched at the cab dash and a second location with a 3-way momentary switch.

The second location for the switch shall be the Officer's side upper dash.

Y\_\_N\_\_

**LIGHT HEAD AND BRACKETS FINISH**

Two (2) FRC light head(s) and light mounting bracket(s) shall have a white powder coat finish.

Y\_\_N\_\_

**LED SURFACE MOUNT SCENE LIGHT**

Four (4) Fire Research Spectra Max LED Scene Light model SPA260-K20 surface mount lights shall be installed. The light shall be mounted with four (4) screws to a flat surface and require a 4 3/4" high by 6 3/8" wide cutout for the electronics box. It shall be no more than 6" high by 14 1/2" wide and have a profile of less than 1 3/4" beyond the mounting surface. Wiring shall extend from the electronics box at the rear of the lamphead.

The lamphead shall have sixty (60) ultra-bright white LEDs, 48 for flood lighting and 12 to provide a spot light beam pattern. It shall operate at 120 volts AC, draw 1.4 amps, and generate 20,000 lumens of light. The lamphead shall have a unique lens that directs flood lighting onto the work area and focuses

the spot light beam into the distance. The lamphead shall be powder coated. The LED scene light shall be for fire service use.

Location of lights shall be: On the upper portion of the body, two (2) each side, one (1) forward and one (1) aft.

Two (2) 120 volt light(s) shall be switched at the cab dash and a second location with a 3-way momentary switch.

One (1) set of switches shall control the Driver's side body recessed mounted 120vac FRC Spectra lights.

One (1) set of switches shall control the Officer's side body recessed mounted 120vac FRC Spectra lights.

The second location for the switches shall be the Officer's side upper dash.

Y\_\_N\_\_

### **BODY REAR SURFACE MOUNT SCENE LIGHT(S)**

Two (2) surface light mount(s) for Fire Research Spectra 900 lamp head(s) shall be installed on the rear of the body. Body rear surface mount shall be located upper portion of the rear body face, just below the Whelen 900 Series warning lights, one (1) each side.

Two (2) FRC "Spectra" SPA900-Q65, 12 volt, 6.0 amp, 4,600 lumen LED light head(s) shall be provided. The lamp head shall have twenty-four (24) ultra-bright white LEDs. The lamp head shall be 6-3/4" high by 9" wide and have a profile of less than 1-3/4" beyond the mounting surface. The lamp head housing shall be aluminum with a chrome colored bezel.

One (1) 12 volt light(s) shall be switched at the cab dash.

Y\_\_N\_\_

### **LED SURFACE MOUNT SCENE LIGHT**

Two (2) Fire Research Spectra Max LED Scene Light model SPA260-K20 surface mount lights shall be installed. The light shall be mounted with four (4) screws to a flat surface and require a 4 3/4" high by 6 3/8" wide cutout for the electronics box. It shall be no more than 6" high by 14 1/2" wide and have a profile of less than 1 3/4" beyond the mounting surface. Wiring shall extend from the electronics box at the rear of the lamphead.

The lamphead shall have sixty (60) ultra-bright white LEDs, 48 for flood lighting and 12 to provide a spot light beam pattern. It shall operate at 120 volts AC, draw 1.4 amps, and generate 20,000 lumens of light. The lamphead shall have a unique lens that directs flood lighting onto the work area and focuses the spot light beam into the distance. The lamphead shall be powder coated. The LED scene light shall be for fire service use.

Location of lights shall be: On the upper portion of the rear of the body, one (1) each side.

One (1) 120 volt rear floodlight(s) shall be switched at the cab dash and a second location with a 3-way momentary switch.

The second location for the switches shall be the Officer's side upper dash.

Y\_\_N\_\_

**HYDRAULIC HOSE REEL**

Two (2) Hannay Model EF2220-17-18 electric rewind reel shall be provided. The hose reel shall be designed to allow operation of a hydraulic tool away from the power unit and rescue vehicle. The reel shall have polished stainless steel discs and sprockets with a chrome frame. The reel drum and frame shall be constructed of heavy gauge steel. Bearings shall be self-aligning. The hose reel shall be powered by a 12 volt DC electric motor with a chain and sprocket drive for efficient deployment. The reel shall be equipped with push-button control #90030 in a position where the operator can safely observe the rewinding operation.

The reels shall be equipped with 4-way "C" Rollers, and a HS-35 hose stop.

The hydraulic hose reels shall be located on the ceiling of the compartment just aft of the rear axle, one (1) each side.

Y\_\_N\_\_

**HYDRAULIC RESCUE HOSE**

The reels shall be equipped with (100) feet of Holmatro CORE Technology™ hydraulic hose to supply pressurized fluid to a tool and return fluid back to the power unit reservoir. The lines shall be constructed of thermoplastic with a Kevlar reinforcement and have a maximum working pressure of 10,500 psi. Both inner and outer lines shall have a 4:1 safety factor.

The hose shall include CORE Technology™ couplings on one (1) end to attach to the hydraulic tool and the other end shall connect directly to the hose reel.

Hose reel motor speed shall be 36 rpm (95 sec to rewind 100 ft).

Holmatro CORE Technology™ hose shall be blue & orange.

Y\_\_N\_\_

**FRONT BUMPER MOUNTED HOLMATRO CORE TECHNOLOGY CONNECTIONS**

Two (2) Holmatro Core Technology hydraulic rescue tool connections shall be run from the compartment just aft of the cab on the Officer's side to the front bumper on the Officer's side.

Exact placement shall be determined at the Pre-Construction.

Y\_\_N\_\_

**LITTLE GIANT LADDER SYSTEM(S)**

One (1) Little Giant Type 1A, model 17 aluminum ladder system(s) shall be provided.

Little Giant ladder shall be located in the compartment aft of the rear wheels on the Driver's side.

Y\_\_N\_\_

**PARTITION**

A vertical partition shall be installed in the full height-full depth compartment to provide a separate area for storage of a Little Giant ladder.

The model of Little Giant ladder is: Model 17 (1A)

The partition shall be located in the compartment aft of the rear wheels on the Driver's side.

Y\_\_N\_\_

**PIKE POLE(S)**

Two (2) 6 ft. Fire Hooks Unlimited APH-6 pike pole(s) shall be provided. The handles shall be solid fiberglass with stainless steel wear sleeves. There shall be a gas shutoff on the end of the pole opposite the hook.

Y\_\_N\_\_

**PVC PIKE POLE MOUNT(S)**

Two (2) PVC tube(s) shall be mounted to facilitate storage of pike poles.

The mounting tube(s) shall be located in the Stokes litter storage compartment.

Y\_\_N\_\_

**WHEEL CHOCKS**

Two (2) Worden HWG wheel chocks shall be furnished and shipped loose by the apparatus manufacturer. Two (2) U815 holders shall be installed by the manufacturer on the left side of the body, one in front of and one behind the rear wheel(s).

Y\_\_N\_\_

**PAINT PROCESSES**

The following processes shall be employed in the finishing of the apparatus:

Manual Surface preparation – All metal surfaces on all custom body and cabs shall be thoroughly cleaned and prepared for paint. Surfaces that shall not be painted include all chrome plated, polished stainless steel and bright aluminum tread plate. As required, weld seams and other areas shall be caulked to prevent water leaks or for appearance reasons. Each imperfection on the exterior metal surface shall be removed or filled and then sanded for a smooth flat appearance.

Chemical Cleaning and Treatment – All painted surfaces shall be washed with a chemical degreaser, cleaner and surface conditioner to allow for proper adherence of primer coat. Then they shall be washed with a neutralizer product. All products used are approved by paint supplier and applied under strict process control to meet performance requirements on corrosion prevention and chip resistance.

Primer/ Surface Coating for Top Coat application – a minimum of 2 coats of Epoxy based primer shall be applied to surfaces inside and outside of cabs and bodies and all other parts of apparatus that shall receive a Top color coat to achieve required corrosion protection. After that a minimum of 2 coats of sealer shall be applied over the primer surface. The overall thickness of the primer/sealer coat shall be between 3 to 8 mils wet. Once dried and cured all surfaces that shall receive a top coat shall be hand sanded to achieve a flat and smooth surface to meet gloss and other paint quality standards. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements according with Manufacturer's Paint Quality Standard. The underside of the cab and body shall be finished with one coat of epoxy primer specifically designed for this application to prevent corrosion and provide chip resistance to typical paved road conditions.

Top Coat Application – Each Top Coat final color on the apparatus is applied using a two stage paint process. The unit shall be thoroughly hand cleaned to eliminate dust residues and to detect any imperfection in the surfaces to be painted. A fast drying 3.5 VOC polyurethane basecoat color shall be applied using a cross coat application technique. Additional coats may be applied as required until the coat thickness reaches 2.0 to 6.0 mils wet and a full hide appearance. If a second color is required, proper masking shall be applied to the unit and the basecoat application process shall be repeated for the second color. A slow drying low VOC High Build clear coat shall be applied using a cross coat application technique until a minimum of 5.0 mils wet is achieved. The unit is then properly heated to assure flash and cure of the paint before leaving the paint booth. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements according to Manufacturer's Paint Quality Standard.

Each batch of color topcoat shall be tested for precise color match following paint supplier color matching process. A visual color match shall be checked prior to paint using customer approved paint chips.

The cab and body shall be primed and finish painted prior to installation on the chassis to ensure paint coverage in all areas including the difficult to reach places. The exterior and interior of the cab shall be finish painted before the doors are installed or any assembly is started to ensure a finish painted surface beneath all trim items.

Primer/ Surface Coating for Single Coat application – a minimum of 2 coats of Epoxy based primer shall be applied to all surfaces of the apparatus that shall receive a single color coat to achieve required corrosion protection. This is a wet coat process and it shall achieve a 3.0 to 8.0 mills wet thickness and complete coverage of all bare metal. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements according with Manufacturer's Paint Quality Standard.

Single Coat Application – A minimum of 2 coats of direct gloss paint shall be applied over all primed surface to achieve corrosion protection and appearance in accordance with Manufacturer's Paint Quality Standard. This application shall be used for Gloss Black, Job Color and Color finishes in parts of the apparatus such as frame rails, outriggers, ladders and other aerial devices, suspension and other chassis parts, etc. as defined in the sales order.

Zolatone Coat Application – All areas to receive a Zolatone coat shall be primed following the primer/surface coating for top coat application. A high pressure coat of Zolatone paint shall be applied in a cross pattern technique to achieve smooth finished surface. A second low pressure coat of Zolatone paint shall be applied in a single pattern to achieve a textured appearance.

Zolatone Clear Coat Application – Starting with a completed and dry Zolatone coat application 2 to 3 coats of Zolatone clear coat shall be applied until a thickness of 5.0 mills wet is achieved.

Y\_\_N\_\_

**PAINTERS**

All painters shall be paint supplier certified. They shall be re-certified periodically in order to keep up to current standards and procedures required by the coatings manufacturer. This certification is performed independently by the paint supplier.

Y\_\_N\_\_

**FACILITY**

The finishing facility shall be certified independently by the paint supplier by meeting or exceeding its extensive and stringent requirements. The paint facility shall be audited quarterly by the paint supplier to

ensure proper equipment, procedures and safety regulations are being used and adhered to in addition to the controls implemented by Manufacturer to assure paint quality requirements are met in every job.

Y\_\_N\_\_

**QUALITY STANDARDS**

The finish quality and appearance shall be in accordance with the Manufacturer's Paint Quality Standards for dirt, gloss, reflectivity, clarity and depth of image. The standard is available to the customer at any time upon request.

Y\_\_N\_\_

**FRAME & UNDERCARRIAGE FINISH**

The following items shall have an additional coat of gloss black paint applied over the primed surface as supplied by the component manufacturer. Single coat application process shall be used to apply Gloss Black direct gloss paint on the parts identified below:

- Chassis frame rails, cross members.
- Front bumper extension.
- Front & rear axles and suspension.
- Battery boxes.
- Fuel tank and fill tube.
- Air reservoir tanks.
- Pump module mounting brackets.
- Body mounting brackets.
- Steering gear box and steering link arm.
- Drive shafts.
- Front suction (when furnished).

The following items will be furnished with the finish as provided by their respective manufacturer.

- Engine, transmission and accessories.
- Exhaust system.
- Retarder (when furnished).
- PTO & hydraulic pump (when furnished).
- Cab lift cylinders & hydraulic pump.
- Shock absorbers.
- Fuel filter.
- Air drier and air cleaner.
- Electrical wiring and loom.
- Air brake lines, valves and mounting brackets.

Y\_\_N\_\_

**CAB INTERIOR PAINT FINISH**

The inside of the cab shall be painted with black Zolatone paint following the Zolatone Coat application process.

- The following components shall be painted:
- Exposed interior surfaces of the cab structure
  - Exposed interior surfaces of the driver/officer/crew doors
  - All interior "Metal" access/wire covers of the cab

Head bumper brackets

Miscellaneous brackets, if present: camera mounts, non-recessed radios, charger covers.

Y\_\_N\_\_

**PAINT INSIDE OF CAB**

The inside of the split tilt cab shall be clear coated following the Zolatone Clear Coat application process in the same components that received a Zolatone application.

Y\_\_N\_\_

**TWO TONE CAB PAINT**

The cab shall be two tone painted with the paint break just below the windshield. The paint shall follow the Top Coat application process for two colors.

A decorative molding shall separate the two colors around the cab. The paint break shall be horizontal across the front of the cab above the wipers and taper down with a radius even with the outside corners of the grille.

Y\_\_N\_\_

**TWO TONE BODY PAINT**

The body of the apparatus shall be painted two-tone matching the cab colors. The paint break line shall be shown on the approval drawing after the pre-construction meeting. The paint shall follow the Top Coat application process for two colors.

Y\_\_N\_\_

**ACORN NUTS**

Acorn nuts shall be installed on all exposed screws and bolts in areas where personal injury may result and/or damage to equipment may occur. For further details, please refer to the enclosed standards document.

Y\_\_N\_\_

**CHEVRON STRIPING**

The entire rear face of the body, including the rear compartment hinged door, shall be covered with 6" wide 3M™ Diamond Grade™ reflective striping in an alternating chevron pattern with the stripes running at a 45 degree downward angle from the top center of the vehicle.

The chevron striping shall be alternating Scotchlite™ Red 983-72NL and Scotchlite™ Fluorescent Yellow-Green 983-23.

Y\_\_N\_\_

**LETTERING & STRIPING**

The apparatus shall be lettered and striped as close as possible to existing *Waltham Fire Department* apparatus.



Y\_\_N\_\_

**TABLET MOUNTING**

Mounting brackets and hardware for one (1) iPad tablet shall be provided and installed. Location shall be adjacent to the Officer's seat either on the engine enclosure or the dash in front of the Officer's seat. Exact location shall be determined during the pre-delivery process at the dealership. Mounting brackets shall be HiNT Peripherals brand. Exact model numbers shall be determined during the location phase.

Y\_\_N\_\_

**ELECTRONIC OPERATOR'S & PARTS MANUAL**

A binder shall be supplied that has CDs and paper documents as listed below.

The binder shall contain 2 duplicate CDs. Each CD shall have:

- Operations & maintenance instructions for items on the vehicle, except the engine.
- Vendor Literature, as available, for purchased components.
- Electrical diagrams including charts illustrating the individual wire color, number code, and function.
- Parts manuals.
- Parts drawings and an overall vehicle layout.
- Certificates
- Warranties

Printed documents shall include:

- Operations & maintenance instructions for items on the vehicle, not including the vendor literature
- Operations & maintenance instructions for engine.
- Certificates of independent test results.
- Warranty documents.
- Manufacturer's record of construction details and engine power curve.
- Vehicle final alignment report.

One (1) to two (2) CD manuals for the water pump shall be included, if there is a pump on the unit, and as provided by the pump manufacturer. Additional CDs and paper documents, as provided by other equipment suppliers, shall also be included.

Y\_\_N\_\_

**PAPER OPERATOR'S MANUAL**

Multiple binders shall be provided containing paper documents regarding operator's instructions and maintenance. The binders shall be indexed for easy access to information.

The binders shall contain:

- Operations & maintenance instructions for items on the vehicle, except the engine.
- Vendor Literature, as available, for purchased components.
- Electrical diagrams including charts illustrating the individual wire color, number code, and function.
- Certificates
- Warranties

Y\_\_N\_\_

**MANUFACTURER'S LIMITED WARRANTY**

A manufacturer's limited two (2) year warranty for parts and labor shall be provided.

**CAB FIFTEEN YEAR STRUCTURAL LIMITED WARRANTY**

Y\_\_N\_\_

A manufacturer's cab limited fifteen (15) year structural warranty shall be provided.

**STAINLESS STEEL BODY FIFTEEN YEAR STRUCTURAL LIMITED WARRANTY**

Y\_\_N\_\_

A manufacturer's limited stainless steel body fifteen (15) year structural warranty shall be provided.

**CHASSIS FRAME RAIL & CROSS MEMBER STRUCTURAL LIMITED LIFETIME WARRANTY**

Y\_\_N\_\_

A manufacturer's limited lifetime frame rail and cross members structural warranty shall be provided.

**PAINT/CORROSION LIMITED WARRANTY**

Y\_\_N\_\_

A manufacturer's limited pro-rated paint six (6) year warranty shall be provided.

Y\_\_N\_\_

**BID OPTION**

Bidders are encouraged to bid the following option:

**Hinged Exterior Compartment Doors in Place of Roll-Up Doors**

**HINGED COMPARTMENT DOORS**

The side compartment doors shall be lap type, double panel construction with 14 gauge outer and 14 gauge 3CR12 stainless steel inner panels. (NO EXCEPTIONS TO THIS STATEMENT.) Outer pan edges that form the lap portion of the door shall be "hemmed" (bent over and back 180 degrees) over the inner pan edges. Inside corners, at the hem area, shall be welded and ground smooth. A minimum of one (1) "Z" shaped formed 14 gauge support rail (two (2) if door is wider than 14") shall be placed between the panels to stiffen and reinforce the door. Stiffener shall be welded to the inside pan and fastened to the outside pan with 3M two sided industrial strength tape.

The doors shall be weather stripped with an automotive bulb type extruded rubber inner seal. A second outer seal of closed cell rubber shall be placed on the lap edge of the door to prevent damage to the paint finish. Outer seal shall have corrugated surface to prevent sticking.

The doors shall be mounted on stainless steel piano hinges with a pin diameter of .25". Mounting holes shall be slotted vertically on one side of the hinge and horizontally on the other side to provide for proper adjustment of the door. The hinge pins shall have spun ends (crowns) at both ends to hold them in place and provide a finished look. Eberhard 206 latches with stainless steel "D" ring handles shall be provided on the lift, single, drop down, and lock door (double door set-up). The free door (double door set-up) shall have an (2) Eberhard latches top and bottom with a single handle located inside the door (standard location at bottom). Isolation tape shall be furnished between the door hinge and door jam. A

rubber gasket shall be provided between the "D" ring handle and the door.

Vertically hinged doors shall be equipped with Hansen 5EZ or Thomas EZ spring type door checks that also hold the doors in the open and closed position. Checks shall be the two point mounting type for simplicity. Spring tension (15 lb.) shall be easily adjustable. Checks shall have black zinc mounting brackets with stainless steel springs, 11" long rods and clamps. Springs shall be polished. Horizontally hinged doors shall be held in the opened position with gas cylinder type stays. Switches for automatic compartment light operation shall be installed in the door hinge area.

Y\_\_N\_\_

**BODY DOOR HINGES**

All piano hinges on the main body exterior doors shall be mill finished.

Y\_\_N\_\_

**BRUSHED STAINLESS COMPARTMENT DOOR LINER(S)**

Brushed stainless steel overlay shall be provided on the inside of fourteen (14) compartment door(s) to protect the painted finish and to cover inside door hardware.

Y\_\_N\_\_

**COMPLIANCE FORMS**

**(PLEASE COMPLETE AND SUBMIT THESE FORMS WITH YOUR RESPONSE)**

**NON-COLLUSION FORM AND TAX COMPLIANCE FORM**

**CERTIFICATE OF NON-COLLUSION**

Y\_\_N\_\_

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity or group of individuals. The undersigned certifies that no representations made by any City officials, employees, entity, or group of individuals other than the Purchasing Agent of the City of Waltham was relied upon in the making of this bid

\_\_\_\_\_, \_\_\_\_\_  
(Signature of person signing bid or proposal)      Date

\_\_\_\_\_  
(Name of business)

\_\_\_\_\_

**TAX COMPLIANCE CERTIFICATION**

Y\_\_N\_\_

Pursuant to M.G.L. c. 62C, & 49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

\_\_\_\_\_  
Signature of person submitting bid or proposal                      Date

\_\_\_\_\_  
Name of business

**NOTE**

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

**CERTIFICATE OF VOTE OF AUTHORIZATION**

Y\_\_N\_\_

Date:

I \_\_\_\_\_, Clerk of \_\_\_\_\_ hereby certify that at a meeting of the Board of Directors of said Corporation duly held on the \_\_\_\_\_ day of \_\_\_\_\_ at which time a quorum was present and voting throughout, the following vote was duly passed and is now in full force and effect:

VOTED: That \_\_\_\_\_ (*name*) is hereby authorized, directed and empowered for the name and on behalf of this Corporation to sign, seal with the corporate seal, execute, acknowledge and deliver all contracts and other obligations of this Corporation; the execution of any such contract to be valid and binding upon this Corporation for all purposes, and that this vote shall remain in full force and effect unless and until the same has been altered, amended or revoked by a subsequent vote of such directors and a certificate of such later vote attested by the Clerk of this Corporation.

I further certify that \_\_\_\_\_ is duly elected/appointed \_\_\_\_\_ of said corporation

SIGNED:

(Corporate Seal)

\_\_\_\_\_  
Clerk of the Corporation:

Print Name: \_\_\_\_\_

\_\_\_\_\_

COMMONWEALTH OF MASSACHUSETTS

County of \_\_\_\_\_

Date:

Then personally appeared the above named and acknowledged the foregoing instrument to be their free act and deed before me, \_\_\_\_\_

Notary Public;

My Commission expires: \_\_\_\_\_

**CORPORATION IDENTIFICATION**

Y\_\_N\_\_

The bidder for the information of the Awarding Authority furnishes the following information.

If a Corporation:

Incorporated in what state \_\_\_\_\_

President \_\_\_\_\_

Treasurer \_\_\_\_\_

Secretary \_\_\_\_\_

Federal ID Number \_\_\_\_\_

If a foreign (out of State) Corporation – Are you registered to do business in Massachusetts?

Yes \_\_\_\_\_, No \_\_\_\_\_

If you are selected for this work you are required under M.G.L.ch. 30S, 39L to obtain from the Secretary of State, Foreign Corp. Section, State House, Boston, a certificate stating that you Corporation is registered, and furnish said certificate to the Awarding Authority prior to the award.

If a Partnership: (Name all partners)

Name of partner \_\_\_\_\_

Residence \_\_\_\_\_

Name of partner \_\_\_\_\_

Residence \_\_\_\_\_

If an Individual:

Name \_\_\_\_\_

Residence \_\_\_\_\_

If an Individual doing business under a firm's name:

Name of Firm \_\_\_\_\_

Name of Individual \_\_\_\_\_

Business Address \_\_\_\_\_

Residence \_\_\_\_\_

Date \_\_\_\_\_

Name of Bidder \_\_\_\_\_

By \_\_\_\_\_

Signature \_\_\_\_\_

Title \_\_\_\_\_

Business Address \_\_\_\_\_ (POST OFFICE BOX NUMBER NOT ACCEPTABLE)

City \_\_\_\_\_ State \_\_\_\_\_ Telephone Number \_\_\_\_\_ Today's Date \_\_\_\_\_

**RIGHT TO KNOW LAW**

Y\_\_N\_\_

Any vendor who receives an order or orders resulting from this invitation agrees to submit a Material Safety Data Sheet (MSDS) for each toxic or hazardous substance or mixture containing such substance, pursuant to M.G.L. c. 111F, §§8,9 and 10 and the regulations contained in 441 CMR 21.06 when deliveries are made. The vendor agrees to deliver all containers properly labeled pursuant to M.G.L. c. 111F §7 and regulations contained in 441 CMR 21.05. Failure to furnish MSDS and/or labels on each container may result in civil or criminal penalties, including bid debarment and action to prevent the vendor from selling said substances, or mixtures containing said substances within the Commonwealth. All vendors furnishing substances or mixtures subject to Chapter 111F or M.G.L. are cautioned to obtain and read the laws, rules and regulations referenced above. Copies may be obtained from the State House Bookstore, Secretary of State, State House, Room 117, Boston, MA (617) 727-2834.

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Authorized Signature Indicating Compliance with the Right-to-know laws:

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Signature

Date

---

Print Name

**NOTE**

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

-

**DEBARMENT CERTIFICATION**

Y\_\_N\_\_

In connection with this bid and all procurement transactions, by signature thereon, the respondent certifies that neither the company nor its principals are suspended, debarred, proposed for debarment, declared ineligible, or voluntarily excluded from the award of contracts, procurement or non procurement programs from the Commonwealth of Massachusetts, the US Federal Government and /or the City of Waltham. "Principals" means officers, directors, owners, partners and persons having primary interest, management or supervisory responsibilities with the business entity. Vendors shall provide immediate written notification to the Purchasing Agent of the City of Waltham at any time during the period of the contract of prior to the contract award if the vendor learns of any changed condition with regards to the debarment of the company or its officers. This certification is a material representation of fact upon which reliance will be placed when making the business award. If at any time it is determined that the vendor knowingly misrepresented this certification, in addition to other legal remedies available to the City of Waltham, the contract will be cancelled and the award revoked.

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Company Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_, State \_\_\_\_\_, Zip Code \_\_\_\_\_

Phone Number (\_\_\_\_) \_\_\_\_\_

E-Mail Address \_\_\_\_\_

Signed by Authorized Company Representative: \_\_\_\_\_

Print Name \_\_\_\_\_, Date \_\_\_\_\_



**10 HOURS OSHA TRAINING CONFIRMATION**

Y\_\_N\_\_

**Chapter 306 of the Acts of 2004**

**CONSTRUCTION PROJECTS**

**AN ACT RELATIVE TO THE HEALTH AND SAFETY ON PUBLIC**

The undersigned hereby certifies that all employees to be employed at a worksite for construction, reconstruction, alteration, remodeling, repair, installation, demolition, maintenance or repair of any public work or any public building estimated to cost more than \$10,000.00 have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first payroll report for each employee and will comply with all laws and regulations applicable to awards of subcontracts subject to section 44F.

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Print Name \_\_\_\_\_

Date \_\_\_\_\_

*See following Chapter 306 of the Acts of 2004*

**NOTE**

Failure to submit any of the required documents, in this or in other sections, with your bid response package will be cause for the disqualification of your company.

**PRICE SHEET**

<b><u>COST OF THE APPARATUS</u></b>	\$ _____
<b><u>&lt;LESS&gt; OPTIONAL TRADE IN VALUE</u></b> (See below for make and model)	\$ < _____ >
<b>Total</b>	\$ _____

**OPTIONAL Price of hinged compartment doors in place of rollup doors option** \$ \_\_\_\_\_

**OPTIONAL TRADE IN OF CURRENT VEHICLE**

The bidder shall render a price for the trade in of the current Rescue vehicle used by the Waltham Fire Department which is the following.

A 1996 Emergency One Cyclone II Heavy Duty Rescue VIN# 4ENRAAA84V1006818

My company Acknowledges receipt of addenda # \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

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Company: \_\_\_\_\_

Signature of Authorized Person: \_\_\_\_\_, Date: \_\_\_\_\_

Print Name: \_\_\_\_\_

Email Address: \_\_\_\_\_,

Phone: \_\_\_\_\_